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FACULTY OF ECONOMICS**

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"Smart Economy: Shaping the Future with AI" SHKODRA IEC2025

This concept captures the profound technological and socio-economic transformations now redefining production, consumption, and governance worldwide. Smart Economy marks the next phase in the evolution of economic systems, where artificial intelligence (AI), and human-centred innovation converge to create new forms of value and to reconfigure how societies generate and distribute wealth.

The conference will critically examine how these emerging technologies are reshaping global value chains, business models, entrepreneurship, and labour markets, as well as financial systems and public governance structures. While AI and advanced digitalisation hold the promise of accelerating innovation, productivity, and sustainable development, they also present complex ethical, environmental, and social challenges. Questions of fairness, inclusion, data privacy, and algorithmic accountability are increasingly central to debates on the future of work and economic life.

These issues acquire distinct urgency in South-East Europe and the Western Balkans, where the transition from planned to market economies has left a legacy of institutional fragility, uneven economic growth, and persistent structural inequalities. In this regional context, the penetration of AI and smart technologies intersects with post-transition reforms, EU integration processes, and rapid but uneven digital adoption, creating unique opportunities for leapfrogging development, but also exposing vulnerabilities such as labour-market segmentation, digital divides, and governance gaps.

Against this backdrop, Shkodra IEC2025 invites critical, empirically grounded, and policy-relevant contributions that illuminate the multifaceted implications of the digital and AI-driven economy. The conference seeks to foster an interdisciplinary dialogue that draws on economics, management, information systems, tourism, and the social sciences to explore how innovation ecosystems, smart industries, and AI-enabled services can enhance competitiveness while upholding social inclusion, ethical governance, and environmental responsibility.

Beyond its conceptual and empirical ambitions, SHKODRA IEC2025 is designed as a platform for action-oriented debate and regional collaboration. Participants will examine structural macroeconomic transformations, the future of finance and FinTech, and the strategic role of tourism and cultural heritage in smart regional development. Special attention will be given to entrepreneurship and start-up ecosystems, sustainable investment strategies, and new forms of human-machine collaboration, offering insights relevant to policymakers, private-sector actors, and civil society.

By bringing together leading scholars, policymakers, industry leaders, and early-career researchers, SHKODRA IEC2025 aims to co-create strategies for aligning technological progress with human well-being, equity, and long-term sustainability. The conference will not only assess the opportunities and risks of Smart Economy, but also envision and design practical pathways for AI adoption and digital transformation that are competitive, inclusive, and socially responsible.

Through this lens, SHKODRA IEC2025 aspires to contribute to a forward-looking agenda for the Western Balkans and beyond, ensuring that the economic transformations of the coming

decade deliver tangible benefits for citizens, businesses, and societies, while safeguarding democratic values and environmental integrity.

We invite abstracts for research papers, policy analyses, and case studies aligned with the following thematic streams:

Business Innovation and Entrepreneurship in the Era of Smart Economy

AI-driven business models, digital entrepreneurship, and innovation ecosystems.

Start-ups, SMEs, and open innovation: opportunities and barriers in South-East Europe and the Western Balkans.

Responsible and sustainable innovation: balancing competitiveness with environmental and social impact.

Structural Growth Economic Changes and Digital Transformation

AI, automation, and big data as drivers of structural change in regional and global economies.

Implications for growth, employment, productivity, and income distribution in post-transition economies.

Reshaping industrial policy and macroeconomic governance to foster inclusive smart growth.

Finance, Accounting, FinTech and Sustainable Investments (new stream)

Digital finance, blockchain technologies, and AI-enabled financial services.

Risk management and ethical challenges in FinTech ecosystems.

Green finance and sustainable investment strategies supporting the EU Green Deal and SDGs.

Innovations in International Financial Reporting Standards (IFRS)

Transparency and accountability in corporate reporting

The future of integrated reporting

Digital transformation of accounting professions

Tourism, Heritage, and Smart Society

Smart tourism, cultural heritage digitalisation, and AI-enhanced visitor experiences.

Sustainable tourism models that integrate local communities and circular economy principles.

Managing overtourism and climate risks through smart data and predictive analytics.

Doctoral and Early-Career Researchers' Session

Innovative PhD and postdoctoral research on digitalisation, AI, and smart economy topics.

Methodological advancements in measuring digital transformation and AI impacts.

Comparative and cross-country perspectives from the Western Balkans, South-East Europe, and beyond.

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THE ANXIETY OF REPLACEMENT AND COGNITIVE OFFLOADING: PSYCHOLOGICAL ADAPTATION TO AI IN THE SMART ECONOMY

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Abstract

The accelerated integration of artificial intelligence (AI) into contemporary economic systems is redefining productivity, innovation, and human roles in the workplace. However, despite its economic potential, AI presents new psychological challenges that shape how individuals respond to technological change. This study investigates two key psychological mechanisms: substitution anxiety and cognitive unloading, which influence how individuals adapt emotionally and behaviorally to AI-driven environments. Substitution anxiety involves the fear of the individual's devaluing by intelligent systems, while cognitive unloading refers to the delegation of cognitive efforts to external technologies. These constructs have rarely been examined together, especially within the economic context of post-transition societies such as Albania and the Western Balkans, where rapid digitalization coexists with labor market uncertainty. Addressing this gap, the research examines how these mechanisms interact to shape human psychological state and productivity.

Keywords: *cognitive load, digital literacy, human-machine interaction, labor market perceptions, technological anxiety.*

JEL classification: D83, J24, O33, D91, I31

1. Introduction

Transition periods in history have never ceased to show radical changes in human life. While these changes have mainly been initiated to simplify daily actions, the arguments have been divided into several large groups and then subgroups, with subjective thoughts and opinions from each, without question as it has adapted to them or as they have perceived it. One of these transition periods is the rapid development of technology, followed by the creation of artificial intelligence and the automation of almost every daily action.

It is natural to feel empowered by the possibility of performing in a few seconds, some tasks that may have taken us a long time to do. If we look at it from the point of view of time management, this automation and digitalization has become our good assistant. Maybe during the time that we are dealing with something more important, artificial intelligence is working to perform something else. Up to this point, we can say that AI is a good tool to have in daily access. However, there is a very thin line between use and overuse, or further, addiction.

On social media we often see captions written with AI, in university assignments presentations there are obvious signs of the use of AI, in institutional reports, in

announcements, in messages, often even to ask for an opinion on something very simple or to ask for psychological or medical explanations. In this case, we can see that the individual has passed normal functioning, based on simple cognitive processes, as a competency to AI systems.

In psychological terms, this phenomenon can only be explained by a constructive approach. That is, the psychological consequences of this use and overuse can be explained differently in different people. There may be individuals who are quite happy with a fast and unpaid virtual assistant, others may feel intimidated, others may feel anxious because their financial source is what the AI is already doing at no cost. Again, this can be seen from different perspectives, because a business owner or company who has hired several employees to perform a certain function now has the opportunity to save on employee salaries, by keeping only one employee who commands and supervises the work of the AI. From the perspective of the employees, who have invested time from their lives to do such a job, they are now in a state of anxiety because all their work is replaced by a virtual intelligence. There are arguments that suggest that no matter how specialized AI becomes, it cannot function without human intelligence. And this argument is not at all wrong, until we are introduced to the anxiety of replacement and cognitive offload.

Reduced cognitive offload can free up mental resources to think about more creative things, while AI systems perform the boring functions. Also, at the same time, the individual receives a positive feeling from the perception of personal mastery in using new systems. However, cognitive offload is likely to have the opposite effect. The erosion of critical thinking is an effect that causes damage to human cognitive processes, losing the individual's ability to think clearly and according to personal mental schemes. Overconfidence in the artificial system turns the feeling of self-confidence into a feeling of loss of competence in performing daily tasks, resulting in the anxiety of being replaced.

As mentioned above, during times of transition, opinions and feelings about changes are different. Since there is no accurate, reliable, tested and reasonable model to follow, people will feel somewhat confused about what to do. Adapting to these changes must be done by taking into account two factors that are related to each other. The human factor is the subjective factor, that is, the way the individual feels best and functions most effectively, adapted to his or her lifestyle. While the other factor, for which a large part of the responsibility falls on competent persons and service providers regarding this issue, is the well-being of the individual. Although the individual may see a solution as the most efficient possible, the harm from this solution may not be apparent from their perspective, so an assessment by experts in specific fields is needed.

The Western Balkans are experiencing this transition also within emerging labor markets. While these economies show strong potential for innovation and productivity gains, they face structural vulnerabilities, such as high youth unemployment, limited digital literacy and uneven access to advanced technologies.

These factors amplify the psychological impact of AI integration, making substitution anxiety and cognitive offloading especially relevant. Understanding these dynamics is crucial for ensuring that digital transformation is inclusive, efficient and psychologically sustainable in the region. These dynamics remain underexplored, particularly in post-transition economies like Albania.

In addition, research papers have their significant impact in gathering knowledge on the current qualitative or statistical situation. In this study, the anxiety of replacement and cognitive offload will be examined, in the context of psychological adaptation to AI in the era of the smart economy.

1.1 Research Objectives and Questions

1.1.1 Research Objectives

- Examine the relationship between substitution anxiety and trust in AI systems in the Albanian context.
- Investigate how cognitive offloading moderates the psychological and behavioral response to AI integration.
- Assess the impact of these mechanisms on AI-driven productivity intentions.
- Provide evidence-based recommendations for workforce adaption and digital literacy programs.

1.1.2 Third-Level Heading

- How does substitution anxiety influence trust in AI among students and professionals?
- Does cognitive offloading enhance or buffer the effects of substitution anxiety on AI adaption?
- How do these psychological mechanisms affect willingness to use AI for productivity?

2. Literature Review

2.1 The anxiety of replacement

The potential for mass automation and the resulting job losses have been a topic of widespread concern since the Industrial Revolution [1]. Automation is the main phenomenon behind the advent of advanced automated systems, such as artificial intelligence [2]. Research over the past few years shows that artificial intelligence is reshaping workers' psychological experiences as profoundly as their economic realities. Researchers increasingly agree that job insecurity associated with artificial intelligence is a distinct and rapidly growing phenomenon that cannot be fully explained by traditional models of job insecurity [3].

The development of the Job Insecurity Scale highlights this difference, indicating that workers distinguish between general employment instability and specific fears of replacement or devaluing by intelligent systems [4].

This distinction is crucial because automation anxiety persists even in sectors where employment has remained stable or productivity has increased [5][6].

Large-scale international surveys further show that public fears about AI span across cultures, skill levels, and application domains. Individuals consistently report concerns about fairness, future employment, and social disruption [7]. Organizational studies mirror these patterns. Employees exposed to algorithmic management or AI-enhanced decision-making systems report lower psychological safety and increased knowledge-hiding behaviors [8]. Related research shows that AI-mediated work environments often reduce engagement and create high perceptions of role threat, even when the technology is framed as additive rather than substitutive [3][9]. Economic analyses complicate the picture by showing that AI affects workers unevenly. Some studies show that automation can reduce wages within occupations and widen inequality, especially for routine or middle-skill roles [10][11].

Complementary research finds that workers exposed to the risk of automation experience higher stress, reduced self-efficacy and increased job insecurity, which in turn amplifies inappropriate workplace behaviors [8][12]. Meanwhile, international analyses show that fear of automation is shaped not only by objective exposure, but also by workers' interpretations of technological change and the transparency of organizational communication [13][14].

2.2. Cognitive offloading

Physical action is sometimes used to reduce the cognitive demands of a task, known as

cognitive offloading [15]. Information offloading can lead to improved performance in cognitively demanding tasks, such as tasks where several pieces of information must be held simultaneously, but little is known about why some individuals choose to engage in offloading and under what conditions they may choose to do so [16]. While this may free up cognitive resources, it can also lead to a decrease in cognitive engagement and skill development [17]. The dual nature of AI in cognitive development has been a focal point in recent research. AI tools can improve learning outcomes by providing personalized instruction and immediate feedback, thereby supporting skill acquisition and knowledge retention [18]. Adults tend to be selective in their use of cognitive offloading. They rely on internal cognitive processes when demands are low but turn to external aids when faced with higher cognitive demands. This selectivity is driven by metacognitive of their own abilities, leading to decisions about when to use external support [19].

AI can allow firms to improve their decision-making, given that firm managers are willing to adopt algorithms in decision-making contexts [20]. However, according to Freisinger & Schneider (2024), delegating decisions to AI is challenging, especially in contexts that go beyond classical optimization problems.

In their research about decoding decision delegation to AI, their results concluded that: “the willingness to delegate an ethically challenging decision to AI in a surrogate decision context is lower than that in a non-surrogate context (decision-maker perspective), whereas people affected by the decision do not generally prefer humans to AI (decision-affected perspective)” [21].

2.3 Behavioral adaptation to automation

Behavioral adaption to automation encompasses the range of cognitive, emotional and action-oriented strategies individuals employ when interacting with AI or automated systems [22]. Today's student is expected to develop critical thinking, problem solving, communication, and teamwork, as these qualities have an impact on the development of the individual [23]. According to Benvenuti et al. (2023), the school and the teachers are the key elements to educating students in this transformation process where computational thinking, critical thinking, problem-solving, creativity, and the remaining skills are taking a leading role in this even more digitalized world [24]. “Humans adapt; they continuously understand where they are in the world and what problem they are solving in response to changing circumstances far better than current AI does.” says Layne (2024) [25].

2.4 Conceptual gaps

Despite a growing body of literature on AI adoption, automation anxiety and cognitive offloading, several gaps remain. Most studies treat psychological responses and economic outcomes separately. Few frameworks simultaneously examine how emotional and cognitive mechanisms mediate or moderate behavioral adaption in AI-enhanced workplaces.

3. Methodology

3.1 Research design

This study employs a quantitative, cross-sectional design using scenario-based online experiments. Participants are presented with constructed AI-driven workplace scenarios and asked to indicate their responses using Likert-scale questionnaires. This design allows measurement of both psychological responses (substitution anxiety and cognitive offloading) and behavioral intentions (trust in AI and productivity intentions).

3.2 Population sampling

The target population is university students, early-career professionals and mid-career professionals across various fields, aged 18 to 41. The used sampling strategy is convenience sampling method through academic networks and online platforms. Efforts will be made to balance participants across age, education levels and AI experience.

3.3 Instruments

- A. Scenario vignettes. Participants will be presented with 2 short and realistic AI decision-making scenarios, including AI-assisted hiring and AI-supported tasks. Each scenario is followed by survey items measuring emotional, cognitive and behavioral responses.
- B. Substitution anxiety scale is adapted from research on automation anxiety and perceived replaceability.
- C. Cognitive offloading scale is adapted from Risko & Gilbert (2016) [15], capturing the tendency to delegate cognitive tasks to AI.
- D. Trust in AI scale is adapted from human-automation trust literature.
- E. Productivity intentions scale is adapted from research and its purpose is for the participants to self-report their intentions to use AI tools.

3.4 Reliability and validity

For each of the instruments, a pilot testing was conducted to explore the construct validity and to ensure that items load appropriately. The instruments were distributed at a small subsample ($N = 26$), to refine wording and clarity. The internal consistency resulted $\alpha = .86$, with variation between items from $\alpha = .81$ to $\alpha = .92$.

4. Results & Discussion

4.1 Descriptive statistics

A total of 312 participants completed the survey, where from 62.8% were female and 37.2% were male participants; meanwhile the mean age was 22.7 ($SD = 3.4$). Students comprised 71.5% of the sample, while professionals accounted for 28.5%. Participants reported moderate exposure to AI tools ($M = 3.12$, $SD = 1.04$ on a Likert-5 scale). Descriptive statistics for all constructs are presented in Table 1.

4.2 Correlation analysis

Table 1. Descriptive statistics

Variable	Mean	SD	Min	Max
Substitution Anxiety	3.41	0.79	1.40	5.00
Cognitive Offloading	3.57	0.66	1.80	5.00
Trust in AI	2.94	0.83	1.20	5.00
AI Adoption Intention	3.21	0.77	1.00	5.00
AI Experience	3.12	1.04	1.00	5.00

Variable	1	2	3	4	5
1. Substitution Anxiety	1				
2. Cognitive Offloading	−0.18*	1			
3. Trust in AI	−0.42***	0.29***	1		
4. AI Adoption Intention	−0.36***	0.33***	0.61***	1	
5. AI Experience	−0.12	0.41***	0.27***	0.31***	1

Table 2: Correlation matrix

Pearson correlations were calculated to examine bivariate relationships, exposed in Table 2. The correlations support the hypothesized pattern: substitution anxiety correlates negatively

with both trust and adoption, while cognitive offloading and experience show positive associations with trust.

H1: Higher levels of substitution anxiety predict lower trust in AI-based systems.

A simple linear regression showed that substitution anxiety significantly predicted trust in AI. Participants with higher substitution anxiety reported substantially lower trust levels ($\beta = -0.42$, $t = -8.72$, $p < .001$, $R^2 = .18$). This supports the broader psychological literature showing that perceived threat reduces openness to technological change. Participants who feared being replaced by AI were less inclined to trust its decisions, framing substitution anxiety as a key emotional bottleneck in digital transformation.

H2: Higher levels of substitution anxiety predict lower AI adoption intentions.

Regression results indicated $\beta = -0.36$, $t = -6.81$, $p < .001$, $R^2 = .13$. Substitutions anxiety is a significant negative predictor of adoption. This indicates that emotional threat not only erodes trust but also suppresses willingness to integrate AI into daily tasks. In emerging economies where job security is more fragile, this anxiety may become a structural barrier to national digital development.

H3: Higher levels of cognitive offloading predict higher trust in AI systems

The analysis showed a significant positive effect ($\beta = 0.29$, $t = 5.36$, $p < .001$, $R^2 = .09$). Individuals accustomed to delegating cognitive tasks to technology appeared more receptive to intelligent systems overall. Offloading may therefore act as a psychological bridge, transforming unfamiliar AI processes into extensions of one's usual digital habits.

H4: Cognitive offloading moderates the effect of substitution anxiety on trust

A moderated regression tested the interaction between substitution anxiety and cognitive offloading. The interaction was significant ($\beta = 0.11$, $t = 2.24$, $p < .026$). Simple slopes showed that at low cognitive offloading, substitution anxiety strongly reduced trust ($\beta = -0.51$, $p < .001$). At high cognitive offloading, the negative effect was weaker ($\beta = -0.29$, $p < .001$). Thus, cognitive offloading buffers the negative psychological impact of substitution anxiety. In practical terms, individuals who habitually rely on technology were less psychologically threatened by AI.

Cognitive offloading appears to function as a coping mechanism: familiarity with delegating cognitive work reduces the emotional weight of potential replacement.

H5: AI experience predicts stronger cognitive offloading tendencies

Regression analysis revealed a strong positive effect ($\beta = 0.41$, $t = 8.11$, $p < .001$, $R^2 = .17$). This relationship highlights a clear developmental pathway. As users gain exposure to AI and digital tools, they become more comfortable offloading tasks, which in turn enhances trust and mitigates threat. For policymakers and institutions, this suggests a straightforward intervention: increasing early, hands-on exposure to AI may improve psychological readiness for automation.

Taken together, these results paint a coherent picture of psychological adaptation in the smart economy. Substitution anxiety operates as a threat-based mechanism that undermines trust and slows adoption, while cognitive offloading and technological experience operate as adaptation-based mechanisms that facilitate acceptance.

The interplay between these forces shapes not only how individuals understand AI, but also how ready they are to collaborate with it.

5. Conclusions

This study provides an integrated psychological and economic perspective on how individuals adapt to AI in an emerging smart economy. The findings show that substitution anxiety and cognitive offloading operate as two opposing forces that shape trust, adoption intentions, and overall readiness for human-machine collaboration. Substitution anxiety

consistently undermined trust and reduced the willingness to engage with AI systems, confirming that emotional threat remains a central obstacle to digital transition, particularly in post-transition societies where job insecurity is structurally embedded.

Conversely, cognitive offloading and AI experience emerged as powerful facilitators of adaptation. Individuals who regularly delegate cognitive tasks to technology demonstrated higher trust in AI and a greater openness to its integration into daily work. Importantly, cognitive offloading buffered the negative effects of substitution anxiety, indicating that digital reliance can function as a protective mechanism against fears of technological replacement. This interaction highlights the importance of developing digital fluency not merely as a technical skill but as a psychological resource.

Overall, the results underscore that successful AI integration depends not only on economic incentives or technological capability, but also on emotional regulation, familiarity, and adaptive habits of technology use. For institutions seeking to accelerate digital transformation, interventions that increase hands-on exposure to AI, strengthen digital literacy, and reduce perceived threat may be essential. By framing psychological well-being as a core component of economic competitiveness, this study positions human adaptability as a strategic driver of sustainable innovation in AI-enhanced societies.

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LEADING FROM THE MIDDLE: RETHINKING DISTRIBUTED AND MIDDLE LEADERSHIP FOR SUSTAINABLE EDUCATIONAL TRANSFORMATION

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Abstract

The traditional focus of leadership studies is on the managers' figure and on their individual ability to succeed in creating organizational routines and structures useful to run the school smoothly and in transforming the school culture over time to contribute to greater satisfaction of all stakeholders (Elmore 2000, Halawah 2005, Spillane, Camburn et al. 2007, Paletta 2015). However, in education, leadership must be seen in a wider perspective as it can be exercised both by individuals and teams (Daniels, Hondeghe, Dochy, 2019). Middle leaders are key players that have a direct and positive effect on the quality of teaching and learning (Sammons, Thomas et al. 1997), thus also affecting the student's achievements.

On one hand, the concept of "leading from the middle" certainly reinforces the centrality of leadership and collaboration within system transformation (Harris 2013) and underlines how important the middle tier is, within any system or structure, to generate positive change and improvement (Harris and Jones 2017). On the other hand, this concept continues to create confusion in educational reforms as it remains ambiguous both in literature and governmental guidelines. Meanwhile the middle manager belongs to formal positions in a hierarchical school structure and has formal roles, tasks and functions, who exercises distributed leadership does not belong to any formal structure. Middle managers can participate also in distributed leadership. Provisions for middle management are becoming more widespread in many countries (OECD, 2013). In some countries, middle management includes the vice-principal or coprincipal, deputy principal(s), assistant principals, vocational/technical school department heads, workshop managers and coordinators and teachers with special duties. In other countries, middle management refers more narrowly to classroom teachers who have responsibilities in specific operational areas, like subject area heads or counselling duties. So, after reviewing the literature on distributed leadership and middle leadership, we compared national regulations and guidelines of some selected developed countries such as Italy, Finland, Canada, Singapore, England, New Zealand, Germany and Albania to identify commonalities and differences. The method used to elicit data for the study is documentary evidence, integrated with information based on local and international reports and scientific papers on specific countries.

Keywords: *collaboration, middle management, distributed leadership, organizational learning, professional development*

JEL classification: I21, I23, M12

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1. Introduction

A range of educational leadership researchers and theorists have emphasised the central role that principals play in purposefully creating and sustaining a supportive school culture for distributed leadership (Day et al., 2009; Harris, 2008; Murphy, Smylie, Mayrowetz, & Louis, 2009). Leithwood et al. (2007) found that different forms of leadership distribution had different impacts on the outcomes for organisations, and that it was crucial that distributed leading practices needed to be carefully considered and planned. Distributed leadership was first developed by Gronn (2002) and Spillane (2006) as a conceptual and theoretical framework for understanding the leading work in schools, and the term has been adopted by many (including researchers, leaders, managers and bureaucrats). Central to distributed leadership is the idea that leadership cannot be constituted in one ‘head’, or even a small leadership team, alone, and this has been widely accepted (Bolden, 2011; Crawford, 2012). In other words, effective distributed leadership practices do not emerge organically or without some top-down shaping or bottom-up engagement (Muijs & Harris, 2006, 2007; Murphy et al., 2009). This requires that education leading be seen and practiced as a form of praxis (Kemmis et al., 2014; Wilkinson, 2017a).

Research conducted by Silns and Mulford (2002) indicates that student performance tends to enhance when leadership is shared across the school community and when teachers are given authority in matters that are significant to them. The success of a new accountability framework relies on the creation of systems that invest in and build the professional capital of teachers and school leaders to make sound decisions in classrooms and schools based on their best collective and individual professional judgement. Crucial to this endeavor is nurturing and sustaining a professional culture of continuous improvement, collective responsibility, and shared leadership in and across schools, districts, and the state as a whole (Fullan, 2015).

After reviewing the literature on distributed leadership and middle leadership, we compared national regulations and guidelines of some selected developed countries such as Italy, Finland, Canada, Singapore, England, New Zealand, Germany and Albania to identify commonalities and differences. The method used to elicit data for the study is documentary evidence, integrated with information based on local and international reports and scientific papers on specific countries. We conclude on the crucial role played by middle managers in the stabilization of organizational structures and routines, but also because it offers career prospects to teachers beyond teaching, responding to their aspirations to be formally recognized and remunerated for the role of organizational and educational coordination.

2. Literature Review

The leadership literature defines distributed leadership in several ways. For example, Spillane (2005) emphasised the interaction of a number of individuals in a school who guide the instructional change process. Bennett, Woods, and Harvey (2003) argued that distributed leadership is not just another technique or practice of leadership but a way of thinking about leadership. According to a comprehensive review of the literature on distributed leadership conducted by the National College for School Leadership (Bennett,

et al., 2003a and 2003b), there are various interpretations from which shared characteristics can be pulled together to form an understanding of the term. The literature supporting the concept of distributed leadership remains diverse and broad-based (Harris 2004). The rhetoric of distributed leadership may be difficult to realise in practice within the harsh cultural and political realities of a school. There are issues about the boundaries of leadership in terms of which individuals or groups should be involved in leadership activity within an organisation. Harris (2003) also pointed out that a distributed perspective on leadership is less about role and more about behaviour.

Linked but different to distributed leadership is the concept of middle leadership. These two concepts are interrelated but the latter is conceptually narrower than teacher leadership (Muijs and Harris 2006) as it focuses on the formal leadership positions related to middle management and subject leadership, rather than on the broad capabilities of teachers to lead within the school organisation. School structure and organisational support facilitate team-building efforts in school.

Distributed leadership is more general and larger as a concept (Paletta, 2015). Distributed leadership theory suggests that schools should shift away from a centralized leadership model. In this regard, leadership is more accurately perceived as "fluid and emergent" rather than a static entity (Gronn 2000). This perspective acknowledges that anyone can exhibit leadership qualities in various ways (Goleman 2002). However, it does not imply that everyone is a leader or ought to be one; rather, it allows for the emergence of a more democratic and collective approach to leadership. Gronn conceptualizes leadership as a collective phenomenon, stating that "leadership is present in the flow of activities in which a set of organization members find themselves enmeshed" (Gronn 2000).

While the idea of 'Leading from the Middle' could be construed as another way of describing middle leaders and their practices, in reality, it could not be more different or distinctive. Leading from the middle is essentially a strategy for system reform where the middle tier is recognised as being critically important (A. Harris et al., 2019).

As Fullan (2015, 1) explains: *Leadership from the Middle can be briefly defined as: a deliberate strategy that increases the capacity and internal coherence of the middle as it becomes a more effective partner upward to the state and downward to its schools and communities, in pursuit of greater system performance. The goal of LftM is to develop greater overall system coherence by strengthening the focus of the middle in relation to system goals and local needs. Thus, it is not a standalone, but rather a connected strategy. This approach is powerful because it mobilizes the middle (districts and/or networks of schools), thus developing widespread capacity, while at the same time the middle works with its schools more effectively and becomes a better and more influential partner upward to the center.*

Middle leaders have the greatest impact on teacher learning and development (peers, colleagues) (Edwards-Groves & Rönnerman, 2013), and unlike the principal or head, a middle leader can impact classroom practices, and as such, they can be seen as key instructional and curriculum' leaders and can focus on the core business of educational institutions (i.e. learning and teaching). The middle leader does have a role similar to that of the team captain, they have to be very good at the core activity (teaching) and simultaneously lead others both individually and collectively to high levels of practice. Middle leadership is commonly defined as comprising the roles relating to middle management and subject leadership (Camburn, Rowan et al. 2003). These are formal leadership roles that teachers undertake that have both management and pedagogical responsibilities, and encompass roles such as head of department, subject head and

(academic) level head. Middle leadership is conceptually linked to distributed leadership, but is conceptually narrower, as it is concerned with the leadership roles of middle leaders in school.

Middle leaders have to work between the leadership of principals and the classroom practices of teachers. In this sense, they have to relate upwards to their principal and school management team, and down and across to their teaching colleagues. The middle leader occupies a position that bridges the senior management of the school and the teaching staff, serving as a crucial link between these two groups. They must engage with various members of the school community in diverse manners, which can vary based on specific contexts and circumstances. Their role involves navigating through a complex relational and structural environment, all while also being mindful of their interactions with students, parents, and the wider community.

As Michael Fullan concludes in its article (Leadership from the Middle, A system strategy):

Governments have become less and less effective at leading system change. The old model – prioritize and implement – is no longer suitable. It cannot generate innovation and learning fast enough for the demands of the 21st century (Michael Fullan, 2015).

“Distributed leadership involves extended leadership responsibility beyond formal leaders and it is stretched over a range of different actors in the school context, middle managers are directly involved in the distribution of power and authority within and across organizations” (Bufalino, G. (2017). Researchers often use middle leaders as synonym for middle managers, but it is not the same, as demonstrated by latest research on new and different leadership roles such as team leaders, co-ordinators, network leaders, learning leaders that are leaders but not managers (Harris et al., 2019[1]). According to various studies (Blandford, 2006), the terminology surrounding middle management in education is increasingly evolving towards "middle leadership." This change signifies a shift in focus from management to leadership within the prevailing discourse, emphasizing distributed or shared leadership where individuals at all levels of an organization can take on leadership roles beyond their formal titles.

In the last decade of the 20th century, developments in regions such as the UK (Brown & Rutherford, 1999) and the Netherlands (Witziers et al., 1999) introduced heightened pressures and diverse responsibilities for principals. Consequently, this situation led to greater delegation and the rise of middle managers (Glover et al., 1998; Busher & Harris, 1999; Adey, 2000). The recognition of middle management's role in school governance can be traced back to the 1970s (Ribbins, 1989). Their significance became apparent when departmental levels emerged as crucial sites for articulating school visions, missions, and goals: “The head of department plays a crucial role in the effective operation of secondary school departments” (Earley & Fletcher-Campbell, 1989, p.98; also cited in Busher & Harris, 1999; Wise & Bush, 1999; Brown et al., 2000; Bolam & Turner, 2003). Gold (1998) echoes this sentiment by stating that these positions are likely among the most influential within well-structured secondary schools due to their substantial capacity to impact decision-making and guide institutional direction (also referenced in Brown & Rutherford, 1998). This importance extends beyond the UK. For example, in the Netherlands there is an increasing assignment of middle management responsibilities to teachers (Witziers et al., 1999, p.294).

A review of definitions indicates that middle managers are often specialist subject teachers (Gold, 1998; Wise & Bush, 1999; Wise, 2003) who receive financial allowances (Gunter, 2001) for assuming “additional responsibilities” alongside their teaching duties (Ribbins,

1998, p.58). From a global standpoint, while Busher & Harris's study from the UK characterizes these individuals as professionals without formal representation on senior management teams (SMTs), Heng & Marsh's research from Singapore emphasizes their leadership roles. These observations align with Kerry's findings from a small-scale study that identified middle managers as "bridges" between SMTs and teaching staff, hence reflecting their "middleness."

Learning from the Middle introduces a transformative approach that moves away from outdated models contrasting top-down and bottom-up perspectives. It empowers a broader range of individuals to engage actively in systemic change processes and fosters collective ownership over these changes. Bufalino (2017) asserts that middle managers serve as essential assets for enhancing school effectiveness (Brown and Rutherford, 1998). According to Blandford (2006), one of their primary functions is to create and sustain conditions conducive to effective learning. The roles assigned to middle managers have become progressively more intricate and demanding, encompassing tasks such as monitoring student performance; evaluating programs and plans; coordinating staff activities; teaching designated classes; developing strategic initiatives; appointing personnel; nurturing staff development along with procedures and programs; conducting meetings; communicating effectively; and overseeing procedural compliance (Cardno, 1995). Role conflict and ambiguity frequently characterize this duality within their job functions (Bennett et al., 2003; Wise, 2001).

There is growing acknowledgment regarding the critical nature of middle leaders within a school's organizational framework (White, 2000), necessitating consideration of how these positions influence educational development. Weller Jr. (2001) argued that department heads could be among the most influential figures within a school's structure. Moreover, middle leaders play vital roles in comprehensive school planning and decision-making processes (Brown, Boyle & Boyle, 1999). Despite increased complexity associated with middle management positions which are on the rise both numerically and functionally, many individuals step into these roles without adequate support or training.

Recent research conducted by Thorpe & Powell (2014) explored perceptions surrounding leadership needs among secondary school middle leaders, it revealed that coaching and mentoring were viewed favorably as developmental strategies while indicating a pronounced demand for further training in leadership techniques amongst these managers (Bufalino, 2017). However, discussions about distributed leadership often overlook mid-level leadership dynamics present within schools, such as those held by department heads/program coordinators or year-level coordinators.

Consequently, although significant research has focused on senior leaders' roles within schools' hierarchies—the area concerning mid-level management remains relatively underexplored. Harris's study underscored shifts occurring among mid-level leaders within educational environments along with reciprocal influences between leaders and followers. She proposed that if mid-level leaders are expected to co-create leadership opportunities alongside principals—they must also foster empowerment among teachers encouraging them toward becoming leaders while providing avenues for ongoing professional growth opportunities (Mujis & Harris, 2003). As effective departmental leaders cultivate collaborative atmospheres characterized by collegiality—middle managers ought to be recognized primarily as educational leaders rather than mere implementers or administrators adhering solely prescribed directives issued by senior management teams.

Recent research continues to reinforce the centrality of distributed leadership and middle leadership in shaping school effectiveness, teacher innovation, and organizational culture.

Building upon foundational theories developed by Gronn (2002) and Spillane (2006), contemporary studies increasingly emphasize not only the benefits but also the complexities and potential drawbacks of distributing leadership across school actors. The expanded evidence base reveals a more nuanced understanding of how leadership is enacted, how it affects teacher behavior, and how middle leaders operate at the intersection of structural and relational dynamics.

One of the most important contributions to our literature recently is the multiregional empirical study of distributed leadership and teacher innovativeness. Lin (2022) demonstrates that principals' distributed leadership has a direct positive influence on teacher innovativeness, and that these influences are strongly mediated by teacher autonomy and professional collaboration.

Based on TALIS data from 132,376 teachers, Lin finds out that distributed leadership increases the individual and collective capabilities needed for teachers to adopt new instructional practices. This tallies with a long-held understanding that distributed leadership is ultimately a function of practice and not role, and that teacher and school leader interactions facilitate instructional change. The mechanisms found by Lin (2022) further elucidate earlier results by Muijs & Harris (2006), who contended that distributed leadership needs to be intentionally developed rather than appearing as an organic phenomenon. The new information provided by data on innovation by global organization reveals that autonomy and collaboration are the routes by which leadership distribution produces innovation, and validates theory from Fullan (2015) which assumes that collaborative professionalism and teacher agency are necessary for continuous improvement. Recent studies also adopt a dual-perspective method of distributed leadership. Tucaliuc et al. (2025) differentiate between structural distributed leadership (SDL) (the formal allocation of leadership positions) and functional distributed leadership (FDL) (the extent to which teachers jointly exercise leadership functions). That this is a critical difference, the two distributions of the material do not create the same consequence. Through a multilevel analysis of 2,632 Romanian teachers, they find that FDL is consistently related to higher job satisfaction, empowerment and organizational identification, while SDL can be negatively associated with unintended consequences (diluted support, reduced identification and lower empowerment) when having many formal leaders in hierarchy Education. This confirms some of the concerns raised earlier in the literature that distributed leadership is not inherently good and that if not designed for purpose it will be confusing or fragmentary (Harris, 2007 Bolden, 2011).

The functional (practice-based) enactment of leadership, rather than the mere structural distribution of positions, appears to be the key driver of positive outcomes. Tucaliuc et al. (2025) further show that functional distribution mitigates the possible dark sides of structural distribution: when teachers perceive high levels of collaborative leadership practice, the negative impacts of SDL are significantly reduced. This offers an important corrective to previous assumptions that simply increasing the number of leadership roles would enhance school capacity. Instead, it is the quality of shared practices, decision-making, instructional leadership, planning, and professional development that matters most.

Parallel to distributed leadership, the field has also seen renewed emphasis on middle leadership, a concept narrower than distributed leadership but deeply interrelated. Middle leaders often heads of departments, subject leaders, or grade-level coordinators operate within what many scholars have described as a "leadership sandwich," positioned between senior management and teachers. Research continues to affirm their pivotal role in shaping

teaching and learning. Studies such as Edwards-Groves & Rönnerman (2013) demonstrate that middle leaders have the most direct influence on teacher learning, coaching, and instructional practices, reinforcing their role as key curriculum and pedagogical leaders.

Recent systematic reviews (e.g., Harris et al., 2019) differentiate between middle leadership and leadership from the middle, the latter being a broader strategy for system reform. Whereas middle leaders focus on organizational and pedagogical leadership within schools, leadership from the middle mobilizes networks of schools and districts to act as catalysts for system improvement. This distinction is essential, as it clarifies that not all leadership exercised in the “middle tier” is the same. Middle leaders perform school-based functions, while leadership from the middle aims at system-wide coherence and transformation (Fullan, 2015).

Contemporary scholarship also highlights challenges faced by middle leaders, including role conflict, role ambiguity, and insufficient preparation for their leadership responsibilities. Although their roles have expanded in complexity, research indicates that middle leaders are often appointed without adequate professional training (Thorpe & Powell, 2014). Recent insights continue to affirm earlier findings by Brown & Rutherford (1998) and Busher & Harris (1999) that middle leaders are central to school vision, culture, and improvement efforts, yet their professional learning needs remain under-addressed.

Taken together, the newest evidence supports three overarching conclusions. First, distributed leadership remains a powerful framework for understanding how leadership work is stretched across actors and situations, but its impacts depend on how it is enacted. Functional distribution collective, collaborative, emergent leadership drives positive outcomes, whereas poorly designed structural distribution may create leadership fragmentation.

Second, teacher autonomy and professional collaboration are now confirmed mediators explaining how distributed leadership influences innovation, suggesting that leadership development must be paired with organizational conditions that support teacher agency and collegiality.

Third, middle leaders occupy a critical position in translating distributed leadership principles into daily practice. Their influence on teaching, curriculum, and professional learning makes them essential actors in both school improvement and system-wide reform.

3. Methodology

After reviewing the literature on distributed leadership and middle leadership, we compared national regulations and guidelines of some selected developed countries such as Italy, Finland, Canada, Singapore, England, New Zealand, Germany and Albania to identify commonalities and differences in practicing middle leadership in schools. The method used to elicit data for the study is documentary evidence, integrated with information based on local and international reports and scientific papers on specific countries. We got primary information by contacting directly the ministries of education of most of these countries (Italy, Finland, England and Germany). Some of the countries were identified by the Center on International Education Benchmarking (2017) as having high performing school systems based on students' achievement in science, mathematics and reading in the 2015 PISA (OECD) results, are: Finland, Canada (Ontario), Singapore, which may serve as best practices also for other countries. In addition included UK and Canada as countries investigated by academic researchers to a great expand papers.

Information was based also on published reports of well-known international organization

such as OECD, European Commission and local ones, such as National College for School Leadership (UK), Finnish National Agency for Education, Ontario College of Teachers, National Institute of Education (Singapore); scientific papers generated by Scopus and 8 important educational journals such as: Educational Management, Administration & Leadership, Education Administration Quarterly, Journal of Research on Leadership Education, Journal of Cases in Educational Leadership, Management in Education, School Leadership and Management, Journal of Educational Administration, British Journal of Sociology of Education (by using as key words school middle managers, school middle management, school middle leaders, school distributed leadership, etc).

In this study, a bibliometric, thematic analysis and the snowball technique approach was used. The data retrieval and analysis process involved the following stages: (1) Setting Keywords (2) Selecting databases (3) Defining search criteria (4) Downloading the selected articles (5) Analysis framework (6) Extracting information from the articles into the analysis framework. The main keywords were “middle manager”, “middle management”, “middle leader” and “middle leadership” whilst other keywords included ‘vice director’, ‘principal collaborator’, ‘head of department’, ‘subject leader’ ‘team leader’ ‘coordinator’ or any combination. To narrow the search criteria and for a more precise and quicker search, a syntax of keywords was created using logical operators such as ‘And’, ‘Or’. Search criteria looked at articles that were in peer reviewed journals, that contained one or more keyword descriptors, had a publishing date between 2005 and 2019 and were written in the English language. The outcome of this first step across the 8 educational journals was the identification of more than 100 articles.

The timeframe for this initial search was 2005 to 2019. This timeframe was chosen, primarily to capture the most recent publications on the topic as interest in middle management has risen significantly within developed countries, over the past decade.

From the theoretical framework we ended up with these 7 main pillars of Middle Management in schools: hierarchical structures with formal middle management positions, which roles and tasks they perform, what are the organizational mechanisms of recruitment, career, training, accountability and incentives.

Comparative analysis

Governments are increasingly looking to international comparisons of education opportunities and outcomes as they develop policies to enhance individuals’ social and economic prospects, provide incentives for greater efficiency in schooling, and help to mobilise resources to meet rising demands (OECD 2018). Transferring decision making powers to schools has been a major objective of the decentralising and restructuring reform movements since the 1980s. In contexts of increased school autonomy, school leaders are asked to fulfil responsibilities that call for expertise which many do not have through formal training. Through this article we analyze the differences between distributed leadership and middle management, how these concepts have become part of the rhetoric of change in public education reforms, which differences and common aspects emerge from international comparison.

In particular, this study tries to understand to what extent the New Public Management (NPM) reforms are changing the traditional organizational model of schools, if there are hierarchical structures with formal middle management positions (vice directors, heads of department, class coordinators, director’s collaborators, curriculum coordinators, tutors, etc.), which roles and tasks they perform, what are the organizational mechanisms of recruitment, career, training, accountability and incentive. The study investigates whether the introduction of middle management figures changes the role of the principal and the

practices of leadership within the schools.

Italy

Italy's education system is fundamentally centralized, with the Ministry of Education, University and Research (MIUR) dictating the overall structure and directly hiring teachers and School Managers. Though legislative reforms like Law no. 107/2015 have granted schools greater autonomy in educational offerings and organization, the system's core remains centralized.

The shift toward autonomy has elevated the role of the School Manager (Dirigente), who is now held highly accountable. After the 2015 reform, the manager's evaluation is tied significantly to students' results (e.g., standardized test scores), a measure often outside their direct control. Despite this high accountability, the system lacks meaningful monetary incentives, as variable remuneration based on results is negligible.

A defining feature of the Italian system is the lack of formal middle management. While schools rely heavily on teachers who take on administrative and organizational roles variously called "Collaboratori del Dirigente", "instrumental functions", or "system figures", these positions are not formally legitimized by law or the National Labor Contract (CCNL). These roles are temporary, typically lasting one year, and come with a modest, often leveled, ancillary remuneration. This absence of a recognized professional track means there is no internal merit-based career path for teachers; progression is based almost entirely on seniority. Unions have historically opposed individual performance evaluations, claiming they threaten the teaching profession's educational freedom. The School Manager thus functions more as a transformational leader who offers a vision, rather than a managerial one, due to the lack of delegated authority to intermediate staff.

Finland

Finland is an international model of effective decentralization and systemically distributed leadership. The vast majority of schools are owned and financed by local municipalities, which act as employers of school leaders and teachers. These municipalities also greatly influence curricular decisions. Finnish leadership revolves around pedagogical leadership, which is centered around interaction and participation. The system also fits into a trend of building bigger schools, which requires distributing and spreading more work around. This is made possible by using teams of the principal (including vice-principal and assistant principals) along with teachers who are appointed temporarily.

As there is no official structure for teachers based on ranks, this kind of cooperation also ensures that accountability for the results reached, strategic decision-making and school-level development is shared by everyone involved. That strong decentralizing means that if the principal is unavailable, the staff will be responsible for leadership. Schools often have flexible team structures in which many teachers work in various areas of the whole school, such as for curriculum or special education. It is not an uncommon part of the Finnish model of educational leadership that collective action and joint responsibility are the norm.

Canada (Ontario)

In Canada, education is a provincial responsibility, with Ontario focusing its strategy on improving student achievement, reducing performance gaps, and increasing public confidence. The system is defined by its commitment to collective capacity building and professionalism among all stakeholders, initiated through forums like the Working Table on Teacher Development.

Ontario has invested in teacher quality, notably by reforming preparation in 2014 by extending the program to two years and cutting student slots, alongside adding an 80-day practicum. Teachers can advance by becoming a department head or by earning Additional Qualifications (AQs) to boost salary. Teacher evaluation occurs every five years, prioritizing continuous improvement recommendations rather than punitive accountability. School leadership faces significant challenges due to the increasing complexity and workload. Principals and vice-principals in Ontario routinely work high hours (59 and 55 hours per week, respectively). While instructional leadership is highly valued, principals report that accountability and reporting requirements severely infringe upon the time needed for improving instruction. The Vice-Principal (VP) is critical in managing this complexity; schools with full-time VPs are more likely to have principals who can focus on the instructional program and the School Improvement Plan (SIP) rather than staff management or facility issues.

The evolving landscape of leadership signifies that professional growth, encompassing the Principal's Qualifications Program (PQP) and informal mentorship, is essential for adjusting to the challenging roles of the 21st century.

Singapore

The Singapore educational system has long been internationally admired for delivering success based on a combination of strategic concentration on human capital development supported by selective recruitment and continuous professional development. The Ministry of Education (MOE) centrally hires teachers in the top third of each cohort. It is also a very meritocratic system, providing teachers and leaders with easily discernible careers in which clear performance and potential are linked to increased pay and promotion. Teachers have the option to become Lead/Master Teachers (whether in the classroom), specialists, or the Leadership Track. Advancement is tracked via a system called the Educational Performance Management System (EPMS), which reviews 16 areas once a year and defines professional practice and leadership. It pays generous bonuses, making performance-based rewards easy to see.

Leadership development is rigorous and selective. All principals start as teachers and must hold two administrative positions before they are appointed. Before beginning the Leaders in Education Program, aspiring principals sit for a grueling two-day simulation test that includes coursework, fieldwork, and mentoring. And it is this relentless focus on development that is structural: the government pays for one hundred hours of professional development every year for all teachers, and also builds in twenty hours per week for planned and shared learning. And it is this structured system that enables ongoing development of leadership aptitude and ensuring that the service personnel are the very best they can be.

Germany

Germany's highly decentralised education system assigns significant responsibility for school governance to each Land (state), leading to variety in leadership structures and practices. School principals are usually seasoned teachers who assume leadership roles after state-managed selection processes, most of whom still have some teaching duties. Formal pre-service leadership training programmes are not obligatory, though a number of universities now provide master's programmes for prospective principals, and the development of leaders, particularly in in-service teaching, has been solidified since the 2010s in Länder. Middle leadership is structured largely around subject heads and teacher

committees however teachers still have significant autonomy in educational practice. These recent reforms now extend the duties of school principals to school development, quality assurance and staff development, facilitated by school inspectorates and the national education standards established after the PISA shock. Distributed and participatory leadership has evolved with the increase of school autonomy, particularly in Länder; however, middle leadership is still less formalised compared with Anglo-Saxon systems and there is increasing acceptance of the structured nature of training and clear career development paths. United Kingdom (England):

At last, England has one of the highest levels of developed leadership frameworks in Europe which has been formed over decades of reforms aimed at accountability, performance and school improvement. Good leadership is closely associated with school performance, so a national strategy that extends the leadership capability from one school to the other, as well as targeted interventions for schools performing poorly. The role of middle leadership is very institutionalized as department heads, pastoral leads and curriculum coordinators play an essential mediating role between the senior leadership teams and the teachers on the floor. They manage instruction, use data, plan curriculums, develop teachers and have the real power to impact the effectiveness of instruction and the educational performance of students. In recent years, a wider number of assistant heads and middle leaders' numbers increased with additional training available through the National Professional Qualifications (NPQs) and a greater clarity over the length of career progression. Distributed leadership is deeply embedded, with middle leaders noted as agents of pedagogical improvement and organisational coherence amongst a growing number of autonomous schools such as academies and multi-academy trusts.

New Zealand

New Zealand's self-managing school system is largely focused on a middle role where principals will act as mediators between senior leadership and teaching staff, translating national policies into local practice. Middle leaders frequently heads of departments and learning areas who are key to instructional leadership, staff appraisal, curriculum design and departmental management, and who are often told they feel unprepared to manage the range of tasks they must perform. The nation stresses distributed leadership and culturally responsive pedagogy, especially Māori and Pasifika children, and demands leaders engage in the cultivation of inclusive, learning-centred school cultures. Leadership development is offered in national programs like First-Time Principals Programme, professional networks, and school-based mentoring; however, there is not a consistent pathway for aspiring middle leaders. New reforms emphasize the importance of structured professional development, clearer expectations about what is expected and supporting structures to ensure that leadership leads for diverse school contexts in a meaningful way.

Albania

Albania is a semi-centralized model of governance in its education system located between highly centralized systems like Italy, as well as decentralization such as Finland or Germany. Regulated by Law No. 69/2012 on Pre-University Education and Law No. 80/2015 on Higher Education and Scientific Research, the system consists in strong ministerial control over curriculum, standards and national testing, but with progressively increasing administrative power devolved to municipalities and the institutional power holders of state institutions. School principals are legally recognized through competitive selection procedures and they have specific responsibilities in pedagogical leadership,

administrative work and quality assurance; but accountability is weak and relatively absent through performance and financial awards attached with student achievement are not relatively strong (as in England or Singapore). Top and middle leadership positions such as deputy directors and subject heads are covered by law, but career progression for the teachers is still more seniority-based to a slight degree, with a narrow focus on professional qualification categories, and little differentiation when it comes to advancement or impact on instruction. In higher education, the reforms implemented in the 2015 law have enhanced institutional autonomy and governance mechanisms in the country, leading Albania to comply with the European Higher Education Area, but the business idea of entrepreneurial capacity, research commercialization instruments and structured leadership development are still being built. Overall, Albania's system is a transitional one: legally designed, progressively decentralized but resource-constrained and slowly evolving, distributed leadership and active on pursuing better for innovation-oriented governance to harmonize with European integration priorities.

Tabel 1: Countries Overview

Nr	1
Coun tries	UK (England)
Middle Managers	Deputy heads, assistant heads and sometimes a bursar or school business manager
MM's Role	Develop a wide leadership team which can transform practice and outcomes and that this means a distribution of leadership roles.
Recruitment Select ion	The 6 content areas across which develop middle manager knowledge Skills are: strategy And improvement Teaching and Curriculum Excellence leading With impact Working in Partnership Managing Resources and risks Increasing Capability (https://www.gov.uk/guidance/national-professional-qualification-for-middle-leadership-Npqml#who-can-Apply)
Accoun tability	In 1992, external inspection by Ofsted was established.
Autonomy	State secondary schools have Considerable autonomy in the selection, appointment, monitoring and also the dismissal of members of staff who are all employees of the school rather than the national or the local government.
Incentives	There are an increasing number Senior management posts with additional salary for these roles such as deputy head teachers and assistant head teachers.
Prof.dev.	There is no legal requirement for teachers and trainers in Further education to undertake professional development, but there is a national reference point in the Professional Standards developed by the Education and Training Foundation (ETF), the national support body for the further education and training sector. These enable teachers and trainers to identify areas for their own professional development and organizations to support staff development.
Nr	2
Coun tries	Canada(Ontario)
Middle Managers	Vice principal, head of departments, curriculum consultant
MM's Role	Involved in aspects of leading and managing the school, managing student discipline issues and special education, improving the instructional program, management of staff, individual student issues, or facilities.
Recruitment Select ion	School boards are responsible for the hiring and appointment of teachers to Ontario schools in the public system. There are several courses teachers need to follow, and the criteria of experience as a teacher to become a principal. It is necessary to complete the Principal's Qualification Program (PQP) prior to assuming a principal's

	position. Successful teachers may be promoted to department head and can take part in professional development and training to take on leadership roles in the school and the school system later in their careers. Teachers can pursue Additional Qualifications which can boost their salary. Additional Qualifications are awarded after completing short courses focused on specific content areas as well as specializations such as technology use. The curriculum for these courses is approved by the College of Ontario Teachers, the teacher-led credentialing organization.
Accountability	There are several courses teachers need to follow, and the criteria of experience as a teacher to become a principal. It is necessary to complete the Principal's Qualification Program (PQP) prior to assuming a principal's position. Successful teachers may be promoted to department head and can take part in professional development and training to take on leadership roles in the school and the school system later in their careers. Teachers can pursue Additional Qualifications which can boost their salary. Additional Qualifications are awarded after completing short courses focused on specific content areas as well as specializations such as technology use. The curriculum for these courses is approved by the College of Ontario Teachers, the teacher-led credentialing organization.
Autonomy	The impact of middle-level leaders and of school boards working together points to the power of professional autonomy as a force for change – but this is not the individual autonomy of isolated schools, but the collective autonomy of interconnected schools boards and their present and former leaders from central bureaucratic control.
Incentives	There is a difference in payments, those one performing leading positions get higher payments.
Prof.dev.	A defining feature is a commitment to collective capacity building at all levels of the education system. A commitment to ongoing professional learning and development is integral to Effective practice and to student learning. Professional practice and self-directed learning are informed by experience, research, collaboration and knowledge.
Nr	3
Coun tries	New Zealand
Middle Managers	No middle management in smaller schools. Some distribution of management / leadership tasks in larger schools. Deputy principals, associate principals, faculty leader, subject head, head of department and learning area leader.
MM's Role	Middle managers have responsibility for leading teaching and learning; liaising with a wide range of stakeholders; developing collegial relationships and managing faculties or departments. Their role includes: instructional leadership; budgeting; interpersonal interactions; administration; strategic planning; monitoring and evaluation of staff performance; developing staff and developing a department vision.
Recruitment Select ion	Boards are responsible for hiring, reviewing and terminating staff if the staff cannot perform their jobs appropriately. The Ministry of Education furnishes several awards each year to teachers and administrators who are particularly effective, in categories such as special education.
Accountability	The New Zealand School Trustees Association (NZSTA) provides Uniform standards for teacher and principal performance in primary and secondary schools. Each school's board of trustees is responsible for monitoring and assessing the school staff, and additionally for providing the staff with support and a clear understanding of what is expected of them. In an accountability culture focused on student performance, middle managers take appropriate actions to ensure quality control and quality assurance within their departments.
Autonomy	School leaders have wide ranging responsibilities, within a framework of considerable autonomy (including middle managers).
Incentives	The reward systems adopted in New Zealand are ways to support and recognize

	middle management participation in leadership. They allow for those people who might be taking on leadership roles in middle management to respond to specific school situations to be recognized and compensated for it and they also provide a more flexible approach to rewarding more flexible and distributed leadership approaches.
Prof.dev.	Where distributed leadership and leadership for learning are of paramount concern, professional development that promotes collaborative work is increasingly favored.
Nr	4
Coun tries	Finland
Middle Managers	Vice- principals, department heads, consortium heads and teachers participate in leadership
MM's Role	Wide- ranging decision-making autonomy in school development issues. Leadership role. Instructional planning, etc.
Recruitment Select ion	Local education authorities, with the advice and counsel of the teachers, select principals. Because Finland has no centralized management of education, the school and the principal, together with the school board, typically make hiring decisions.
Accountability	The local municipal authority in any given region appoints principals for six- or seven- year terms, but once appointed, the municipal authorities largely leave the running of the school to the principal and his or her teachers. Principals are responsible for managing the school staff, ensuring the well-being and success of the students, and managing the school budget, although they do this generally in collaboration with middle managers and teachers.
Autonomy	There is no formal evaluation process, but middle managers receive continual feedback from their principal and other school faculty members.
Incentives	Teachers that perform leading duties have a higher wage. But more important than salaries are such factors as high social prestige, professional autonomy in schools, and the ethos of teaching as a service to society and the public good.
Prof.dev.	In response to concerns about uneven opportunities for in service professional learning, the government is planning substantial increases in professional development budgets and considering ways to require that middle managers and all teachers must have access to adequate professional training financed by municipalities.
Nr	5
Coun tries	Germany
Middle Managers	Vice school director, head of departments, study adviser
MM's Role	There is no formal career ladder for teacher s in Germany, other than the path from teacher to school leader.
Recruitment Select ion	School principal or deputy principal positions and are usually vetted and appointed by the Ministry of Education in charge.
Accountability	All of the Länder have school inspect orates, which are responsible for monitoring whether schools meet requirements. There is also monitoring of schools at the federal level. New education standards for primary and lower secondary school were developed in 2004 and new national tests to measure achievement of these standards were implemented in 2006.
Autonomy	Germany has a decentralised education system, with responsibilities shared between the Federation, the Länder (states) and local authorities.
Incentives	The promotions result in an increase in salary and status.
Prof.dev.	Participation in professional development by teachers is required across Germany although requirements vary by Länder. Most Länder offer professional development at state-run training institutes or at institutes run by local school authorities. Professional development is also offered in individual schools, sometimes with

	support or oversight from the school supervisory authority or the ministry.
Nr	6
Countries	Singapore
Middle Managers	Superintendent, school principals, department heads and teachers
MM's Role	Several roles for school leaders including – prioritising staff professional development; developing and communicating a shared vision on PLCs; building staff commitment (fostering trust, collaboration and ownership; building a learning culture; handling resistance; balancing creativity and autonomy within parameters and boundaries); role modelling commitment to PLCs; optimising organisational structures and processes; leveraging existing structures; providing training, resources, tools and templates; mentoring; recognising, affirming and celebrating PLC activities; and leveraging on the notion of PLC to enhance professional development as a whole the quality of school leadership especially at principal and middle level assumes major importance in establishing and sustaining PLCs across school systems –whether they are more devolved systems of school based management or more centrally controlled schools
Recruitment Selection	Teachers are hired centrally by the Ministry of Education (MOE). Teachers can be promoted from a leadership position within the school all the way up to the position of Director-General of Education. Teachers' performance on the Educational Performance Management System (EPMS) determines when they are eligible for advancement up the career ladder.
Accountability	The Ministry of Education sets annual goals for schools, and teachers and principals. Teacher performance is annually in an Enhanced Performance Management System. Teachers are evaluated based on 16 different competencies, including their work in the classroom and their interaction with the greater school community. Rewards take several forms, including honors and salary bonuses. The Ministry also selects teachers for awards and recognition at the national level.
Autonomy	Over the last five years, there has been a significant rhetorical shift towards favouring more autonomy of administrative and pedagogical authority to individual schools. However, the educational system remains highly centralized and regulated – making for tight coupling vertically between center and periphery.
Incentives	Teachers' compensation depends in part on where they are on the various career ladders. Promotion up these career ladders depends entirely on demonstrated performance and demonstrated potential. At each level, there are salary increases and additional training and mentorship opportunities
Prof.dev.	Singapore's performance- management system and career-ladder program help to create a strong profession. Teachers have numerous opportunities to grow professionally and take on leadership responsibilities, based on demonstrations of competence. The ministry has just established a new teaching academy to support teacher- initiated and teacher-led learning opportunities around subject matter across schools. A teacher's network also supports learning circles, teacher-led workshops, conferences, and a website and publications series for sharing knowledge. To support school-based learning, senior and master teachers are appointed to lead the coaching and development of the teachers in each school.
Nr	7
Countries	Italy
Middle Managers	According to the law, the School manager can appoint the first collaborator (Vice-Principal) and other collaborators up to the 10% of the total amount of teachers of the school. However, only two collaborators can get a remuneration for this extra role from the school fund.
MM's Role	There is still no formal legitimization of middle management roles (no professional

	profile recognized by the Law and by the National Labor Contract-CCNL) The Italian schools heavily rely on the work of teachers carrying out specific organizational responsibilities, like the Assistant head or First Collaborator (traditionally named Vicario), Head of the Department and Site managers (who are responsible for a unit/subsidiary of the school). However, with no formal delegation of power, the Italian School manager mainly exercises a leadership role than a managerial role, and he/she mainly acts as transformational leader (that offers a vision, support for teachers, promotes collegiality and acts as intellectual stimulus) rather than an instructional leader (Paletta, 2013).
Recruitment Selection	The Ministry directly hires teachers and School managers that passed a national examination. The education system is centralized in terms of structure and organizational models. Laws (see Legislative Decree no. 59/1998; Legislative Decree 165/2001 and Legislative Decree 150/2009) refer to Collaborators ("Collaboratori del Dirigente"), who are directly chosen and receive a formal delegation by the School manager. According to the law, the School manager can appoint the first collaborator (Vice-Principal) and other collaborators up to the 10% of the total amount of teachers of the school. The intermediate figures are chosen because of some personal pre-existing capabilities. These figures exist de facto almost on a voluntary basis and receive an assignment from the School manager. In some cases, the School manager decides on his own; in others cases, the designation is expressed by the college of teachers.
Accountability	New regulations were issued to create a national system of evaluation (D.P.R.no. 80/2013) based on local inspectors that visit schools, a centralized entity named INVALSI and a program of self-assessments that schools have to perform regularly to then identify plans of improvements (D.D.no. 937/2015).
Autonomy	Decentralization and school autonomy was originally introduced with the Law no.537/ 1993 but it really began with the Law no.59/1 997, when schools had the freedom to define their educational offer. Yet, it is the latest school reform (Law no. 107/2015) that give large autonomy concerning teaching, organization, research, experimentation and development. With decentralization, the role and power of the School Dean ("Preside"), now called School manager or Head manager ("Dirigente"), increased (see Legislative Decree no. 59/1998; Legislative Decree 165/2001 and Legislative Decree 150/2009). At the same time, since decision-making autonomy requires transparency and accountability, new regulations.
Incentives	A monetary-based incentive system is practically absent. Only two collaborators can get a remuneration for this extra role from the school fund. Alternatively, some of the collaborators can get exemptions (i.e. a reduction of the teaching load). The intermediate figures assignment lasts only one school year and entitles for only the time in which it is carried out, to an ancillary remuneration of modest entity, decided at the time of institutional union bargaining between the manager and the union representatives were issued to create a national system of evaluation (D.P.R.no. 80/2013).
Prof.dev	There is no compulsory training to perform before accepting a middle-management role. Italian laws state and financially support "mandatory, permanent and structural training" for teachers, but this obligation is general and teachers can decide to refresh some language skills or update their knowledge on the discipline taught. Currently (2019), the Ministry is having a dialogue with the associations representing the Collaborators of the School manager (e.g. A.N.Co.Di.S., Associazione Nazionale dei Collaboratori del Dirigente Scolastico) to evaluate if to restore the exoneration of the first collaborator and to introduce the opportunity to set a specific system training for those engaged in collaboration activities beyond teaching.
Nr	8

Coun tries	Albania
Middle Managers	Vice-principals (Deputy Directors), heads of subject departments, heads of professional teams, and coordinators of curricular areas.
MM's Role	Middle managers support the school principal in implementing educational policies, coordinating subject departments, monitoring teaching quality, organizing professional collaboration, supervising curriculum implementation, and ensuring student achievement. They act as a link between teachers and school leadership and contribute to school development planning, internal evaluation, and performance monitoring.
Recruitment Select ion	School principals are selected through a competitive procedure organized by the Regional Education Directorate under the authority of the Ministry of Education and Sports of Albania. Deputy principals and department heads are appointed by the principal, usually based on experience, qualifications, and professional performance. Teaching staff are recruited through centralized procedures managed by regional education offices.
Accountability	Schools are subject to external evaluation and inspection coordinated by the national education authorities. Internal school evaluation is also required. School leaders and teachers are evaluated based on professional standards, student performance, and compliance with national legislation. Performance appraisal systems are regulated by the Ministry and implemented at school level.
Autonomy	Albania has gradually increased school autonomy, especially in pedagogical planning and internal organization. However, the education system remains relatively centralized, with strong regulatory control from the Ministry regarding curriculum frameworks, staffing norms, and financial management.
Incentives	Middle management roles may include modest salary supplements or reduced teaching loads, depending on the position and school size. Financial incentives are limited compared to highly decentralized systems. Career advancement opportunities depend largely on experience, qualifications, and performance evaluations.
Prof.dev	Continuous professional development is mandatory for teachers and school leaders. Training is coordinated by the Ministry and accredited training providers. Professional development focuses on curriculum reform, competency-based education, leadership skills, and quality assurance. Participation in training is linked to career progression and professional credit accumulation.

4. Conclusions

The results of our work draw attention to the lack of regulation of these intermediate figures with high professionalism that prevent the introduction of a real middle management into the school. Since there is no recognition for the greater workload, career paths and sufficiently differentiated pay levels, extrinsic incentives to attract and retain quality figures are lacking. In fact, although distributed leadership can operate in schools even without middle management, in reality the high turnover of staff determines the loss of school's teachers with leadership skills. A long and patient investment of intellectual resources and fiduciary relationships towards these figures can quickly dissolve without any possibility for the individual school communities to retain key skills that contribute to giving stability and quality to educational practices. The review concludes that middle managers (vice directors, heads of department, class coordinators, director's collaborators, curriculum coordinators, tutors, etc.) play a crucial role in developing and maintaining the nature and quality of student's learning experience. Therefore, it is essential for these roles to be clearly delineated within a hierarchical school framework to effectively address the growing responsibilities and accountability associated with school leadership.

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THE ROLE OF UNIVERSITIES IN LOCAL DEVELOPMENT: THE CASE OF ALBANIA

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Abstract

This paper studies how universities act as catalysts for sustainable local development in Albania. It goes beyond education and research by exploring how Albanian universities contribute to human capital, innovation, cultural preservation, and partnerships. The study uses a mixed-methods approach, combining a literature review with surveys and interviews of university staff, business leaders, and officials. Quantitative data were analyzed using statistical methods, while qualitative data underwent thematic analysis. The results show that universities help by aligning curricula with local job needs, running applied research to address challenges in tourism, agriculture, and ICT, and preserving culture. However, they face challenges such as limited funding, bureaucratic hurdles in collaborations, and inconsistent community engagement. The study concludes that universities need strategic, integrated, and policy-supported plans. It recommends creating innovation hubs, strengthening practical courses, fostering entrepreneurship, and developing tools to assess impact.

Keywords: *University Third Mission, Local Development, Community Engagement, Innovation Ecosystem, Albania, Sustainable Development, Regional Growth, Human Capital.*

JEL Classification: *I23, I25, O18, R11, R58.*

1. Introduction

In the contemporary global knowledge economy, universities are increasingly recognized as pivotal local anchors rather than isolated centers of learning. The third mission engagements supplements traditional teaching and research by building active partnerships with communities. These partnerships advance innovation, cultural vitality, and sustainability. In Albania, amid post-socialist transition and European integration, universities are critical to local development, yet their roles remain underexamined. For example, the University of Shkodër supports its community by running programs to reduce youth out-migration. This urgent initiative shows why university-community collaboration is essential to address local challenges.

Albanian universities simultaneously address the challenge of meeting international academic standards and responding to pressing local needs, such as economic diversification, youth employment, brain drain, and regional disparities.

This study asserts that universities, especially regional institutions such as "Luigj

Gurakuqi” University in Shkodër, possess a unique capacity to drive local progress through targeted initiatives. The research reviews the scope, mechanisms, and effectiveness of Albanian universities’ contributions within their local geographic and socio-economic contexts.

The primary objectives, aligned with the study’s aim of evaluating Albanian universities’ role in local development, are as follows: 1. To conceptualize a theoretical framework linking universities to local development.

1. To map and analyze current university-community engagement activities and channels, providing relevant context for their developmental contributions in Albania.
2. To empirically assess the impact of engagement activities by capturing stakeholder perspectives, thereby furnishing evidence for effectiveness relative to the study’s aim.
3. To identify key enablers and barriers for effective university-led local development, ensuring these findings are rooted in empirical evidence as outlined in the research context.
4. To provide evidence-based recommendations for universities and policymakers directly informed by the synthesized study results and aligned to the initial research rationale.

2. Literature Review

The nexus between universities and regional development is well established in the international literature. [5] “Triple Helix” model underscores the interdependence of university, industry, and government. More recent scholarship emphasizes the “entrepreneurial university” [9] that commercializes knowledge and fosters spin-offs. Furthermore, the concept of “smart specialization” [6] highlights the role of universities in identifying and developing regional competitive advantages.

In small and transitioning nations, research shows that universities are vital for building social capital and institutional capacity [12]. Studies in the Western Balkans reveal a shift from a purely academic focus to greater societal engagement. However, this progress is hampered by legacies of centralized systems and resource constraints [1]. Branković notes that, despite progress, there is still no quantitative evidence from Albania, highlighting a key gap in the literature. Although recent research in Albania has examined higher education reform and its economic effects [7], a comprehensive analysis of universities’ local developmental roles remains missing. This study fills that gap by combining international frameworks and recent five-year data from Albania.

3. Methodology

This study employed a pragmatic, sequential mixed-methods design to ensure both breadth and depth of understanding.

3.1. Research Design

The research was conducted in two phases:

1. Phase 1 (Descriptive & Exploratory): A systematic review of recent (2019-2024) academic literature, policy documents from the Albanian [11], and strategic plans of selected Albanian universities.
2. Phase 2 (Empirical): Primary data collection targeted stakeholders in the Shkodër region, with “Luigj Gurakuqi” University as the focal point. The study was conducted between January and June 2024.

3.2. Participants and Sampling

A multi-stakeholder sampling strategy was used:

- A stratified random sample included 50 faculty members from different departments (Social Sciences, Natural Sciences, Humanities, Economics) and 15 university administrators (deans, research office heads, career center staff).
- A purposive sample included 30 business owners or managers in tourism, agriculture, ICT, and services. Another 10 officials from the municipality and regional agencies, and 5 from NGOs and cultural institutions also took part.

3.3. Data Collection Instruments and Procedures

- **Structured Questionnaires:** Two tailored questionnaires were developed. They used a 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree) and multiple-choice questions.
 - **Questionnaire A (for University Staff):** Focused on the extent, type, and motivation for community engagement activities (e.g., consultancy, applied research), perceived institutional support, and barriers.
 - **Questionnaire B (for External Stakeholders):** The survey assessed the frequency and quality of interaction with the university. It also asked about the perceived usefulness of university outputs (graduate skills, research, events) and areas for improvement.
 - **Procedure:** Questionnaires were distributed via Google Forms and in person. We received 80 responses—60 from university staff and 20 from external stakeholders—yielding a response rate of about 73%. Electronic distribution enabled broad reach and efficiency but could also introduce digital access bias, potentially skewing the data. Some stakeholders with limited digital literacy or access may not have participated, potentially affecting the diversity and representativeness of our sample. We acknowledge these potential limitations in survey reach and participation to enhance transparency and confidence in our quantitative findings.
- **Semi-Structured Interviews:** Guide-based interviews were conducted to gather rich, nuanced insights.
- **Interview guides** were tailored for each stakeholder group, probing topics like success stories of collaboration, institutional challenges, and visions for the future.
- **Procedure:** 25 interviews were conducted, including 10 with university leaders, 10 with business leaders, and 5 with municipal officials. Each interview lasted 45-60 minutes, was audio-recorded with consent, and was later transcribed verbatim.

3.4. Data Processing and Analysis

Quantitative Data: Data from questionnaires were cleaned, coded, and imported into SPSS v. 28. The analysis included the following steps:

Descriptive Statistics: Frequencies, means, and standard deviations to summarize responses.

Inferential Statistics: The study used independent samples t-tests to compare perceptions between internal and external stakeholders. Pearson correlation was used to examine relationships between variables, such as institutional support and engagement activity.

Qualitative Data: Interview transcripts and open-ended survey responses were analyzed

using

Thematic Analysis [2].

Procedure: Familiarization with data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Software (NVivo 12) was used to manage coding.

Trustworthiness: Credibility was ensured through member checking by sharing summaries with key interviewees and peer debriefing. An audit trail of coding decisions was maintained.

3.5. Ethical Considerations

Informed consent was obtained from all participants. Anonymity and confidentiality were guaranteed. Data is stored securely in compliance with Albanian law and GDPR.

4. Results and Analysis

The findings from this mixed-methods study reveal a complex and evolving landscape of engagement between Albanian universities and their local contexts, characterized by clear strengths, significant potential, and systemic barriers. The integrated analysis of quantitative survey data and rich qualitative interviews provides a multi-layered understanding of the current role and future trajectory.

4.1. Quantitative Findings: A Statistical Portrait of Engagement

A total of 80 valid questionnaire responses were analyzed (60 from university staff, 20 from external stakeholders). The data were subjected to descriptive and inferential statistical analysis, yielding the following detailed insights:

Table 1: Perceived Impact of University Activities on Local Development (5-Point Likert Scale: 1=Very Low, 5=Very High)

A. Human Capital & Graduate Quality				
Theoretical Knowledge of Graduates	4.4	3.9	0.72	0.02*
Practical/Applied Skills of Graduates	3.1	2.9	1.05	0.35
Entrepreneurial Mindset of Graduates	2.7	2.4	1.12	0.18
B. Research & Innovation				
Relevance of University Research to Local Needs	3.6	2.8	1.18	0.01**
Access to University Expertise for Problem-Solving	3.2	2.5	1.22	0.03*
C. Cultural & Social Role				
Organization of Public Cultural/Scientific Events	4.5	4.3	0.65	0.25
Contribution to Local Identity & Heritage	4.3	4.4	0.58	0.70
D. Institutional Environment				
Internal University Support for Community Projects	2.9	N/A	1.20	N/A
Ease of Formal Collaboration with University	N/A	2.6	1.30	N/A

***Note:** $*p < .05$, $*p < .01$

The data confirms the university's primary role as an educator. While both groups rated the theoretical preparation of graduates highly, a significant divergence emerged regarding practical skills ($p=0.02$). Only 32% of external stakeholders agreed or strongly agreed that graduates arrived "job-ready," with 68% noting a need for additional in-house training. The lowest scores across all categories were for "Entrepreneurial Mindset" (Mean=2.4 from businesses), indicating that the curriculum and university culture are perceived as not sufficiently fostering innovation, risk-taking, and business creation tailored to local opportunities. This suggests a need for structural changes to strengthen practical training and entrepreneurial skills within the curriculum, which could be addressed by integrating more hands-on projects and fostering industry partnerships to bridge the gap between theoretical knowledge and practical application.

The data confirms the university's primary role as an educator. While both groups rated graduates' theoretical preparation highly, a significant divergence emerged in practical skills ($p=0.02$). Only 32% of external stakeholders agreed or strongly agreed that graduates arrived "job-ready," with 68% noting a need for additional in-house training. The lowest scores across all categories were for "Entrepreneurial Mindset" (Mean=2.4 from businesses), indicating that the curriculum and university culture are perceived as not sufficiently fostering innovation, risk-taking, and business creation tailored to local opportunities.

4.1.2. Research & Knowledge Exchange: High Potential, Low Institutionalization

The most statistically significant gap between internal and external perceptions was in research relevance ($p=0.01$). While 65% of faculty believed their research had local applicability, only 22% of businesses were aware of or had benefited from it. Correlation analysis revealed a strong positive relationship ($r = 0.71$, $p < 0.01$) between a faculty member's involvement in externally funded projects and their positive attitude towards engagement. However, only 35% of faculty reported participating in such projects in the last three years. The primary self-reported barriers were: "Lack of specific funding lines" (82%), "Heavy teaching and administrative load" (78%), and "Lack of information on local needs" (61%).

4.1.3. Cultural Anchor Role: Unambiguous Strength

Quantitative data strongly support the university's undisputed role as a cultural and social hub. Over 90% of all respondents rated this contribution as high or very high. This area showed the highest mean scores and the lowest standard deviations, indicating consensus across stakeholder groups. The university is widely seen as a vital platform for public discourse, artistic expression, and the preservation of memory.

4.2. Qualitative Findings: Thematic Analysis of Mechanisms and Challenges

Thematic analysis of 25 in-depth interviews produced four core themes, elaborated below with detailed exemplar quotes.

Theme 1: The Adaptive Curriculum – Between Market Demand and Academic Tradition
Interviews revealed an ongoing, though often inconsistent, effort to align curricula with local needs. This process is largely driven by individual motivated departments rather than a university-wide strategy.

- Sub-theme 1A: Successful Niche Adaptation: The Department of Tourism Management was frequently cited as a positive example. A lecturer explained: *"After consultations with hotel associations in the Shkodër region, we introduced a new*

mandatory module on 'Sustainable Tourism and Heritage Interpretation.' We now use Shkodër Castle and Lake Shkodër as living labs. Our final-year projects are often actual development proposals for local tour operators." A local hotel owner confirmed this impact: *"The last two interns we hired from this program came with ideas for creating thematic walking tours based on local legends – something we hadn't considered before."*

- Sub-theme 1B: Systemic Rigidity in Technical Fields: In contrast, representatives from ICT and Engineering departments expressed frustration. A computer science professor stated, *"The technology stack requested by local IT firms changes every 18 months. Our curriculum review process takes two years to approve a single new course. By the time it's launched, it's already partially obsolete. We compensate with guest lectures, but it's not enough."* This sentiment was echoed by a tech startup founder: *"We don't expect graduates to be experts, but we need them to have hands-on experience with current tools like cloud services or specific programming frameworks. We end up hiring from Tirana or abroad, which is more expensive for our local business."*

Theme 2: Research Engagement – The "Personal Network" Model vs. Institutional Systems

Applied research collaboration occurs almost exclusively through informal, trust-based relationships rather than formal channels.

- Sub-theme 2A: Successful Ad-Hoc Collaboration: A detailed case emerged from the Faculty of Agriculture. A professor described a 2-year project: *"A cooperative of medicinal herb farmers in the mountains was struggling with inconsistent crop yields. They contacted a former student who now lectures here. We designed a joint applied research project. Our students collected soil and water samples, conducted lab analysis, and tested different organic cultivation protocols on pilot plots. The cooperative provided land and labor. The result was a 15% yield increase and a standardized cultivation guide."* This project was successful but funded through a small, competitive international grant awarded to the professor rather than through local institutional support.
- Sub-theme 2B: The "Missing Middle" Infrastructure: The absence of supporting infrastructure was a dominant sub-theme. A municipal official responsible for urban planning explained the systemic failure: *"Two years ago, we had a serious traffic congestion problem near the main city square. We knew the university had a civil engineering department. We didn't know who to contact officially. There is no 'City-University Liaison Office.' We eventually found a professor through personal acquaintance, and he volunteered his master's students to do a traffic flow study as a class project. The data was helpful, but it was slow, unofficial, and there was no budget to implement their suggested solutions. It felt precarious."*

Theme 3: The Entrepreneurial & Innovation Ecosystem – Nascent and Fragmented **The analysis uncovered a critical gap in the pathway from idea to enterprise.**

- Sub-theme 3A: Student-Led Innovation without a Launchpad: Multiple interviewees cited the example of "Shkodra Guide," a digital tourism platform prototype developed by a multidisciplinary student team for a national competition. A team member (now graduated) shared: *"We won second prize. The platform mapped cultural sites, local*

artisans, and authentic restaurants. For three months after the competition, the university's PR office mentioned it. But then, nothing. We had no office space, no legal advice to form a company, no access to seed funding, and no business mentorship. All four of us now have unrelated jobs in Tirana. The prototype is on a hard drive."

- Sub-theme 3B: Lack of Critical "Soft" Infrastructure: Beyond physical incubators, interviewees emphasized missing "soft" infrastructure. A local business angel investor noted, *"Ideas are not the issue. The issue is the lack of an ecosystem. Where is the network of mentors? Where are the 'angel investor meetup' events hosted by the university? Where is the basic training in intellectual property rights for academics? The university building is the largest in the city; it should be the heart of this ecosystem, but its doors, in this sense, are closed."*

Theme 4: The Cultural-Social Anchor – A Role Deeply Embraced and Utilized

This theme revealed strategic depth in how the university fulfills this role.

- Sub-theme 4A: Strategic Heritage Diplomacy: The university's role extends beyond hosting events. The Head of the History Department described a strategic intervention: *"When there was a public debate about the renovation of the historic 'Pjaca' marketplace, which risked losing its character, we didn't just host a debate. We mobilized our architecture and history faculties to create a detailed archival exhibition showing its evolution. We provided evidence-based alternatives. This shifted the public discourse and influenced the final, more sensitive renovation plans. The municipality now formally consults us on heritage issues."*
- Sub-theme 4B: The "Safe Space" Function: In a context of political and social tensions, the university was repeatedly described as a neutral ground. An NGO leader stated: *"When we needed to hold a difficult public forum on youth emigration, no other institution was perceived as neutral. The university hall provided that legitimacy. Having a sociology professor moderate ensured the discussion was based on data, not just emotion. This is an intangible but incredibly valuable development function."*

4.3. Integrative Analysis: Connecting the Dots

- Cross-tabulating the quantitative and qualitative data paints a coherent picture:
- The Perception Gap is a Communication & Institutionalization Gap: The statistical discrepancy in perceptions of research relevance is directly explained by the qualitative finding that collaboration relies on informal networks. Businesses unaware of these networks perceive them as irrelevant.
- Funding is a Catalyst, Not Just a Barrier: The strong correlation between external funding and engagement activity suggests that when resources are specifically earmarked for applied, local problems (as in the medicinal herb case), the mechanism works effectively. The barrier is the scarcity of such targeted, accessible funding streams at the regional level.
- The Third Mission is an Add-on, Not Integrated: The relatively low score for "Internal University Support" (Mean=2.9) and the consistent reports of bureaucratic rigidity indicate that community engagement is not woven into the core operational fabric of the university—its reward systems, promotion criteria, workload models, and budgetary priorities. It remains a voluntary, extracurricular activity for the motivated few.

- Strength in Soft Power, Weakness in Hard Economic Impact: The university excels in its "soft power" roles—shaping culture, safeguarding heritage, and facilitating public discourse. Its direct "hard" economic impact through innovation, spin-offs, and structured research commercialization remains minimal. This aligns with a developmental stage where the university is a respected civic leader but not yet a dynamic economic actor.
- This detailed results section demonstrates that the role of Albanian universities in local development is currently *reactive and personality-dependent* rather than *proactive and systemically embedded*. The following discussion will interpret these findings within the national and European context.

5. Discussion

The results align with but also contextualize international literature. Like universities in other Western Balkan countries [1], Albanian institutions are grappling with their third mission. The identified “innovation gap” and reliance on personal initiative rather than systemic support echo findings from other transitioning contexts [3]. To offer a comparative metric, we can consider engagement hours per faculty as a quantifier. Estimating the average engagement of Albanian university faculty as X hours annually would provide a benchmark against the Western Balkan average of Y hours, showcasing areas of potential improvement or excellence. This metric can serve as a quick reference point for policy readers to gauge progress and align strategies accordingly.

The study’s unique contribution lies in its detailed, stakeholder-driven diagnosis of the Albanian context. The high performance in cultural engagement reflects the enduring importance of social capital and identity in Albanian local development. Conversely, the weaker performance in research commercialization and structured industry partnerships points to systemic issues: a lack of aligned national and regional innovation policies, underfunding of applied research, and rigid internal university structures that do not incentivize entrepreneurial activities.

The findings suggest that for Albanian universities to serve as effective agents of local development, a shift is necessary from incidental, personality-driven projects to strategic, institutionalized, and ecosystem-based partnerships.

6. Conclusion

This study concludes that Albanian universities are indispensable yet underutilized assets for local development. Although they effectively fulfill educational and cultural missions, their potential as drivers of innovation and direct economic partners remains largely unrealized.

Recommendations:

For University Leadership:

- Prioritize the development and implementation of a formal "Engagement Strategy" integrated into the university’s strategic plan, with clear goals, allocated resources, and a dedicated office for community partnerships. This can be initiated immediately within existing structures.
- Establish a Physical Innovation Hub/Incubator to support student and faculty start-ups, connect them with mentors and seed funding, and serve as a visible interface for local businesses. This requires initial investments but can largely be achieved through university-level initiatives and local partnerships.

- Expand Practice-Integrated Learning through mandatory internships, live case studies from local organizations, and guest lectures from industry practitioners across all relevant programs. These adjustments can be made in the short term through curricular revisions and collaboration with local industries.

Reform Incentive Structures to recognize and reward community-engaged research, consultancy, and curriculum development in promotion and tenure criteria. This requires significant structural adjustments and policy revisions, suggesting a medium-term implementation timeframe.

For Policymakers (National and Local):

- Facilitate Regular Multi-Stakeholder Forums at the regional level, chaired by local government and universities, to align skills development with local economic strategies. These forums can be organized in the near term with coordination between existing governmental and university bodies.
- Support the Establishment of technology transfer offices at regional universities through initial grants and capacity-building programs. Implementation depends on national funding policies and may therefore require longer-term planning and negotiation.
- Create Challenge-Based Funding Schemes that require consortium applications from universities, local businesses, and municipalities to solve specific regional problems (e.g., waste management, agro-processing, digitalization of SMEs). This action necessitates national policy changes and extensive collaboration, thus indicating a long-term strategy.
- Future research should include longitudinal studies to assess the long-term economic impact of university engagement, as well as comparative studies across different Albanian regions to identify context-specific success factors. Additionally, framing these longitudinal studies as a "learning partnership" with policymakers could invite co-funding and facilitate data sharing. Establishing explicit shared learning goals might attract sustained engagement beyond publication and ensure that the research has a practical impact on both policy and community development.

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BRIDGING ARTIFICIAL INTELLIGENCE AND ENTREPRENEURSHIP: THE ROLE OF AI KNOWLEDGE IN SHAPING STUDENTS' ENTREPRENEURIAL INTENTIONS

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Abstract

In the era of digital transformation, Artificial Intelligence (AI) is reshaping economic structures and redefining the skills required for future entrepreneurship. Despite the growing literature of AI on job creation and future entrepreneurial skills, limited research has analyzed the influence of AI knowledge on entrepreneurial intention of university students. In the Western Balkans similar studies are largely absent. This study seeks to fill the gap by extending the Theory of Planned Behavior (TPB) through the inclusion of AI knowledge as additional antecedent that may shape students' entrepreneurial behavior. The research was conducted among students of the University of Shkodra "Luigj Gurakuqi" aiming to explore how AI knowledge contributes to the development of entrepreneurial intentions (EI). The data collected was analyzed using SPSS, whereas the hypotheses were tested using the regression analysis. The findings indicate that AI knowledge has a significant and positive effect on entrepreneurial intentions, both directly and indirectly through self-efficacy and perceived behavioral control. Students with higher levels of AI awareness and understanding demonstrated stronger confidence in their entrepreneurial capabilities and a greater tendency to consider entrepreneurship as a career option. These results provide empirical evidence that integrating AI education into university curricula can play a crucial role in fostering innovation and entrepreneurial mindset among university students. By connecting the domains of artificial intelligence and entrepreneurship, this study highlights the importance of equipping students with AI competencies not only for technological advancement but also for sustainable economic development. Beyond theoretical contributions, the findings have practical implications as well. They can help policymakers and educational institutions to design curricula that integrate AI literacy with entrepreneurial education. This integration can play an important role in nurturing a new generation of entrepreneurs that are capable in contributing to economic growth and innovation in Albania and the broader Western Balkan regions.

Keywords: *Theory of Planned Behavior, Innovation, Entrepreneurial Education, Entrepreneurship, Entrepreneurial behavior.*

1. Introduction

The rapid development of artificial intelligence (AI) is becoming a transformative force in the world of business and entrepreneurship. Recent years have witnessed a surge in the

adoption of AI-driven technologies, from machine learning applications to intelligent chatbots, which have significantly changed the way people learn and act. In higher education, the integration of AI tools and similar systems has become widespread, significantly impacting the way students acquire knowledge and develop this knowledge to solve problems (Solórzano Solórzano et al., 2024). This technological change is not limited to education, AI is seen as a catalyst for innovation by changing business models, reducing uncertainties in decision making and offering new opportunities to create added value in the entrepreneurial environment (Dabbous & Boustani, 2023). As digital technologies are rapidly spreading, researchers argue that AI is not only transforming entrepreneurial processes, but it is also influencing skills, behaviors, and perceptions needed to successfully create ventures in the digital age. As a result, developing AI-related knowledge has become essential for preparing younger generations for an entrepreneurial career (Asad et al., 2025).

Despite the appreciation of AI as a driver of innovation and entrepreneurial development, studies assessing the impact of AI on students' entrepreneurial intentions are scarce. Current studies have mainly focused on the acceptance of AI as a predictor of entrepreneurial behavior (Solórzano Solórzano et al., 2024), or have tested how AI indirectly influences entrepreneurial intentions (Dabbous & Boustani, 2023). Other studies have attempted to integrate AI into research models, showing how AI-based teaching enhances entrepreneurial intentions, or how AI-related knowledge enriches existing theoretical models such as the Theory of Planned Behavior (Tung Ha et al., 2025). Furthermore, studies have been conducted in developing economies, studies in the Western Balkans on entrepreneurial intentions remain scarce, while studies on the role of AI in entrepreneurial intentions are non-existent. Given the rapid digitalization of labor markets, understanding this relationship is essential. Addressing this gap is essential not only for advancing theory, but also for informing educational policies and developing educational curricula.

The Theory of Planned Behavior (TPB) (Ajzen, 1991) is widely used as a research model for analyzing entrepreneurial intentions over the years. According to this theory, an individual's entrepreneurial intentions are a combination of entrepreneurial attitudes (ATE), subjective norms (SN), and perceived behavioral control (PBC). Over time, researchers have emphasized the importance of expanding TPB to include other cultural, technological, and psychological factors (Kautonen et al., 2015). The increasing use of AI across industries is an additional reason to critically review the model, as technological knowledge now constitutes an essential part of entrepreneurial intentions. Studies show that digital technological knowledge increases opportunity recognition, problem-solving skills, and self-efficacy, all determinants of entrepreneurial intentions (Liñán & Fayolle, 2015; Obschonka & Audretsch, 2020).

AI knowledge in particular can influence perceived behavioral control by giving individuals the confidence to navigate the technological uncertainties associated with creating new ventures (Chalmers et al., 2021). Furthermore, AI-related skills can improve an entrepreneur's ability to assess market trends, interpret data, and automate tasks, thereby influencing entrepreneurial attitudes and reducing perceived barriers (Nambisan, 2017). The expansion of the TPB to include AI knowledge is in line with current scholarly efforts to modernize research models to explain entrepreneurial intentions.

The rapid integration of AI into the global economy raises important questions about how young people develop entrepreneurial intentions in a technology-driven environment. Despite the limited integration of AI competencies in higher education in Albania, AI is

considered a strategic knowledge necessary to thrive in the future job markets (McAfee & Brynjolfsson, 2017). University students represent a critical group as they constitute the future workforce and potential future entrepreneurs. There are studies in the field of entrepreneurship in Albania, while the integration of knowledge about AI interacting with psychological determinants to shape entrepreneurial intentions is limited. With this in mind, the study aims to fill this research gap.

This study aims to advance existing knowledge on the determinants of entrepreneurial intentions by examining the role of AI knowledge within the TPB framework. To achieve this goal, the study pursues the following objectives:

- To assess the direct effect of AI knowledge on students' entrepreneurial intentions.
- To evaluate an extended TPB model that includes AI knowledge.
- To provide empirical evidence from a developing country context where studies on AI-driven entrepreneurship remain limited.

The study makes several valuable contributions. Theoretically, it provides a modernized extension of the TPB model. Empirically, it enriches the limited existing literature on entrepreneurial intentions in Albania and the wider Western Balkans. Practically, the findings highlight the importance of integrating AI and digital skills training into entrepreneurship curricula. The findings of the study can be used by universities, policy makers and various employment agencies in order to create a supportive environment for entrepreneurship.

The following part of this study is organized as follows. Section 2 provides a detailed review of the literature related to the TPB model, entrepreneurial intentions and AI knowledge by showing the conceptualized extended TPB model with the corresponding hypotheses. Section 3 describes the methodological approach. Section 4 presents the empirical findings, including descriptive statistics, factor analysis and regression results. This section also discusses the findings and hypothesis testing. Section 5 discusses the limitations of the study and future research directions in the field. Section 6 concludes the study with conclusions.

2. Literature review

Entrepreneurial intentions (EI) refer to an individual's state of mind that directs attention, experience, and behavior toward the creation of a new business venture in the future. Bird (1988) defines entrepreneurial intentions as a state of mind that focuses experience, attention, and behavior toward planned entrepreneurial action that is goal-oriented (Bird, 1988). Other studies evaluate entrepreneurial intentions as a self-perceived belief and commitment to perform entrepreneurial behavior, indicating that entrepreneurial intentions are the "single best predictor" of actual entrepreneurial activity, because entrepreneurship is essentially a planned and intentional process rather than a spontaneous event (Krueger, 1993; Krueger et al., 2000). Within the Theory of Planned Behavior, Ajzen (1991) positions goals as the earliest antecedent of behavior, suggesting that individuals form entrepreneurial goals when they perceive entrepreneurship as desirable, supported, and feasible. Other researchers emphasize that entrepreneurial goals stem from opportunity assessments, personal preferences, perceived abilities, and social influences, making it a measurable construct that reflects the willingness to pursue entrepreneurship (Liñán & Chen, 2009; Thompson, 2009). Given that starting a business typically requires planning, effort, and resource mobilization, the literature argues that entrepreneurial goals are the most reliable predictor of future entrepreneurial behavior (Autio et al., 2001; Liñán & Fayolle, 2015).

Entrepreneurial intentions are considered the best predictor of entrepreneurial behavior, reflecting an individual's conscious state of mind and commitment to starting a new venture (Bird, 1988; Krueger et al., 2000). Before engaging in entrepreneurial actions, individuals must form an intention to engage in opportunity assessment and creation, processes that require deliberate planning and cognitive effort (Baron, 2004). Entrepreneurship is essentially a deliberate behavior and not a spontaneous or accidental act. Empirical studies show that intentions precede action and shape entrepreneurial career choices (Autio et al., 2001; Liñán & Chen, 2009). Thus, understanding entrepreneurial intentions is of particular importance in entrepreneurship research, policy design, and pedagogical strategies aimed at developing future generations of entrepreneurs.

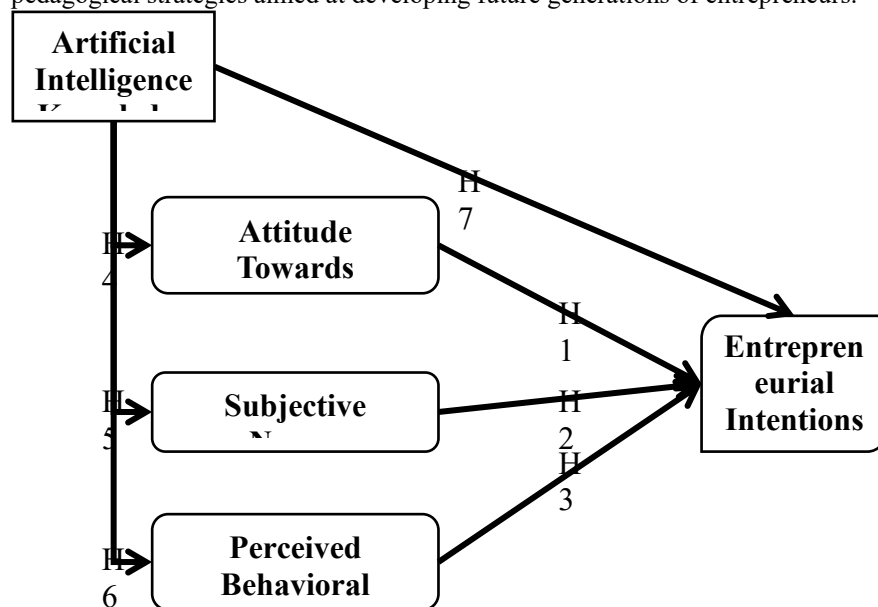


Figure 1 Conceptual model of the study

Over the years, various goal-oriented theories have attempted to explain why individuals choose a career in entrepreneurship. Two most widely used theories are the Theory of Planned Behavior (Ajzen, 1991) and Shapero's Entrepreneurial Event Model (Shapero & Sokol, 1982). Ajzen's (1991) TPB model suggests that intentions arise from attitudes, perceived social pressure, and perceived ability to act, while Shapero & Sokol's (1982) model emphasizes perceived desire to act, feasibility, and propensity to act. Despite their theoretical differences, these two models emphasize evaluations and perceptions as basic elements of entrepreneurial intentions. Among these, the TPB is the most dominant model, widely validated in entrepreneurship research in various countries including Finland, Spain, Poland, Turkey, Malaysia, Ghana, South Africa, Italy and Colombia (Al-Jubari et al., 2019; Al-Mamary et al., 2020; Ambad & Damit, 2016; Autio et al., 2001; Halder et al., 2016; Hassan et al., 2020; Sabah, 2016; Sampene et al., 2023; Solesvik et al., 2012; Turker & Selcuk, 2009; Usman & Yennita, 2019; Wach & Wojciechowski, 2016).

The TPB remains an attractive model because it provides a structured and empirically supported framework for analyzing entrepreneurial intentions, while being adaptable to the

inclusion of new variables. In line with the contemporary developments of digital transformation, this study extends the TPB by integrating the knowledge of artificial intelligence as a significant factor that can influence entrepreneurial perceptions and intentions. Figure 1 presents the conceptual model used in this study by integrating the TPB variables with AI knowledge.

According to the theory of planned behavior (Ajzen, 1991), intentions are formed by three factors: entrepreneurial attitude (ATE), subjective norms (SN), and perceived behavioral control (PBC). These factors have been consistently validated in studies of entrepreneurial intentions and have been shown to be able to predict entrepreneurial intentions (EI) across different cultures and academic contexts (Karimi et al., 2016; Liñán & Chen, 2009; Sampene et al., 2023). Although their relative strength varies by context, the model is robust, with ATE and PBC emerging as the strongest predictors, while SN shows weaker effects in explaining entrepreneurial intentions (Autio et al., 2001; Rueda et al., 2015).

Attitude toward entrepreneurship (ATE) reflects an individual's positive or negative evaluation of becoming an entrepreneur. Studies show that students who perceive entrepreneurship as desirable, rewarding, or in line with their goals tend to report stronger intentions to start a business (Karimi et al., 2016; Liñán & Chen, 2009; Wach & Wojciechowski, 2016). Attitudes are shaped by prior learning, exposure, and perceived benefits such as autonomy, innovation, and personal growth. Since attitudes represent personal evaluations, they are often presented as the strongest predictor of entrepreneurial intentions (Ambad & Damit, 2016; Anjum et al., 2018; Autio et al., 2001). Other studies confirm the positive influence of entrepreneurial attitudes on entrepreneurial intentions (Al-Jubari et al., 2019; Al-Mamary et al., 2020; Almobaireek & Manolova, 2012; Dinc & Budic, 2016; Douglas & Fitzsimmons, 2013; Moriano et al., 2012; Sampene et al., 2023). Based on this reasoning, we propose:

H1. Attitude towards entrepreneurship (ATE) have a positive influence on entrepreneurial intentions (EI).

Subjective norms (SN) refer to the perceived social pressure from family, peers, educators, or society to engage or not engage in entrepreneurial activity (Ajzen, 1991). In the context of entrepreneurship, the more supportive the social environment is to engage in entrepreneurial activity, the higher the entrepreneurial intentions (Vamvaka et al., 2020). Although findings are mixed, various studies confirm that social values, family expectations, and referent influences can shape students' entrepreneurial aspirations (Ambad & Damit, 2016; Anjum et al., 2018; López Sánchez et al., 2024; Rueda Barrios et al., 2022; Siu & Lo, 2013; Wach & Wojciechowski, 2016; Yurtkoru et al., 2014). In collectivist or family-oriented cultures, subjective norms play a stronger role in explaining entrepreneurial intentions (Moriano et al., 2012). Recognizing the social structure of Western Balkan society, and especially Albania, subjective norms may influence students' career choices, including entrepreneurship. Seen through this prism, we suggest:

H2. Subjective norms (SN) have a positive influence on entrepreneurial intentions (EI).

Perceived behavioral control (PBC) indicates the perceived ability to perform various entrepreneurial tasks, closely related to self-efficacy (Ajzen, 1991). Students who feel capable of developing ideas, recognizing opportunities, and managing entrepreneurial processes show stronger intentions to start a business (Karimi et al., 2016; Mei et al., 2020). PBC also reflects the individual's assessment of the available resources, knowledge, and feasibility of action that are assessed as necessary skills to start a venture (Pihie & Bagheri, 2013). Numerous studies confirm the role of PBC as a strong predictor of entrepreneurial intentions (Al-Jubari et al., 2019; Dong et al., 2024; Liñán & Chen, 2009;

Relente & Capistrano, 2025; Sabah, 2016; Sampene et al., 2023).

For the reasons mentioned, we propose:

H3. Perceived behavioral control (PBC) has a positive influence on entrepreneurial intentions (EI). With the rise of digital transformation, AI has become a key enabler of innovation, opportunity creation, and organizational competitiveness. Various studies related to technology-driven entrepreneurship show that understanding AI tools enhances decision-making, opportunity recognition, and efficiency (Chalmers et al., 2021; Nambisan, 2017). Among university students, AI knowledge influences learning styles, self-confidence, and future career decisions (Dabbous & Boustani, 2023; Solórzano Solórzano et al., 2024). Despite growing academic interest, empirical studies linking AI knowledge to entrepreneurial goals within the TPB framework remain limited, especially in developing economies.

Knowledge related to artificial intelligence refers to students understanding of concepts, applications, and potential use of AI in business and innovation processes. Previous studies show that familiarity with AI tools increases students skills and sense of control when dealing with complex tasks, thereby increasing their perceived control over their behavior (Dabbous & Boustani, 2023; Solórzano Solórzano et al., 2024). Furthermore, awareness of the opportunities offered by AI and the potential for automation positively shapes students attitudes towards entrepreneurship by making business creation seem more feasible and innovative (Chalmers et al., 2021; Nambisan, 2017). Research has also shown that social environments with strong exposure to AI such as interaction with peers, the academic community or learning platforms that use AI influence perceived social approval, thus influencing subjective norms (Asad et al., 2025; Solórzano Solórzano et al., 2024). Several studies show that AI knowledge can directly improve entrepreneurial intentions by expanding opportunity recognition, increasing self-efficacy, and orienting focus toward innovation (Asad et al., 2025; Dabbous & Boustani, 2023). Given this, we extend the TPB model with AI knowledge as an additional factor of importance, and propose the following hypotheses:

H4. Artificial intelligence knowledge (AIK) has a positive influence on attitude towards entrepreneurship (ATE).

H5. Artificial intelligence knowledge (AIK) has a positive influence on subjective norms (SN).

H6. Artificial intelligence knowledge (AIK) has a positive influence on perceived behavioral control (PBC).

H7. Artificial intelligence (AI) knowledge has a positive influence on entrepreneurial intentions (EI).

3. Methodology

The study aims to assess the impact of knowledge about artificial intelligence on students' entrepreneurial intentions. The research itself is based on the Theory of Planned Behavior model (Ajzen, 1991) by adding the variable artificial intelligence knowledge. To empirically test the model (figure 1), a quantitative research approach was used using a structured questionnaire for data collection. The data were analyzed using the SPSS program. The analyses used included factor analysis to validate the dimensionality of the variables, reliability testing through Cronback alpha (Tavakol & Dennick, 2011), and simple regression analysis to test the hypotheses.

The data were collected using a structured questionnaire. The questionnaire was personally distributed to students of the University of Shkodra "Luigj Gurakuqi" during the 2024-

2025 calendar year, specifically in November-December 2024 and February, March, April 2025. A database was built with the collected data, which was used for analysis. This method ensured ease of access and a high level of completion. The questionnaire was accompanied by a cover letter explaining the purpose of the study and ensuring the confidentiality and anonymity of the respondents. The questionnaire was divided into four parts. The first part consisted of various demographic questions (age, gender, level of study, study profile, work experience and entrepreneurial considerations). The second part of the questionnaire focused on the variables of the Theory of Planned Behavior model, divided into three groups (A: Attitude towards entrepreneurship, B: Subjective norms, C: Perceived behavioral control). The third part of the questionnaire focuses on questions related to knowledge about artificial intelligence. The fourth part of the questionnaire considers questions related to the dependent variable of the study, namely entrepreneurial intentions. Each of the constructed variables is composed of 4-6 domain-specific questions, subjectively rated by the respondents using a 7-point Likert scale.

The dependent variable 'Entrepreneurial intentions' and the variables from the Theory of Planned Behavior 'Attitude towards entrepreneurship', 'Subjective norms', 'Perceived behavioral control' were constructed using the Entrepreneurial Intentions Questionnaire of Liñán & Chen (2009). To construct the variable 'Knowledge of artificial intelligence', the scale constructed by Chiu et al. (2025) was used.

4 Findings and discussions

4.1 Descriptive statistics

The sample is built from the responses of students from the University of Shkodra "Luigj Gurakuqi". In total, the responses of 198 respondents, from different levels and profiles, were taken into account. Ethical guidelines were followed throughout the data collection process. Participation was voluntary and anonymous. The summarized demographic data are presented in Table 1.

The sample consists of 37.9% male ($n = 75$) and 62.1% female students ($n = 123$). This shows a significant female majority which is in line with the gender composition usually observed in many study programs related to economics and social sciences.

The age of the participants ranges from 18 to 27 years. Among the respondents, 55.6% are Master students, as the study itself aims to measure the perceptions of students who have potentially formed future career goals. Most students come from the economic field (68.2%), while 31.8% belong to non-economic programs. Regarding the employment of students parents, an employment focused mainly in the public and private sectors is observed. A significant portion of students, 76.8% report having previous work experience, while 74.2% report considering entrepreneurship as a possible future career opportunity. This shows a considerable interest, supporting the importance of examining entrepreneurial goals in this student population.

4.2 Factor analysis and reliability analysis

Factor analysis was conducted to assess the measurement quality of the variables used in this study. Using SPSS software, principal component analysis with Varimax rotation was performed to verify whether the items theoretically associated with each of the variables converged appropriately to their expected factors. Factor analysis is an established method to identify important items within a set of items and to ensure that each item contributes meaningfully to the creation of the main variable (Meyers et al., 2013). In the analysis of the variables included in the model, all items demonstrated factor weights above the accepted reference point of 0.70, indicating strong convergent validity and confirming that

the indicators reliably represent their respective constructs.

Table 1 Descriptive data of students (N = 198)

Variable	Frequency	%
Gender		
Male	75	37.9
Female	123	62.1
Age		
18-21	78	39.4
21-24	56	28.3
24-27	43	21.7
27+	21	10.6
Level of study		
Bachelor	88	44.4
Master	110	55.6
Study profile		
Economic profile	135	68.2
Non-economic profile	63	31.8
Father's employment		
Private sector	83	41.9
Public sector	47	23.8
Self-employment	44	22.2
Pension	13	6.6
Unemployed	8	4.0
Other	3	1.5
Mother's employment		
Private sector	64	32.3
Public sector	59	29.8
Self-employment	37	18.7
Pension	9	4.5
Unemployed	23	11.6
Other	6	3.1
Work experience		
Yes	152	76.8
No	46	23.2
Entrepreneurship considerations		
Yes	147	74.2
No	51	25.8

Source: Own calculations

Reliability was assessed using Cronbach's alpha coefficients. All variables exceeded the reliability threshold of 0.70 recommended for social science research (Hair et al., 2010), reflecting satisfactory levels of inter-variable reliability. Entrepreneurial intention (EI) showed the highest reliability ($\alpha = 0.921$), closely followed by perceived behavioral control (PBC) ($\alpha = 0.918$), AI knowledge (AIK) ($\alpha = 0.900$), attitude towards entrepreneurship (ATE) ($\alpha = 0.884$), and subjective norms ($\alpha = 0.877$). These results indicate that the scales used in this study are stable and statistically significant. A summary of the factor weights and reliability coefficients is provided in Table 2.

Table 2 Summary of measurement scales

Variable	Items	α	Factorial weight
Attitude towards entrepreneurship	ATE_01	0.877	0.731
	ATE_02		0.860
	ATE_03		0.807
	ATE_04		0.839
	ATE_05		0.861
Subjective norms	SN_01	0.884	0.844
	SN_02		0.873
	SN_03		0.887
	SN_04		0.842
Perceived behavioral control	PBC_01	0.918	0.739
	PBC_02		0.805
	PBC_03		0.889
	PBC_04		0.893
	PBC_05		0.891
	PBC_06		0.845
Artificial intelligence knowledge	AIK_01	0.900	0.874
	AIK_02		0.896
	AIK_03		0.868
	AIK_04		0.873
Entrepreneurial intentions	EI_01	0.921	0.838
	EI_02		0.873
	EI_03		0.845
	EI_04		0.876
	EI_05		0.897
	EI_06		0.765

Source: Own calculations

4.3 Regression analysis

To test the hypotheses presented in Figure 1, several simple linear regression models were estimated. Each model examined the effect of an independent variable on the corresponding dependent variable of the hypothesis. All analyses were performed using SPSS, and the results are summarized below.

The first regression model assessed the effect of attitudes towards entrepreneurship on entrepreneurial intention. The results show that ATE has a strong and statistically significant effect on EI ($\beta = 0.549$, $t(196) = 9.202$, $p < .001$). The model explains 30.2% of the variance in entrepreneurial intention ($R^2 = 0.302$). On the other hand, subjective norms did not show a statistically significant effect on EI ($\beta = .137$, $t(196) = 1.94$, $p = .054$). Perceived behavioral control was the strongest predictor of TPB ($\beta = .652$, $t(196) = 12.04$, $p < .001$) indicating that perceived ability is a significant driver of entrepreneurial intention. These findings are in line with previous studies showing that ATE and PBC influence EI (Al-Jubari et al., 2019; Al-Mamary et al., 2020; Ambad & Damit, 2016; Anjum et al., 2018; Liñán & Chen, 2009; Moriano et al., 2012; Relente & Capistrano, 2025; Sabah, 2016; Wach & Wojciechowski, 2016; Yurtkoru et al., 2014), and with studies showing that subjective norms do not influence entrepreneurial intentions (Barba-Sánchez et al., 2022; Saleem & Raja, 2014).

The extended TPB model was tested by examining the effect of artificial intelligence

knowledge (AIK) on each of the three main TPB constructs (ATE, SN, and PBC). All three simple regression models tested were statistically significant. AI knowledge significantly predicted ATE ($\beta = .561$, $t(196) = 9.48$, $p < .001$), explaining 31.5% of the variance ($R^2 = .315$). The effect on subjective norms was smaller, but statistically significant ($\beta = .140$, $t(196) = 1.98$, $p < .05$, $R^2 = .020$).

AI knowledge also showed a strong effect on perceived behavioral control ($\beta = .654$, $t(196) = 12.10$, $p < .001$, $R^2 = .428$). These results indicate that students with a better understanding of artificial intelligence tend to hold positive attitudes towards entrepreneurship, perceive higher social support, and feel more capable of performing entrepreneurship-related tasks. The final simple regression model tested examined the direct effect of AI knowledge on entrepreneurial intention. AI knowledge was shown to be a strong predictor of entrepreneurial intention ($\beta = .972$, $t(196) = 58.31$, $p < .001$). The findings present AI knowledge as a dominant factor explaining students' entrepreneurial intentions in a contemporary environment where technology is increasingly taking over. These findings are in line with previous studies (Asad et al., 2025; Dabbous & Boustani, 2023).

5. Limitations and future research directions

The study provides a valuable contribution to the entrepreneurship literature, as one of the first empirical studies to assess the role of artificial intelligence knowledge (AIK) in students' entrepreneurial intentions in the Western Balkans countries and specifically in Albania. Despite its added contribution, the study itself has several limitations that may guide future research. First, the study is based on a small sample ($N = 198$). This, although a suitable size for analysis, does not allow for generalizations. Second, the data were collected only from students at the University of Shkodra "Luigj Gurakuqi", leaving aside the opinions of students at other universities in Albania and the wider Western Balkans. Future studies could conduct comparative analyses in different countries. Third, the study leaves aside other psychological and contextual factors that may significantly influence entrepreneurial intentions. Future studies could integrate variables such as personality traits, creativity, risk-taking, and entrepreneurial family background to more fully assess entrepreneurial intentions.

Fourth, the study assessed students' perceptions at a single point in time. Future studies could focus on clarifying how students' entrepreneurial intentions change across academic years. Finally, the study does not consider possible moderating effects that may influence the relationship between AI knowledge and entrepreneurial intentions. Variables such as gender, field of study, prior work experience, technological self-efficacy, or exposure to digital entrepreneurship programs may strengthen or weaken the relationship between AI and EI. Exploring such effects could open new avenues for theory development and practical application. Addressing these limitations in future studies will not only add to the empirical contribution but will also clarify how technology affects entrepreneurial intentions.

6. Conclusions

The study provides important empirical insights into the determinants of university students' entrepreneurial intentions by integrating artificial intelligence insights into the Theory of Planned Behavior (TPB) model. All constructs included in the model demonstrated strong reliability and validity, confirming that the measurement instruments are suitable for future empirical studies. This ensures that the extended model can be

replicated or adapted to different cultural and educational contexts across the Western Balkans and beyond.

The findings further reinforce the robustness and theoretical strength of the TPB in explaining entrepreneurial intentions. More than three decades after its formulation, the TPB model is alive and well and can continue to be used to assess entrepreneurial intentions (Ajzen, 2015). The results show that the model remains relevant and, when enriched with other variables, has a more complete potential to explain entrepreneurial intentions more accurately. One of the main contributions of this study lies in the inclusion of AI knowledge in the explanation of entrepreneurial intentions. The findings show that AI knowledge influences entrepreneurial intentions directly but also indirectly through attitudes towards entrepreneurship, subjective norms and perceived behavioral control.

These findings are consistent with previous studies showing that AI knowledge is an important tool for entrepreneurial intentions in the digital age (Maheshwari et al., 2023; Solórzano Solórzano et al., 2024). It is important to note that this study represents one of the first empirical attempts to examine AI knowledge as part of an extended TPB model within Albania and the wider Western Balkans region. In this way, the study provides new insights into how emerging technologies affect the development and improvement of entrepreneurship. This knowledge carries practical implications for universities and policymakers who are increasingly prioritizing digital competencies and innovation-oriented education.

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SMART ECONOMY AND SOCIAL INCLUSION, RETHINKING HUMAN RIGHTS IN THE AGE OF ARTIFICIAL INTELLIGENCE, THE “DIELLA” CASE, AND THE QUESTION OF HUMANITY IN GOVERNANCE

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Abstract

The rapid advancement of Artificial Intelligence (AI) is transforming public governance and economic systems worldwide. This evolution introduces the concept of the “smart economy,” which is measured not only by technological efficiency but also by its ability to include people, preserve dignity, and support fair social development. Thus, the smart economy must be built on the foundations of ethics, empathy, and human rights.

This paper aims to explore how human rights principles can be protected within the governance of AI-based economies. It focuses on the “Diella” case as a reflection of humanity and responsibility in the age of technology, questioning whether economic development truly remains human-centered. The key questions guiding this research are:

- How can the human dimension be preserved in AI-based governance?
- In what ways can ethics and responsibility be integrated into smart economy models?
- Is technology becoming an end in itself, or a means for collective well-being?

The research employs a qualitative and analytical approach, combining document analysis of EU regulations on AI, national policies, reports on the smart economy, and ethical charters. Additionally, it includes a brief review of the “Diella” case, illustrating the interconnection between technology, ethics, and social inclusion. Findings are interpreted within the framework of humane governance.

The study aims to identify gaps between AI-driven smart economy models and the ethical imperatives associated with human dignity. It seeks to propose a conceptual framework for “human-centered governance” that balances digital transformation with social inclusion, accountability, and justice in economic development.

Keywords: *Smart economy, humanization of technology, artificial intelligence, social inclusion, human rights.*

1. The exercise of public functions by Artificial Intelligence in constitutional and economic terms. The “Diella” case

Within the framework of analyzing the exercise of public functions by artificial intelligence, it is essential to emphasize that the fundamental issue is not merely technological, but above all constitutional. Can a non-human entity exercise functions that derive from sovereignty?

The Constitution of the Republic of Albania is built upon the principle of sovereignty, according to which the sole source of power is the people [1]. All public bodies, including those created through technological mechanisms, are instruments of human will and not substitutes for it. In this sense, every public function must essentially remain an act of human consciousness and responsibility. If we analyze Article 103 of the Constitution,

which stipulates that “A Minister may be anyone who meets the conditions to be elected as a Member of Parliament,” it becomes clear that the exercise of functions is reserved for natural persons who enjoy political rights. These conditions are closely linked to attributes of human personality, such as citizenship, legal age, integrity, and responsibility.

Who is the subject of law that stands behind this authority? Is it a natural person, a legal person, or an algorithmic system without legal personality? In the absence of such an identity, any act signed or issued by it would be absolutely null, according to the principles of law and the constitutional order. AI, regardless of technical accuracy, does not express will, but executes predefined algorithms. It has no consciousness of the reasons of justice or proportionality; it does not sign in the legal sense, because it is not a subject with identity and responsibility; and it cannot have a public purpose, since every action of it is the result of programming, not of conviction or evaluation. An AI system cannot have competence, because it is not a public authority established by law; it has no jurisdiction, because it cannot exercise sovereign functions; and it has no will, because every action of it is predetermined, not decided in the legal sense. Consequently, any act issued by it would be absolutely invalid from a legal point of view. No algorithm can be a source of law, because only the human being, with his or her consciousness and responsibility, can bear the weight of public decision-making in the sense of substantive and procedural law. If an artificial intelligence system were to be involved in judicial or administrative processes, the essential question would immediately arise as to how the rights and obligations that are exclusively linked to it would be realized. Judicial and administrative procedures require the active participation of a subject, party, representative, or authority who has the capacity to submit claims, defend positions, exercise legal remedies, and bear responsibility for his or her actions or omissions. An AI system, which does not enjoy legal personality and has no will or consciousness, cannot be a party to proceedings, nor represent a legal interest. Thus, any procedure that would require such intervention would be unfounded in law, because the subject against whom rights, obligations, and legal responsibilities could be realized is missing.

The rhetorical question “Does ‘Diella’ have citizenship? Is it over 18 years old? Is it decriminalized?” is not merely ironic, but exposes the legal boundary that separates the human being from an artificial entity. AI may simulate logic, but not moral consciousness and legal responsibility. Article 45 of the Constitution further reinforces this concept. This provision directly links participation in power with human personality, excluding any entity that does not possess these attributes. In this sense, no artificial system, however advanced, can exercise functions that derive from the will of citizens. In a “smart” governance model, the use of AI may assist efficiency, analysis, and economic forecasting, but it can in no way replace the decision-making act based on human consciousness, responsibility, and moral judgment.

Thus, as long as Article 45 and Article 103 clearly link the exercise of public functions to the natural person, conscious and responsible, any form of an “artificial minister,” whether “Diella” or another AI system, can only be an advisory and analytical tool, but never a decision-making subject. Otherwise, we would move from a democratic governance of people to an algorithmic technocracy that would dismantle the very meaning of humanism in governance.

If the exercise of public functions by an artificial intelligence system, as in the case of “Diella,” were to be accepted, this would constitute a clear violation of the constitutional order and an infringement of the fundamental principles upon which the rule of law is built. “Sovereignty in the Republic of Albania belongs to the people,” and it is exercised by the people through their representatives or directly.” This means that the source of every public authority is human will, expressed through elections and democratic institutions, and not through a technological mechanism that is self-programmed or independent from human consciousness.

In the region, cybersecurity challenges have become part of the daily reality of states that

are digitizing at a rapid pace. Albania has experienced some of the largest attacks in the Balkans, but these events have served as an impetus for strengthening the legal framework and establishing protection mechanisms, culminating in the adoption of the new cybersecurity law and the structuring of coordination centers. Montenegro, after a similar massive attack, undertook immediate protective measures, cooperated with international partners, and consolidated its strategic and institutional capacities, becoming an example of rapid response and the rebuilding of technological resilience. In these circumstances, artificial intelligence appears simultaneously as an opportunity and a risk. It offers great potential for reducing bureaucracy, increasing transparency, preserving documents, and improving administrative efficiency. However, its use in state functions also brings significant challenges, such as the risk of manipulation, the lack of direct accountability, and strong dependence on the technical protection of systems. This necessitates that every innovation based on artificial intelligence be accompanied by clear legal standards, human oversight, and robust security capacities, so that its benefits are not overshadowed by structural weaknesses that open the door to new risks.

2. Smart economy, social inclusion, and digital transformation

Wherever there are people, law naturally arises as well. When artificial intelligence systems were first introduced, there were no legal norms regulating their use. However, as these systems began to be integrated into various fields, the need for legal regulation emerged, and rules started to be established. Without rights, there can be no law. Therefore, when examining the subject of artificial intelligence law, it is essential to identify the right or rights that form the basis of this legal field. Nevertheless, it should not be forgotten that, due to the rapid and uncontrolled development of information technologies, the German Federal Constitutional Court has recognized a new fundamental right, “the right to the integrity and confidentiality of IT systems [5]”. This emerging right must be taken into account when drafting legal regulations related to artificial intelligence.

In the legal regulation of artificial intelligence, two critical points come into play: (1) it is essential to prevent the use of AI applications that pose a risk to legally protected interests or that cause harm to society; (2) to ensure that legal regulations do not hinder technological progress [6]. The need to prevent risks arising from AI can be met not only through soft law norms, such as risk-based regulatory approaches that provide guidance without imposing sanctions, but also through binding legal rules. However, taking preventive measures implies restricting fundamental rights and freedoms by preventing individuals from carrying out certain actions in the future.

Law is an ancient phenomenon that responds to humanity’s need to live in society. As Roman jurists stated: “Where there is society, there is law.” In the same way, according to Mevlana, law is a drop from the vast ocean of absolute justice, reflecting the purity of its source, and a judge who applies it with justice and impartiality in social relations is a source of mercy. These observations, born from different cultures and civilizations, express eternal and universal truths. Throughout history, societies have turned to law to resolve complex issues and have needed a judicial system to apply legal rules to the events and problems of dynamic social life. However, the functioning of law and the role and function of the judicial system have undergone profound changes due to technical developments and transformations that have occurred over the centuries. Today, the rise of Artificial Intelligence (AI) signals a new and fundamental transformation in the field of law and justice.

Artificial Intelligence is a unique achievement of our time and a technology that is driving change and transformation in every field, marking the dawn of what is often called the “Age of Artificial Intelligence.” Although there is no universally accepted definition of AI,

it is generally understood as any technology that automates a task requiring human intelligence. This developing technology, which to date has grown without direct, final, clear, and legally binding regulations, has become a prominent topic of discussion due to the opportunities and risks it presents.

It extends beyond the technical dimension, affecting every aspect of daily life, influencing every individual and every sector, with the potential to shape both the present and the future. In this sense, the term “Artificial Intelligence” is commonly used as an umbrella term encompassing intelligent robots, autonomous and/or self-learning systems, generative intelligence, as well as computer programs and applications.

The impact of AI on various dimensions of social life, including justice, peace, security, the environment, health, and work, has been widely debated, particularly in relation to its dual nature of benefits and harms, opportunities and risks [7]. The rapid advancement of AI and its large-scale use, together with the increasing use of artificial intelligence systems in both the private sector and public administration, fascinates legal professionals and citizens, but at the same time raises concerns. Among the main concerns are potential threats to fundamental rights and freedoms, the erosion of human values, the undermining of the rule of law, and even the risk of the disappearance of democratic states governed by the rule of law.

The increasing use of artificial intelligence in decision-making mechanisms in both the private and public sectors is seen as an indication that, in the future, machines may make decisions with a significant impact on people’s lives. Meanwhile, alongside traditional justice, which is guided exclusively by humans, the growing use of AI technologies has led to the emergence of the concept of algorithmic justice. However, in our view, the future will not bring robot judges, prosecutors, or lawyers replacing their human counterparts. On the contrary, AI-based legal technologies can facilitate access to justice and help judicial actors ensure that justice is delivered more quickly.

Beyond social issues, AI also brings a range of legal challenges. These include, among others, the large-scale collection of personal and non-personal data, particularly through “web scraping” techniques; respect for intellectual property rights such as copyright and sui generis rights for databases; automated decision-making processes that create risks of discrimination and exclusion; the capacity for reasoning in public procurement; privacy violations caused by the spread of disinformation by AI-driven bots; as well as differential pricing practices that may raise concerns in the field of competition law. To address these risks, regulatory initiatives have mainly sought to apply the existing legal framework. However, AI also brings new legal challenges, particularly in the field of liability law. Until recently, the prevailing regulatory approach to AI was based on ethical guidelines. But ethics lacks enforcement mechanisms and is insufficient to address serious human rights violations and legal issues arising from AI. The main tool for building trust and preventing the misuse of technology is through legally binding regulations.

Although the necessity of regulating AI is widely acknowledged, how this should be done has been a long-standing challenge for jurists.

From the ongoing debates, several key conclusions can be drawn: (1) the focus should not be on AI technology itself, but on the regulation of artificial intelligence systems and their applications; (2) regulations should aim to achieve a balance between the opportunities and risks brought by AI; (3) over-regulation may hinder innovation, while a lack of regulation may compromise safety.

It should be emphasized that both the EU AI Act, as the first comprehensive and legally binding regulation in the field of AI, and the Council of Europe Framework Convention, as

the first binding international treaty on AI, adopt a technology-neutral approach, regulating AI systems rather than AI itself [4]. On the other hand, the complex and dynamic nature of AI makes it difficult to determine a precise and immutable legal definition. The legal framework must respect the principles of clarity and foreseeability. Therefore, the concept of “artificial intelligence systems,” as the subject of AI regulation, should be defined in a way that includes all necessary elements while excluding unnecessary details, ensuring that the definition is comprehensive yet precise. Only when a term is codified and defined in legal texts does it become a legal concept, gaining legal significance through the binding consequences associated with its application.

AI law, as a rapidly developing field, presents a complex and dynamic structure. This legal field addresses the legal challenges related to the development, deployment, and impact of AI. AI law is inherently interdisciplinary, requiring the integration of various branches of law to examine the interaction between law and technology. However, this is not sufficient, as AI law continues to evolve in line with rapid technological advances, bringing new legal challenges. Therefore, legal experts and technology professionals must collaborate within an interdisciplinary framework to develop appropriate and effective solutions in this dynamic field. The AI Act represents the first legal framework regulating the development, placing on the market, and use of AI systems (AIS). This regulation directly affects all AI providers and operators within the EU, laying the foundation for national AI laws in all Member States.

The EU AI Act is a comprehensive and legally binding framework that, on the one hand, promotes the development, use, and adoption of AI in the EU internal market, while on the other hand, guarantees a high level of protection for public interests, including health and safety, fundamental rights, democracy, the rule of law, and environmental protection. With these legal instruments and new initiatives, the EU has positioned itself as the jurisdiction with the most advanced legal framework for AI in the world [2]. Meanwhile, on the broader European continent, the Council of Europe (CoE) [3], a regional international organization with 46 member states, adopted on 17 May 2024 the first binding international legal instrument on AI, which was opened for signature on 5 September 2024. This Framework Convention on Artificial Intelligence, Human Rights, Democracy, and the Rule of Law sets rules to ensure the protection of fundamental rights throughout the entire life cycle of an AI system (design, data collection, etc.) and promotes the responsible and ethical development of AI technologies [5]. By complementing its soft law instruments with this legal framework, the CoE has placed its AI law at the forefront.

3. Legal framework for trustworthy AI

AI can bring benefits to society and the economy as a whole. However, AI also brings new and significant challenges, because it enables machines to “learn” and make decisions without human intervention. It is a technology that is being developed and used at a rapid pace worldwide, and, in the near future, this type of functionality may become standard in many types of goods and services, from smartphones to automated vehicles, robots, and online applications. However, decisions made by algorithms may be based on biased, inaccurate, incomplete, insufficient, or corrupted data, or data manipulated by cyber attackers. Therefore, “the unreflective application of technology as it develops will lead to problematic outcomes as well as to citizens’ reluctance to accept or use it” [6]. Instead, AI technology must be developed in a way that puts people at the center and is thus worthy of public trust. This implies that AI applications should not only comply with the law but also respect ethical principles and ensure that their implementations avoid harm. Diversity in

terms of gender, racial or ethnic origin, religious belief, ability, and age must be guaranteed at every stage of AI development. AI applications should empower citizens and respect their fundamental rights. They should aim to enhance human capabilities, not replace them, and should also enable access for persons with disabilities.

“Trustworthy AI” is described as consisting of three components, which must be met throughout the entire life cycle of the system [8]: (1) it must be lawful, i.e., comply with all applicable laws and regulations; (2) it must be ethical, i.e., ensure alignment with ethical principles and values; and (3) it must be robust, both from a technical and a social perspective. Even if the ethical purpose is ensured, society must be confident that AI systems operate in a safe, reliable, and sustainable manner, and that safeguards are in place to prevent any potential harm. The three components work in harmony, overlap in their operation, are closely interconnected, and complement one another.

With regard to lawful AI, we emphasize the importance of a predictable legal environment. Legal certainty is essential to ensure trust, accountability, and facilitate innovation. It was emphasized that AI systems cannot operate in a lawless world and that the EU has a strong and balanced regulatory framework, with high standards in terms of safety, product liability, network/system security, and personal data protection. As regards the other two components, being “ethical” and “robust,” it is self-evident that “it is the duty of every natural or legal person to comply with the law, whether applicable today or adopted in the future in line with the development of AI. This is based on the assumption that all legal rights and obligations applicable to the processes and activities of the development, implementation, and use of AI systems remain binding and must be duly respected.”

AI can improve individual and collective well-being by generating prosperity, value creation, and wealth maximization. It can contribute to achieving a just society by helping to improve the health and well-being of citizens in ways that strengthen equality in the distribution of economic, social, and political opportunities. It is therefore essential to ensure that everyone can flourish in an AI-based world and to build a better future while remaining globally competitive.

We must ensure that these systems are fair in their impact on people’s lives, are aligned with values that must not be compromised, and act in accordance with them, and that appropriate accountability processes ensure this. We aim to contribute to this effort by introducing the notion of trustworthy AI, which we believe is the right way to build an AI future. A future in which democracy, the rule of law, and fundamental rights support AI systems, and in which these systems are continuously improved and protect democratic culture, creating an environment where innovation and responsible competition can flourish. In addition to developing a set of rules, ensuring trustworthy AI requires building and maintaining an ethical culture and mindset through public debate, education, and practical learning.

Albania’s efforts to align national legislation with the *acquis communautaire* of the European Union represent an essential process not only of a technical nature, but also of a constitutional one in terms of harmonizing the values and principles upon which European law is built. The European Union is founded on a constitutional commitment to protect fundamental and indivisible human rights, to ensure respect for the rule of law, and to promote democratic freedom and the common good. These rights and principles are embodied in the preamble of the Treaties and in Articles 2 and 3 of the Treaty on European Union, as well as in the Charter of Fundamental Rights of the European Union. In this context, any initiative related to the inclusion of artificial intelligence in public functions must respect these fundamental standards, ensuring that no automated process undermines human dignity,

institutional accountability, or the principle of the rule of law. The inclusion of AI in decision-making requires not only technical control, but above all legal guarantees and certainty so that human rights remain at the center of governance and are not replaced by algorithms.

The fundamental and indivisible human values that ensure respect for the rule of law, promote democratic freedom, and the common good are human dignity, freedom, democracy, and equality, which are common to the societies of all states in which pluralism, non-discrimination, tolerance, justice, solidarity, and equality prevail. All these fundamental rights are linked to respect for human dignity, reflecting a “human-centered approach” in which the human being has a unique and incomparable moral status in the civil, political, economic, and social spheres.

4. The human governance model, the responsibility of Artificial Intelligence, and respect for fundamental rights

Five families of fundamental rights are considered particularly suitable for covering AI systems: (i) respect for human dignity; (ii) individual freedom; (iii) respect for democracy, justice, and the rule of law; (iv) equality, non-discrimination, and solidarity, including the rights of persons at risk of exclusion; (v) citizens’ rights. Respect for human dignity is the primary governance instrument for AI-enabled products and services, the value upon which all fundamental rights are based.

Human dignity encompasses the idea that every human being has an “inherent value” that must not be diminished, compromised, or suppressed by others, nor by new technologies such as AI systems. Respect for human dignity implies that all people are treated with respect as moral subjects, not merely as objects to be filtered, classified, or manipulated.

People must be free to make decisions about their lives. This includes government intervention to ensure that individuals have equal access to the benefits and opportunities of AI. Individual freedom includes the protection of the right to conduct a business, freedom of the arts and sciences, freedom of expression, the right to private life and privacy, and freedom of assembly and association, etc. AI systems should serve to preserve and promote democratic processes and respect the plurality of values and life choices of individuals [9]. Citizens’ rights (including the right to vote and to good administration) may be negatively affected by AI systems and must be protected. In the context of AI, equality means that system operations must not generate unfair or biased outcomes. This includes respect for vulnerable persons and groups, such as the elderly, persons with disabilities, ethnic minorities, women, children, or others at risk of exclusion.

One of the key issues for any future AI regulation is the need to define its scope of application. In these circumstances, a clear and precise definition of AI must be established to ensure legal certainty. At the same time, the definition should be “sufficiently flexible to accommodate technical progress.” The definition of AI, as initially provided by the Commission Communication “Artificial Intelligence for Europe” and subsequently refined by the High-Level Expert Group on AI, is as follows: “Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions, with some degree of autonomy, to achieve specific goals. AI-based systems can be purely software, operating in the virtual world (e.g. voice assistants, image analysis software, search engines, facial and voice recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous vehicles, drones, or internet applications).” For this purpose, specific criteria are needed to differentiate AI applications, in particular to determine when an AI application can be considered “high-risk” (as opposed to “low-risk” applications, which may be subject to less stringent obligations). The designation of a high-risk AI application must be clear, easy to understand, and applicable to all stakeholders.

Our main proposal is that AI applications used in high-risk sectors (e.g., energy, transport, healthcare) for high-risk uses (e.g., uses that may cause significant material or non-material harm) should be regulated. Furthermore, in exceptional cases, the deployment of AI outside high-risk sectors may also be subject to regulation due to the risks of its use. An AI application should be considered high-risk when it meets these two cumulative criteria: i) if AI is used in a high-risk sector, i.e., “in a sector where, taking into account the characteristics of the usual activities, significant risks can be expected”. The listed sectors include healthcare, transport, energy, and parts of the public sector (e.g., asylum, migration, border control, the judiciary, social security, and employment services), which are considered “high-risk” [14]. This list should be reviewed and updated periodically to accommodate technological progress; and ii) if the intended use or the manner of deployment may increase significant risks for individuals or companies, in particular from the perspective of safety, consumer rights, and fundamental rights.

Concerns regarding safety and protection related to the use of AI systems must be addressed, and therefore, it must be ensured that these systems are trustworthy and operate according to high safety standards. AI systems must be robust, secure, and protected in order to guarantee the physical and mental integrity (emotional safety) of people. All AI systems, and especially high-risk AI applications, must be technically robust and accurate to be considered trustworthy. AI systems should avoid intentional or accidental misuse, be resilient, reliable, function adequately, and not pose unreasonable safety risks. It is essential to ensure that AI systems and the environments in which they operate are robust, reliable, secure, and protected throughout their operational life cycle, and that specific protective measures are implemented to prevent malicious use or accidental harm.

AI systems must be trustworthy, secured to withstand cyberattacks, and equipped with safety mechanisms, and must be regularly tested to identify and minimise risks from cyberattacks [15]. Processes should assess potential risks and ensure contingency plans in case of problems. The decisions of AI systems must be accurate and reflect their actual accuracy, while outputs must be reproducible and reliable.

The main requirements for a future regulatory framework on AI may include:

- i) AI systems must be robust and accurate throughout all phases of their “life cycle”;
- ii) Results must be reproducible;
- iii) AI systems must be able to withstand errors or inconsistencies throughout their life cycle;
- iv) AI systems must be resilient to apparent attacks and data or algorithm manipulation, with appropriate measures to minimise risks.
- v) (v) Human oversight

The principle of respect for human autonomy is closely linked to the right to dignity and freedom. These principles imply that people must not be deceived, coerced, or manipulated by AI systems. AI systems should be designed to enhance and support human cognitive, social, and cultural skills. Ensuring human oversight over AI system workflows is essential to guarantee that these systems do not undermine human autonomy or cause other negative effects [12]. People should have the right not to be subject to automated decisions that significantly affect them or have legal effects. System operation should follow human-centred principles and allow people to make decisions in their own best interests [10]. AI systems should enable human oversight without diminishing, limiting, or misinforming human autonomy. Adequate human participation must be ensured by providing users with tools to understand interaction with AI systems and the appropriate way to interact. Human oversight measures may include mechanisms for immediate system shutdown (“kill switches”) or procedures to stop operation

in emergency cases, as well as human review and verification of AI system outputs.

Facial recognition and other methods of non-voluntary identification using biometric data constitute major “critical issues” raised by AI. Important examples of scalable AI identification technology include facial recognition and other non-voluntary identification methods using biometric data (e.g., personality assessment through micro-expressions and automatic voice detection).

Identifying individuals is sometimes a desirable outcome, consistent with ethical principles (e.g., in fraud detection, money laundering, or terrorist financing). However, automatic identification raises strong legal and ethical concerns, as it may have unexpected impacts at multiple psychological and sociocultural levels. Proportional use of control techniques in AI is necessary to protect citizens’ autonomy [18]. Clearly defining whether, when, and how AI may be used for automatic identification of individuals, and differentiating between identifying an individual and tracking and monitoring an individual, as well as between targeted surveillance and mass surveillance, will be decisive for achieving trustworthy AI. This also applies to the use of “anonymous” personal data that can be re-personalised.

In line with this, we emphasise that the use of facial recognition for remote biometric identification is generally prohibited and may be used only in exceptional, justified, and proportionate cases, under safeguards and based on EU law or national law. Due to the risks, there may be “exceptional cases” where the use of AI applications for certain purposes may be considered high-risk, regardless of the sector in which these applications are used, and would thus trigger specific AI requirements. The use of biometric information (e.g., physical traits, psychological traits, behavioural characteristics) in connection with AI technologies is always considered high-risk and, therefore, must be subject to regulation. AI may be used for remote biometric identification only when the use is justified, proportionate, and subject to sufficient safeguards. The future AI framework “must be respected in practice and effectively enforced by competent national and European authorities as well as by affected parties”[13]. From a governance perspective, national authorities must ensure “maximum stakeholder participation”. To guarantee the effective implementation of Artificial Intelligence, states are obliged to establish “effective and proportionate” sanctions, including administrative fines, applicable to infringements of the proposed AI Act, and must ensure that these sanctions are applied properly and effectively, including effective judicial remedies and the guarantee of due process.

5. From the Rule of Law to the Rule of Artificial Intelligence Law

In a world dominated by technology, it is essential to strengthen democracy by restoring the law to its fundamental role as an expression of the will of the people and as a binding instrument for all. Ethical rules precede the law; they can guide its future content, but they cannot replace it because they lack democratic legitimacy and the coercive power of the state.

Thus, the question remains: will human society transform into an AI society? What will be the role of humans in such a world? In a society dominated by AI, humans will lose control over routine processes but will retain legal responsibility, creativity, and ethical values. The role of humans will be to establish rules, interpret meanings, and ensure the protection of rights and individual freedoms. Law is not just about mathematical logic; it also involves experience, interpretation, and human interaction.

Full automation of the legal system would mean the removal of the human, moral, and political elements of justice. The transition from the “Rule of Law” to the “Rule of Artificial Intelligence Law” means that the very principles of justice, legality, and responsibility must be translated into algorithms. Law will not disappear but will transform into a digital form, and the essential question will remain: will this law still be human?

The rule of law implies that authority is subject to the law and that the law is applied equally to all members of society. But in the age of globalization and global economic governance, who is

the “authority” subject to the law? The state, in the context of the rule of law, acts as the guardian of socially accepted fundamental norms. In a legal system influenced by artificial intelligence (AI), will the state continue to be the enforcer? Or will AI take on the roles of legislator, enforcer, and supervisor of its own operations at both national and international levels? The state, in the context of the rule of law, acts as the guardian of socially accepted fundamental norms [17]. In a legal system influenced by artificial intelligence (AI), will the state continue to be the enforcer? Or will AI take on the roles of legislator, enforcer, and supervisor of its own operations at both national and international levels? The state, in the context of the rule of law, acts as the guardian of socially accepted fundamental norms. In a legal system influenced by artificial intelligence (AI), will the state continue to be the enforcer? Or will AI take on the roles of legislator, enforcer, and supervisor of its own operations at both national and international levels?

Even from an economic perspective, a fundamental question arises: what is the real utility of AI in terms of productivity, cost, and sustainable benefits for businesses and the economy as a whole? This issue remains the subject of extensive debate, as despite rapid technological development, reasonable doubts. The state, in the material sense of the rule of law, serves as the guardian of socially accepted fundamental norms [11]. In a legal system guided by artificial intelligence (AI), will the state continue to be the enforcer? Or will AI take on the roles of legislator, enforcer, and supervisor of itself at both national and international levels? Moreover, the benefits of AI are not always immediate; they require time, organizational adaptation, and personnel training. This leads some companies to conclude that the financial risk of investment may outweigh the expected benefits.

On the other hand, strong arguments exist that AI has measurable potential to transform how economic value is produced, distributed, and consumed. Implementing AI systems can:

- Increase operational efficiency by automating repetitive processes and reducing human error;
- Reduce medium- and long-term costs, especially in production, logistics, and service sectors;
- Improve decision-making processes through big data analysis and more accurate market forecasts [2];
- Foster innovation by creating new products and services previously unimaginable;
- Redistribute workloads, allowing employees to focus on higher-value knowledge, creative, or strategic tasks.

In this sense, the mere existence and gradual integration of AI change the nature of work and the structure of the modern economy. It creates a new productivity dynamic, where the combination of humans and intelligent machines can lead to significant increases in efficiency and effectiveness [16]. However, real economic benefit depends on proper management of the technological transition, an appropriate regulatory framework, and the ability of enterprises to integrate AI strategically, not merely as a technological tool. Therefore, the economic utility of AI lies not only in its technical potential but in how it is applied, adapted, and harmonized with long-term objectives of economic development and institutional sustainability.

Nevertheless, in line with the reasoning developed in this study, regardless of the “benefits” AI offers, its potentially limiting consequences for humans cannot be ignored. Excessive automation risks weakening human roles and agency and may undermine equality and transparency in processes that require judgment, evaluation, and reasoning. Therefore, AI must remain an auxiliary tool, not a replacement for humans, so that technological development aligns with democratic constitutional principles and the protection of fundamental human rights.

6. Conclusions

In this context, it is reasonable to emphasize the essential role of public institutions and the judiciary in ensuring the effective implementation of the fundamental principles of human rights. Automated decision-making in the economic sphere must be accompanied by procedural mechanisms that guarantee human intervention, the right to be heard, and access to effective legal remedies. Without these safeguards, there is a risk that technology may create new forms of inequality and undermine citizens' trust in the legal order. In our assessment, we believe that trustworthy AI represents a normative and practical approach in which intelligent systems are developed and used in accordance with the principles of legality, ethics, and respect for fundamental rights, ensuring that technology is safe, predictable, and in service of humanity, and that states carefully define its legal regulation. Furthermore, the prior assessment of the social and legal impact of intelligent systems constitutes a fundamental element for sustainable development. This assessment should serve as a preventive instrument, identifying potential risks to fundamental rights and imposing clear limitations in cases where economic interests conflict with the protection of the individual. In our view, only through such a preventive and institutional approach can it be ensured that technological innovation does not exceed the boundaries of legality and justice. In this way, the "intelligent" economy is consolidated not only as a technological reality but also as a normative order that respects the fundamental principles of the rule of law, ensuring that digital progress is accompanied by responsibility, equality, and effective protection of human rights. In our assessment, this approach highlights the importance of coordinating technology and law, maintaining humanity at the center of economic and social development.

It is essential to emphasize that deepening the understanding of AI law and legal reasoning in this field requires a strong knowledge base of artificial intelligence itself. This includes understanding its nature, scope, and types, its interaction with law, application possibilities, and, above all, its limitations and risks. Legal awareness regarding AI must be built on an understanding of what AI systems can and cannot do. This is fundamental to ensuring a fair, balanced, and protective approach to fundamental human rights in a reality where AI is becoming an integral part of social and institutional life. Continuous human oversight is necessary to prevent discrimination and harmful effects that may arise from the careless use of intelligent systems. To ensure compliance with the law, it is essential to maintain transparency, predictability, explainability, traceability, and verification of algorithms. A key principle is the concept of responsibility, ensuring that citizens have access to effective legal remedies for protection. Mass surveillance and the discriminatory use of technology must be strictly prohibited. Additionally, it is crucial to guarantee full human oversight and transparency in processes, and to incorporate social and environmental considerations into the evaluation of high-risk systems. By adopting such an integrated and equitable approach, we can ensure that AI serves humanity positively rather than causing harm.

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BRIDGING NATURE AND ENTERPRISE: INTEGRATING ECOSYSTEM SAFEKEEPING INTO SUSTAINABLE BUSINESS MODELS IN ALBANIA

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Abstract

Albania's rural development is shaped by the fragile interdependence between ecological health and economic activity, particularly in biodiversity-rich areas where agrotourism and agroecological production are expanding. While sustainable business models such as Triple-Layered Business Model Canvas have advanced the integration of environmental and social dimensions into value creation, they largely frame ecology through impact reduction rather than the proactive safeguarding required in nature-dependent rural systems (Joyce & Paquin, 2016). Similarly, existing nature-based solutions business frameworks developed the urban contexts but provide limited guidance for fragmented agricultural landscapes and culturally embedded production systems. To address this gap, this paper introduces the Ecosystem-Safekeeping-Inclusive Business Model Canvas (ESI-BMC), a new conceptual tool that embeds long-term ecological stewardship as a core entrepreneurial function. Engaging a qualitative exploratory research, we developed a comparative synthesis of sustainable business models, nature-focused canvases and community-based agroecosystem management literature. The ESI-BMC positions ecosystem integrity like soil fertility, biodiversity, water systems and cultural landscape preservation as strategic value driver shaping competitiveness and resilience in Albanian rural enterprises. The model contributes to emerging nature-positive business scholarship by offering a theoretically grounded framework tailored to rural socio-ecological contexts and by supporting transitions aligned with the EU Biodiversity Strategy 2030 and the European Green deal. Further empirical research is required to operationalize ecosystem safekeeping metrics and assess the governance capacities needed to enable its adoption at scale.

Keywords: *sustainable business models, ecosystem safekeeping, nature-positive entrepreneurship, agroecosystem management.*

1. Introduction

Sustainable development challenges are becoming increasingly pronounced in rural areas where socio-economic vulnerabilities intersect with ecological fragility. Albania exemplifies this condition. It is a biodiversity-rich country characterized by Mediterranean and Alpine ecosystems that provide essential natural resources and cultural landscapes, yet remain highly vulnerable to land degradation, soil erosion, deforestation and climate-induced hazards (FAO, 2024; SASB, 2024).

Rural communities depend intensively on these ecosystems for agriculture and emerging sectors such as agrotourism, resulting in a tight coupling between ecological health and economic viability. Against this backdrop, strengthening business models that embed ecological responsibility becomes imperative. In recent years, sustainable business models (SBMs) have gained traction as tools for integrating environmental stewardship and social wellbeing into entrepreneurial value creation (Bocken et al., 2016). Among them, the Triple-Layered Business Model Canvas (TLBMC) (Joyce & Paquin, 2016) has been widely applied (Dionizi & Dhora, 2025). However, while the TLBMC acknowledges

environmental and social externalities, ecological value is largely conceptualized through lifecycle efficiency and impact reduction. This perspective falls short in contexts where enterprises rely directly on ecosystem integrity and require proactive ecological protection as a core business function. In parallel, nature-based solutions (NBS) are increasingly recognized as regenerative approaches capable of delivering multifunctional benefits while enhancing climate resilience and biodiversity (European Commission, 2020). Efforts to align NBS initiatives with business logic have led to the development of new frameworks such as the NBS-Business Model Canvas (McQuaid, 2019), the Natural Assurance Schemes Canvas (Mayor et al., 2021), and the Nature-based Sustainability BMC (Stork et al., 2023). Despite their advancements, these tools predominantly address urban and peri-urban contexts where governance systems and stakeholder networks differ markedly from rural Albania. Moreover, they do not explicitly frame ecosystem safeguarding as an internal and continuous component of business logic. In contrast, rural Albania livelihoods are shaped by long-standing Community-Based Agroecosystem Management (CBAM) practices rooted in traditional knowledge, cultural identity, and shared ecological responsibility (Dionizi et al., 2025; Pretty & Bharucha, 2018). These systems reflect adaptive governance of land, water, and biodiversity but facing structural constraints like fragmented land areas, institutional limitations, and weak cooperation mechanisms (FAO, 2024). Unlocking their sustainability potential requires tools that intentionally integrate community stewardship and ecological regeneration into business design. Collectively, the literature reveals a critical gap. Existing SBMs and NBS frameworks do not adequately conceptualize ecosystem safekeeping, the proactive preservation of ecological processes, biodiversity, and landscape integrity as a strategic and continuous business function. This gap is particularly significant in Albania where the land is so much fragmented but rural business competitiveness and long-term viability depend on ecological resilience, cultural landscape quality and community participation. The objective of this paper is to address this theoretical and practical gap by developing the Ecosystem Safekeeping-Inclusive Business Model Canvas (ESI-BMC), a new integrative framework tailored to Albania's socio-ecological context. Synthesizing insights from SBMs, nature oriented business models, and CBAM scholarship, the ESI-BMC reframes ecological safeguarding from peripheral externality into a central pillar of value creation, delivery and capture. The model aims to support rural enterprises in generating economic resilience, strengthening ecosystem stewardship, and reinforcing cultural identity, contributing to broader European sustainability goals such as the European Green Deal and the Biodiversity Strategy 2030. In doing so, the paper provides a novel conceptual contribution to sustainable business literature and a region-specific tool for practitioners engaged in regenerative and place-based entrepreneurship.

2. Theoretical framework

2.1 Review on sustainable business models

Community-Based Agroecosystem Management (CBAM) has emerged as a critical framework for understanding how rural societies interact with, depend upon, and actively sustain the ecological systems that support their livelihoods. Rooted in participatory resource governance and agroecological traditions, CBAM emphasizes the centrality of local actors in shaping decisions regarding land, water, biodiversity, and agricultural production. As Dionizi et al. (2025) demonstrate in the Albanian context, community-based practices are not merely cultural remnants but functional systems of environmental care that maintain soil fertility, conserve agrobiodiversity, and stabilize ecological

processes essential for long-term food security. The TLBMC introduced by Joyce & Paquin (2016), represents a significant advancement in conceptualizing sustainable value creation. Expanding upon Osterwalder et al. (2010) original Business Model Canvas, the TLBMC integrates three interdependent layers. Nature-Based Solutions (NBS) provide an increasingly influential framework for addressing environmental and societal challenges through actions that are inspired by, supported by, or directly utilize natural processes.

Table 1 Business Models Review

Business model framework	Proposed by	Main features
<i>Triple-layered Business Model Canvas (TLBMC)</i> - Emphasizes lifecycle thinking, resource efficiency, stakeholder inclusion - Widely used for sustainable enterprise innovation - Does not conceptualize business responsibility for ecosystem safeguarding - Limited attention to landscape stewardship and cultural heritage relevant for rural contexts	(Joyce & Paquin, 2016)	Extends original BMC with the 3 value layers: economic, environmental, social
<i>NBS - Business Model Canvas (NBS-BMC)</i> - Designed for NBS implementation and green/blue infrastructure - Supports community involvement (primarily urban/peri urban focus) - Ecological value treated as external benefits, not operational core - Weak fit with smallholder and rural livelihood systems	(McQuaid, 2019)	Integrates ecosystem services, co-benefits, multi-stakeholder value
<i>Natural Assurance Scheme (NAS) Canvas</i> - Includes hybrid financing & risk sharing mechanisms (narrow focus on risk reduction NBS (flood/erosion)) - Requires strong institutional actors - Does not integrate cultural-landscape value	(Mayor et al., 2023)	Positions ecosystems as natural insurers mitigating disaster risks
<i>Nature-Based Sustainability BMC (NB-SBMC)</i> - User-tested in European living labs - Integrates collaborative governance & community (still urban pilot-driven) - Does not incorporate agroecosystem stewardship - Missing mechanisms for landscape integrity and biodiversity as value logic	(Stork et al., 2023)	Holistic triple impact: economic-social-environmental
<i>4>Returns Landscape BMC</i> - Long-term territorial planning. High-level strategy, not enterprise-level operational tool - Assumes large-scale collaboration; mismatch with small, fragmented farms - Does not explain how businesses internalize ecosystem safekeeping	(Van Der Deijl, 2024)	Landscape regeneration with returns: nature, social, financial, inspiration

The European Commission defines NBS as interventions that deliver environmental, social, and economic benefits while enhancing ecosystem resilience and biodiversity (European Commission, 2020). Their growing relevance reflects the global push toward regenerative approaches capable of mitigating climate risks, improving human wellbeing, and restoring degraded landscapes. Alongside the conceptual expansion of NBS, the need for business models tailored to nature-oriented projects has gained urgency. Traditional business model tools often fail to capture the multifunctional and cross-sectoral nature of NBS, where benefits are dispersed across diverse stakeholders and unfold over long temporal scales (McQuaid, 2019). Nature-Based Solutions Business Model Canvas (NBS-BMC), addresses some of these difficulties by modifying the classic BMC to account for ecosystem services, co-benefits, and governance structures relevant to green and blue

infrastructure. Similarly, the Natural Assurance Scheme (NAS) Canvas, proposed by Mayor et al. (2023), focuses on NBS for disaster risk reduction. More recently, Stork et al. (2023) introduced the NB-SBMC, which builds upon an extensive literature review to develop a holistic framework capturing the multi-dimensional impacts of NBS across economic, social, and ecological spheres. The details of the studied frameworks and their specificities are on Table 1.

2.2 Ecosystem Safekeeping: Conceptualization and Relevance

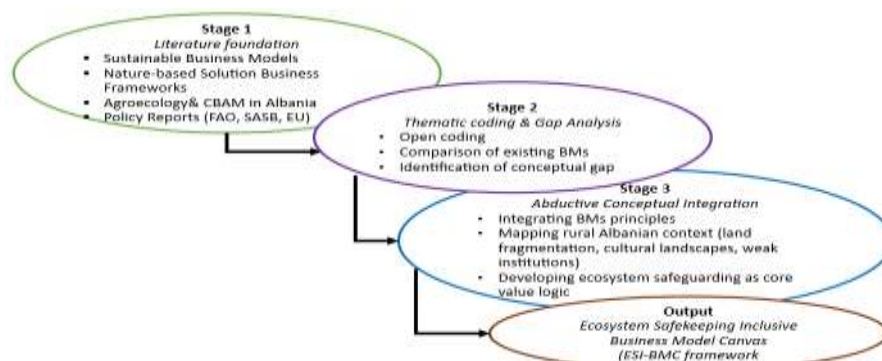
The concept of ecosystem safekeeping provides a crucial lens through which to address the limitations of existing models. Ecosystem safekeeping refers to the active, long-term protection and maintenance of ecological functions, processes, and structures to ensure the wellbeing of current and future generations. It extends beyond environmental protection in a narrow sense by emphasizing stewardship, resilience-building, ecological regeneration, and community participation. Ecosystem safekeeping is not a passive stance.

It demands deliberate actions that prevent degradation, support natural regeneration, and sustain the integrity of landscapes. Key elements of ecosystem safekeeping include the prevention of ecological degradation, such as soil erosion, biodiversity loss, and water contamination, all of which are prevalent challenges in Albania's mountainous and rural regions. It also involves the ongoing maintenance of natural processes. Safekeeping further implies safeguarding the integrity of landscapes, particularly cultural landscapes that represent the co-evolution of human activity and ecological systems. These landscapes hold ecological, cultural, and economic value, and their protection is central to rural identity and to the sustainability of agritourism-based enterprises. Community participation is fundamental to ecosystem safekeeping. Echoing Ostrom (2009) work on governing the commons, Albanian rural communities possess collective knowledge and informal rules that can enhance the stewardship of shared ecological resources. In many cases, communities act as primary custodians of biodiversity, traditional seed varieties, and ecological processes that underpin rural livelihoods (SASB, 2024). Embedding this knowledge in business model structures is therefore essential for developing locally grounded strategies that align entrepreneurship with ecological responsibility. Ecosystem safekeeping serves as a powerful value driver within sustainable business models.

3. Methodology

This study adopts a qualitative, exploratory research design (detailed in Figure 1) grounded in desk research, a method particularly suitable for conceptual model building and theoretical integration across heterogeneous knowledge domains (the process on figure 1).

Figure 1 Methodological process for developing the ESI-BMC



The analytical process followed a thematic synthesis approach (Thomas & Harden, 2008), which unfolded in three progressive stages. First, an open coding of the literature was conducted to identify recurrent themes related to ecological value creation, rural landscape degradation, community participation, and business model innovation. Codes emerging from CBAM, NBS frameworks, and landscape-level approaches were compared to identifying overlapping principles and divergences. Second, a comparative framework analysis was undertaken to systematically contrast the structural elements of TLBMC, NBS-BMC, NAS-Canvas, NB-SBMC, and the 4>Returns Canvas. Particular attention was given to the way each model conceptualizes environmental value, risk, long-term stewardship, and community involvement. The comparison revealed a shared commitment to ecological regeneration but also a structural absence. None of the existing frameworks explicitly conceptualize ecosystem safekeeping as a proactive, long-term responsibility embedded within business logic. This analytical gap provided the rationale for the development of a new integrative model. Third, using abductive reasoning, the study carried out a conceptual integration process aimed at identifying which elements from CBAM, NBS business models, and sustainability-oriented canvases could be recombined to create a model suitable for Albania's socio-ecological context. Ecosystem safeguarding principles, such as integrity preservation, ecological process maintenance, community stewardship, and prevention of landscape degradation, were treated as core value drivers and then mapped onto SBM architecture. This iterative mapping exercise generated preliminary building blocks, which were refined through cross-framework synthesis and alignment with empirical insights from Albanian agrotourism and agroecology cases. The methodological outcome of this multi-stage desk-research process is the construction of the ESI-BMC. The model represents both a synthesis and an extension of existing models, embedding ecosystem safeguarding as central value logic rather than a peripheral environmental consideration. It is designed to guide rural enterprises in Albania toward business models that are economically viable, ecologically restorative, culturally grounded, and socially anchored in community participation.

4. Developing the Ecosystem Safekeeping-Inclusive Business Model Canvas (ESI-BMC)

The development of the ESI-BMC emerges from the recognition that existing sustainability-oriented business models, although important, do not sufficiently address the ecological vulnerabilities and socio-economic specificities of Albania's rural landscapes.

Albania is characterized by extraordinary biodiversity richness, a mosaic of Mediterranean and Alpine biogeographical regions, and a high concentration of endemic species (European Environment Agency, 2020; SASB, 2024).

Yet, these ecosystems face acute pressures such as soil erosion, land abandonment, overgrazing, deforestation, watershed degradation, and climate-induced hazards. The rural economy, dominated by smallholder agriculture and fragmented land parcels, remains structurally fragile, with limited institutional capacity for coordinated land management and insufficient incentives for long-term ecological stewardship (FAO, 2024). As a result, the sustainability of rural livelihoods is directly tied to the health of ecosystems, making it imperative for business models to internalize ecosystem safeguarding as a core value logic.

Figure 2 Ecosystem Safekeeping-Inclusive Business Models Canvas



However, the ESI-BMC moves beyond the other frameworks by embedding ecosystem safekeeping as an essential layer of business logic. Ecosystem safekeeping encompasses proactive ecological responsibilities such as maintaining soil fertility, safeguarding biodiversity, preventing erosion, conserving water systems, and preserving cultural landscapes. These are not auxiliary environmental actions; they are foundational inputs into the business model itself. In Albania, where rural enterprises and agrotourism depend on authentic landscapes, unpolluted water, rich soils, and cultural-environmental identity, ecosystem safekeeping becomes both a precondition and a generator of long-term value. The ESI-BMC thus responds to Albania's dual challenge: protecting ecologically fragile territories while enabling rural enterprises to innovate and compete in emerging sustainability-driven markets. It provides a conceptual tool that aligns business model innovation with ecological responsibility, cultural integrity, and community agency.

By positioning ecosystem safekeeping not as an externality but as a central value driver, the model addresses a gap in sustainability business literature and offers a region-specific contribution to the theorization of regenerative and place-based entrepreneurship.

5. Discussion

This study proposed the ESI-BMC as a conceptual response to the growing need for sustainability-rooted entrepreneurship in rural socio-ecological contexts such as Albania. The findings are consistent with the empirical observations emerging from the Albanian rural context, where agrotourism competitiveness and agricultural production directly depend on biodiversity, soil vitality, and cultural landscapes (Dionizi & Dhora, 2025). Parallel advancements in Nature-Based Solution (NBS) business model research show considerable progress in recognizing multiple value streams, multi-actor collaboration, and ecosystem service benefits (Mayor et al., 2023; McQuaid, 2019; Stork et al., 2023; Van

Der Deijl, 2024). Yet these frameworks have predominantly been conceived for urban and peri-urban infrastructures embedded in stronger institutional and financial systems than those found in rural Albania. Stakeholder governance and ecological responsibilities are often treated as diffuse public or community benefits rather than as internally governed business imperatives. The introduction of the ESI-BMC therefore advances theory by repositioning ecological protection, particularly safeguarding soil, water, biodiversity, and cultural heritage at the center of entrepreneurial strategy and economic logic. The proposed model also strengthens the theoretical connection between business strategy and CBAM, which has long characterized Albania's mountainous and agrarian areas. Traditional stewardship practices represent a latent form of collaborative governance that, if integrated into business design, can reinforce not only nature protection but also local socio-cultural resilience (Pretty & Bharucha, 2018). The ESI-BMC operationalizes this linkage by treating communities not only as beneficiaries or co-creators but also as custodians of the ecosystems upon which business viability depends. In this way, the model aligns with European sustainability priorities, including the EU Biodiversity Strategy 2030 and the European Green Deal, which encourage territorial development based on nature-positive approaches. Nonetheless, the model remains at a conceptual stage. As indicated in the methodology, its development relied on extensive literature review, thematic synthesis, and contextual interpretation rather than empirical testing. Further application in real rural enterprises is required to validate the usefulness of ecosystem safekeeping as a measurable business mechanism and to understand the enabling or constraining role of local governance structures. Additional research could explore financing pathways for ecological obligations, collaborative platforms among fragmented landowners, and comparative studies across Western Balkan territories undergoing similar sustainability transitions. Such work would strengthen the model's generalizability while preserving the place-based specificity central to its design.

6. Conclusion

Rural development in Albania is at a critical juncture where economic aspirations intersect with ecological vulnerability. The country's biodiversity, agro-ecological resources, and cultural landscapes are indispensable not only as environmental commons but also as economic foundations for emerging rural industries such as agritourism and high-quality agrifood production. Yet these ecosystems face intensifying degradation pressures, while institutional support for collective stewardship remains limited (FAO, 2024). In this context, there is an urgent need for business models that do more than minimize harm, instead acting as active agents of ecological protection and community empowerment. The ESI-BMC developed in this paper offers a theoretical foundation for such a transition. By positioning ecosystem safekeeping as a central strategic function, the model highlights how enterprises can create and capture value derived from ecosystem care, rather than exploitation. In doing so, it bridges a critical gap between SBMs, NBS-related frameworks, and the socio-ecological realities of rural Albania. Its integration of community-based governance, cultural landscape preservation, and ecological regeneration reflects a shift toward more resilient and place-specific forms of entrepreneurship. The study thus contributes to sustainability scholarship by proposing a conceptual tool capable of guiding rural enterprises through regenerative transitions aligned with European sustainability objectives. Future empirical deployment and refinement of the ESI-BMC will help validate its applicability across diverse sectors and territories. Strengthening ecosystem-based business logic will be essential for ensuring that rural communities not only remain viable but thrive as active stewards of the ecological systems that sustain them.

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FROM 'BRAIN DRAIN' TO 'BRAIN GAIN' THROUGH AI-ENABLED REMOTE WORK: OPPORTUNITIES TO MITIGATE HUMAN CAPITAL EMIGRATION IN ALBANIA.

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Abstract

The emigration of its highly skilled workforce represents a critical structural challenge for Albania and the broader Western Balkans, profoundly impacting economic growth, labor markets, and innovation potential in post-transition economies. This study explores the possibility of transforming this "brain drain" phenomenon into a "brain gain" by strategically leveraging AI's transformative potential in remote work models. Moving beyond traditional remote work paradigms, the research investigates how advanced AI applications—such as intelligent project management, real-time multilingual collaboration platforms, AI-powered skill matching, and predictive analytics for labor market trends—can fundamentally reconfigure global value chains and enable decentralized talent pools, connecting Albanian talent with global labor markets without the need for physical migration.

The research methodology relies on a critical review of the scientific literature and international policy frameworks, combined with a comparative analysis of case studies from countries successfully utilizing AI to foster remote employment, such as Estonia, Portugal, and Georgia. The goal is to construct a theoretical framework for transitioning from "brain drain" to "brain gain," identifying key institutional, technological, and educational factors adaptable to the Albanian context.

Expected outcomes include conceptual models for labor market transformation, action-oriented policy recommendations in education, taxation, and digital innovation, and measures to mitigate risks such as skill polarization, the "gigification" of work, and the exacerbation of digital divides. This research not only advances the literature on digital labor transformation in emerging economies but also provides action-oriented insights and a foundational framework for policymakers and stakeholders seeking to leverage AI for inclusive and sustainable development in the Western Balkans and similar post-transition contexts.

Keywords: *Artificial intelligence, digital transformation, remote employment, human capital emigration, sustainable development, Western Balkans*

1. Introduction

The economic history of the Western Balkans over the last three decades has been defined by a singular, persistent structural paradox: while the region has aggressively pursued market reforms and EU integration, its most valuable economic asset its human capital has steadily exited the market. For Albania, and historically significant regional hubs like Shkodra, the phenomenon of "Brain Drain" is not merely a labor market statistic; it is an existential challenge to sustainable development.

As the global economy transitions into what the SHKODRA IEC2025 conference theme identifies as the "Smart Economy," post-transition economies face a critical juncture. We

can either continue to serve as reservoirs of migrant labor for Western Europe, or we can leverage the disruptive power of Artificial Intelligence (AI) to fundamentally decouple the *location* of the worker from the *value* of their work.

This paper posits that the "Smart Economy" offers Albania a historic, albeit time-sensitive, opportunity to reverse the logic of emigration. By strategically adopting AI-enabled remote work models, Albania can transition from a "Remittance Economy" dependent on the financial transfers of emigrants to a "Digital Service Economy," where talent remains resident while integrating into global value chains.

The urgency of this inquiry is underscored by the current demographic trajectory. The emigration of the highly skilled workforce engineers, medical professionals, and IT specialists has left a legacy of "institutional fragility" and uneven economic growth (Gëdeshi & King, 2020). Traditional industrial policies, which rely on physical infrastructure and foreign direct investment (FDI) in manufacturing, are often too slow to counteract the rapid pace of demographic decline. However, the Fourth Industrial Revolution, driven by AI and hyper-connectivity, provides a mechanism for "leapfrogging."

We are witnessing a shift from traditional outsourcing to what Baldwin (2019) terms "Telemigration" virtual migration where workers sit in one nation but work in another. However, this paper argues that the *current* phase of the Smart Economy differs significantly from the freelancing boom of the 2010s. The difference is Artificial Intelligence. Previously, linguistic barriers, trust deficits, and skill mismatches prevented Albanian talent from fully accessing the global digital labor market. Today, AI-driven technologies ranging from real-time natural language processing (NLP) to algorithmic project management and automated skill verification are dismantling these barriers. AI effectively "flattens" the world for the Albanian workforce, allowing them to compete based on merit rather than geography.

This research addresses the conference's call to examine how emerging technologies are reshaping labor markets and social inclusion in South-East Europe. It explores the following core research question: *How can the Western Balkans utilize AI-enabled remote work infrastructure to transform "Brain Drain" into "Brain Gain"?*

The paper is structured as follows: Section 2 analyzes the structural challenge of human capital flight in the specific context of the Western Balkans. Section 3 establishes the theoretical framework of "Virtual Migration" augmented by AI. Section 4 details the specific AI mechanisms—such as intelligent matching and algorithmic management—that make this transition possible. Section 5 offers a comparative analysis of successful digital states like Estonia and Portugal. Finally, Section 6 and 7 propose a strategic framework for policymakers, universities, and the private sector in Albania to operationalize these insights, ensuring that the Smart Economy results in inclusive growth rather than digital segmentation.

2. The Structural Challenge: Human Capital Flight in the Western Balkans

The transition to a Smart Economy in Albania is not merely an aspiration for modernization; it is a demographic necessity. While the "Brain Drain" is a global phenomenon affecting many developing nations, its intensity in the Western Balkans constitutes a distinct structural crisis. For small, open economies like Albania, the emigration of the highly skilled workforce acts as a persistent brake on economic convergence with the European Union, creating a cycle of "institutional fragility" that traditional development models have failed to break.

2.1. The Magnitude of the Exodus

The scale of emigration from Albania over the past three decades has been profound. According to recent data from the Albanian Institute of Statistics (INSTAT) and international observers, a significant percentage of the workforce resides outside the national territory. However, the *composition* of this flow has shifted dramatically in the last decade. Unlike the mass migration of the 1990s, which was driven by immediate economic survival, the current wave is characterized by the exit of the tertiary-educated workforce. Gëdeshi and King (2020) note that the intention to migrate is highest among medical professionals, engineers, and IT specialists precisely the human capital required to build a domestic Smart Economy.

This phenomenon represents a severe "fiscal transfer" from Albania to Western Europe. The Albanian state and Albanian families invest scarce resources in the education and training of young professionals, only for the returns on that investment (in the form of tax revenue, innovation, and productivity) to be realized in economies like Germany, Italy, or the United States. This subsidy of the rich by the poor is unsustainable.

2.2. The "Hollow City" Effect and Institutional Fragility

The impact of this flight is unevenly distributed. While the capital, Tirana, manages to retain a degree of demographic vitality through internal migration, secondary cities and regional hubs such as Shkodra face a "hollow city" effect. When the most ambitious and digitally literate segments of the youth population emigrate, local institutions suffer a degradation of capacity. The University of Shkodra "Luigj Gurakuqi" and similar regional institutions face the challenge of declining enrollment and a shrinking pool of academic talent. This erosion of local human capital makes it difficult to attract traditional Foreign Direct Investment (FDI).

International firms are hesitant to establish physical offices in regions where the talent pool is perceived as depleted, creating a vicious cycle: talent leaves because there are no jobs, and jobs do not arrive because the talent has left.

2.3. The Limits of the "Remittance Economy" Historically, the economic blow of emigration has been softened by remittances.

Flows of money from the diaspora have served as a critical safety net for Albanian households, often accounting for a substantial portion of GDP. However, from the perspective of a Smart Economy, a reliance on remittances is a development trap. Literature suggests that while remittances support household consumption and construction, they rarely translate into productive investment or technological innovation (Petreski et al., 2020). Furthermore, a "remittance economy" can trigger a variant of "Dutch Disease," where the inflow of foreign currency raises the reservation wage, effectively discouraging labor market participation among non-migrants and rendering the domestic export sector less competitive.

2.4. The Imperative for a New Model

The structural challenge, therefore, is clear. Albania cannot continue to export its primary resource human intelligence and expect to achieve sustainable growth. The traditional industrial policy of waiting for physical factories to relocate to the Balkans is too slow to arrest this demographic decline. A paradigm shift is required. If the "push factors" (institutional weakness, lower wages) cannot be resolved overnight, we must alter the "pull factors." We must create a mechanism where the economic opportunity of the Global North can be accessed without the physical necessity of relocation. This is where the intersection of Artificial Intelligence and remote work offers a novel solution: shifting from the export of *people* to the export of *digital services*.

3. Theoretical Framework: The “Virtual Migration” Paradigm

To understand how the "Smart Economy" can mitigate human capital flight, we must look beyond traditional labor market theories and examine the underlying *paradigm* governing global work. In the philosophy of science, Thomas Kuhn (1962) defined a "paradigm" not merely as a theory, but as a fundamental worldview a set of practices and assumptions that define a scientific discipline during a specific period. A paradigm shift occurs when anomalies accumulate that the old framework can no longer explain, necessitating a revolutionary change in perspective.

3.1. The Collapse of the Proximity Paradigm

For two centuries, the dominant economic paradigm was the "Proximity Paradigm." It assumed that high-value production required physical agglomeration; for a worker to access high wages and capital, they had to be physically present where that capital was located (e.g., relocating from Shkodra to Munich). Under this paradigm, "Brain Drain" is an inevitable consequence of economic gravity; talent must physically migrate to the center to be productive.

However, we are currently witnessing the collapse of this worldview and the emergence of a "Connectivity Paradigm." In this new framework, the "place of work" and the "residence of the worker" are treated as distinct, non-dependent variables. This is not merely an operational change (like working from home one day a week); it is an ontological shift in how value creation is defined. The "Smart Economy" operates on the premise that talent is equally distributed globally, while opportunity is not. The paradigm shift involves moving the opportunity to the talent, rather than the talent to the opportunity.

3.2. "Virtual Migration" vs. Traditional Outsourcing

Within this new paradigm, the central mechanism is "Virtual Migration" or "Telemigration," a concept articulated by Richard Baldwin (2019). It is crucial to distinguish this from the "Business Process Outsourcing" (BPO) of the early 2000s.

- *The Old Model (BPO)*: Corporations moved standardized, low-complexity tasks (call centers, data entry) to low-cost jurisdictions. The worker was a replaceable cog in a distant machine.
- *The New Model (Telemigration)*: High-skill individuals integrate into remote teams to perform complex, non-routine cognitive tasks (software architecture, financial analysis, creative design).

Under the Virtual Migration model, an Albanian professional does not "support" a Western team; they *are* the team. Theoretical frameworks on "Digital Affordances" suggest that when digital infrastructure is sufficiently robust, it allows for "spatial decoupling," where the value creation is entirely independent of the worker's geographic coordinates (Autio et al., 2021).

3.3. The AI Differentiator: The Catalyst of the Shift

Why is this paradigm shift occurring *now*? Remote work has been technically possible for twenty years. The answer lies in the specific role of Artificial Intelligence as a friction-reducing catalyst. Prior to the AI era, the "Connectivity Paradigm" failed to take hold in the Western Balkans due to two significant barriers:

1. **The Linguistic Friction:** High-value roles require nuanced, sophisticated communication. Previously, a brilliant engineer in Shkodra with only intermediate English skills was effectively locked out of the US market.

2. **The Trust Friction:** Western employers faced high information asymmetry. They could not easily verify the credentials or reliability of a worker in a non-EU jurisdiction with different legal frameworks.
 AI fundamentally alters these variables, stabilizing the new paradigm. As Agrawal, Gans, and Goldfarb (2018) argue, AI is a "prediction technology" that lowers the cost of verification and coordination.
Bridging the Language Gap: Advances in Natural Language Processing (NLP) and Large Language Models (LLMs) allow for real-time, context-aware translation. This effectively removes the "linguistic penalty" for non-native speakers, allowing Albanian talent to compete on technical merit rather than linguistic fluency.
Algorithmic Trust: AI-enabled platforms utilize "algorithmic management" to track output and verify skills in real-time (Duggan et al., 2020). This shifts the employer's reliance from "institutional trust" (requiring the worker to be in a known legal jurisdiction) to "technological trust" (based on verifiable data output).
3. **From Brain Drain to Brain Circulation**
 Finally, this paradigm shift reframes migration from a zero-sum game to a positive-sum game. In the physical migration paradigm, when a worker leaves Albania, their consumption power and tax revenue exit with them. In the Virtual Migration paradigm, the worker remains a resident consumer and tax contributor in the local economy. This facilitates "Brain Circulation." By working remotely for advanced foreign firms, Albanian workers are exposed to global best practices and management styles. This creates a "knowledge spillover" effect (Fabian et al., 2022), where tacit knowledge is imported back into the local ecosystem—creating a "Brain Gain" without the prerequisite of physical return.

4. Mechanisms of Action: How AI Enables “Brain Gain”

If the "Virtual Migration" paradigm provides the theoretical roadmap for a Smart Economy, Artificial Intelligence provides the engine. The transition from "Brain Drain" to "Brain Gain" relies on specific technological mechanisms that dismantle the barriers previously isolating the Western Balkan labor market. This section analyzes three core AI-driven mechanisms: Intelligent Matching, Algorithmic Trust, and Generative Augmentation that are currently reconfiguring global value chains to the advantage of peripheral economies.

4.1. Intelligent Talent Matching and the Reduction of Search Costs

The primary inefficiency in the global labor market is information asymmetry. A Chief Technology Officer in San Francisco may face a shortage of DevOps engineers, while a qualified engineer sits unemployed or underemployed in Shkodra. Historically, the "search costs" to find, vet, and hire that Albanian engineer were prohibitively high, leading the firm to hire locally at a premium or rely on established hubs like India.

AI-driven Talent Platforms (such as Toptal, Upwork Enterprise, or Turing) utilize deep learning algorithms to eliminate this friction. Unlike traditional job boards that rely on keyword matching, these platforms employ "Skill Ontologies"—complex data structures that understand the relationship between skills (e.g., understanding that a developer who knows *React* likely also understands *JavaScript* and *State Management*).

Research by Tambe et al. (2019) suggests that AI matching systems can predict candidate performance more working accurately than human recruiters by analyzing code repositories (e.g., GitHub) and past project data points. For Albanian talent, this is revolutionary: it renders their location invisible and their actual capability visible. The

algorithm acts as an unbiased market maker, connecting supply and demand based purely on meritocratic data, effectively bypassing the geographic biases that often disadvantage Western Balkan professionals.

4.2. Bridging the Trust Gap: Algorithmic Verification and Smart Contracts

A significant barrier to "Virtual Migration" for Albania has been the "institutional trust gap." International employers often hesitate to engage contractors in jurisdictions where they are unfamiliar with the legal system or fear intellectual property (IP) theft. The Smart Economy mitigates this through "Technological Trust" mechanisms:

Automated Productivity Verification: AI-driven project management tools (such as Jira or Asana Intelligence) provide granular visibility into work progress, analyzing output rather than hours logged. This creates a transparent "digital audit trail" that builds trust between the remote worker and the employer.

Blockchain and Smart Contracts: The integration of blockchain technology in payroll systems ensures that payment terms are executed automatically upon the completion of agreed deliverables. This protects the Albanian worker from non-payment (a common risk in freelancing) while assuring the employer of asset delivery. This "trustless" architecture removes the need for intermediaries, allowing direct, high-value economic relationships to form across borders (Tapscott & Tapscott, 2016).

4.3. Generative AI as the "Great Equalizer"

Perhaps the most profound mechanism for "Brain Gain" is the advent of Generative AI (e.g., Large Language Models like GPT-4). Brynjolfsson et al. (2023) have demonstrated that Generative AI acts as a skill leveler, disproportionately boosting the productivity of less experienced or peripheral workers. For a young professional in Shkodra, Generative AI acts as a "co-pilot," assisting with coding, drafting complex business English communications, or debugging technical issues. This effectively allows an Albanian junior developer to operate with the efficiency of a mid-level developer in Western Europe.

Leapfrogging Development: This capability allows for "skill leapfrogging." Instead of spending years traversing the traditional learning curve, Albanian workers can utilize AI augmentation to immediately access higher rungs of the global value chain. This rapid upskilling capability is crucial for retention; if a worker can access high-level, stimulating work from Albania via AI augmentation, the "push factor" of professional stagnation—a key driver of emigration—is significantly reduced.

4.4. The Multilingual Collaboration Layer

As noted in Section 3, language is a primary barrier. New AI-driven "Neural Machine Translation" (NMT) tools now integrate directly into collaboration suites (like Microsoft Teams or Slack). These tools offer real-time, context-aware translation of not just text, but spoken audio. This capability effectively opens the German, French, and Japanese labor markets to Albanian professionals who may only speak English and Albanian, vastly expanding the total addressable market for the country's human capital.

5. Comparative Analysis: Blueprints for the Albanian Context

The transition from a labor-exporting economy to a digital service hub is not a theoretical abstraction; it is a proven development trajectory. Several small, post-transition, or peripheral economies have successfully leveraged the "Smart Economy" to reverse demographic decline and foster innovation. This section analyzes two distinct models **Estonia (The Digital Infrastructure Model)** and **Portugal (The Talent Attraction Model)** to identify actionable policy lessons for Albania and the Shkodra region.

5.1. Estonia: The “Government as a Service” (GaaS) Model

Estonia represents the gold standard for post-socialist digital transformation. Facing similar constraints to Albania in the 1990s—a small population, limited natural resources, and a legacy of Soviet occupation—Estonia bet its future on digital governance. The cornerstone of the Estonian model is **e-Residency**. Launched in 2014, this program allows non-residents to access Estonian services (banking, company formation, taxation) without physical presence. This effectively decoupled the concept of “business location” from “physical geography.”

Relevance for Albania: Tammpuu and Masso (2018) argue that e-Residency transformed Estonia from a peripheral Baltic state into a “global digital nation.” For Albania, the lesson is that digital infrastructure (like the *X-Road* interoperability platform) is more critical to the Smart Economy than physical infrastructure. While Albania has made strides with the *e-Albania* platform, it remains domestically focused. To achieve “Brain Gain,” Albania must emulate Estonia by opening its digital architecture to the world, allowing global freelancers to incorporate and operate from Albania with zero friction.

5.2. Portugal: The “Lifestyle Superpower” Model

While Estonia focused on infrastructure, Portugal focused on “Lifestyle Arbitrage” to combat its own brain drain following the 2010 financial crisis. Portugal realized that in a remote-work world, “Quality of Life” is a primary economic input. Through policies like the **D7 Visa** and the newer **Digital Nomad Visa**, combined with the **Non-Habitual Resident (NHR)** tax regime (offering a flat 20% tax rate for high-value activities), Portugal positioned itself as the premier destination for the global mobile workforce.

Relevance for Shkodra: This model is particularly pertinent for the Shkodra region. Just as Portugal leveraged its climate and culture, Shkodra possesses significant “amenity value” Lake Shkodra, the Albanian Alps, and a rich cultural heritage combined with a low cost of living. Hermann and Paris (2020) highlight the success of the “Madeira Digital Nomad Village,” a public-private partnership that revitalized a regional island economy. Shkodra has the potential to become the “Madeira of the Balkans.” By creating a dedicated ecosystem for remote workers (both returning diaspora and international nomads), Shkodra can import purchasing power and “tacit knowledge,” revitalizing the local economy through consumption and knowledge spillovers.

5.3. Georgia: The Deregulation Approach A third, briefer mention must be made of Georgia. To attract IT talent, Georgia introduced a “Small Business Status” for individual entrepreneurs, taxing their gross turnover at 1% (up to ~\$155,000 USD). This aggressive fiscal policy turned Tbilisi into a magnet for freelancers from the post-Soviet space. This demonstrates that for a Smart Economy to flourish, the friction of compliance must be reduced to near zero.

5.4. Synthesis: The Missing Link for the Western Balkans

The common thread across these case studies is the role of the state as a *facilitator* rather than a *regulator*. Estonia provided the code, Portugal provided the lifestyle, and Georgia provided the fiscal incentive. Current literature on the Western Balkans suggests the region suffers from “reform fatigue” and regulatory complexity (Katsikas et al., 2021). For Albania to replicate these successes, it cannot merely copy these policies; it must adapt them to the AI era. It requires a “Digital Nomad Strategy” that is not just about tourism, but about integrating these individuals into the local university and business ecosystems to ensure the “Brain Gain” is structural, not just transient.

6. Strategic Framework: A “Smart Economy” Roadmap for Shkodra and Albania

The potential for “Virtual Migration” to reverse the brain drain is clear, but it is not

automatic. The "Smart Economy" does not emerge from a vacuum; it requires deliberate design. As Mazzucato (2021) argues, the state must act not merely as a fixer of market failures, but as a "market shaper." To transform Shkodra and Albania into a hub for AI-enabled remote work, a coordinated strategy is required across three pillars: Educational Reform (The Supply Side), Fiscal Innovation (The Governance Side), and Physical-Digital Infrastructure (The Environmental Side).

6.1. Educational Reform: From "Knowledge Transfer" to "Digital Competency"

The University of Shkodra "Luigj Gurakuqi" stands at the center of this transformation. Historically, regional universities in the Western Balkans have focused on theoretical knowledge transfer. However, the AI economy commoditizes static knowledge; what holds value is *adaptive competency*. To prepare students for the global remote labor market, the curriculum must pivot:

Universal AI Literacy: "AI Proficiency" should be treated as a core literacy, equivalent to English or Mathematics. Regardless of whether a student is studying Economics, Tourism, or Literature, they must understand how to utilize Large Language Models (LLMs) to augment their specific workflow.

The "Remote Work" Curriculum: Technical skills alone are insufficient. The biggest reason remote workers fail is a lack of soft skills: asynchronous communication, time management, and cross-cultural emotional intelligence.

The university should introduce micro-credentialing programs specifically designed to certify students in "Remote Work Readiness," signaling to international employers that these graduates are "plug-and-play" ready for global teams.

6.2. Fiscal Policy: The "Digital Export" Status

Currently, the Albanian tax code is ill-equipped for the gig economy, often forcing remote workers into a gray area of informality or subjecting them to high personal income tax rates designed for traditional employment. To incentivize "Brain Gain," the Government of Albania should recognize individual remote workers as **"Micro-Exporters of Services."**

The Proposal: Implement a simplified fiscal regime similar to Georgia's "Small Business Status" or extend the existing 5% Corporate Income Tax (CIT) for IT software entities to individual freelancers in approved "Smart Economy" sectors (design, consulting, translation, coding).

Rationale: By lowering the barrier to formalization, the state captures tax revenue that is currently lost to the informal economy (Payoneer/Crypto off-ramps). More importantly, it incentivizes the diaspora to maintain tax residency in Albania even if they work for firms in Berlin or New York.

6.3. Infrastructure: The Coworking Hub as Social Capital

In the "Smart Economy," the isolation of the worker is a major risk factor (see Section 7). For a city like Shkodra, "Coworking Spaces" should be viewed not as coffee shops, but as essential public infrastructure analogous to libraries. Public-Private Partnerships (PPPs) should be utilized to repurpose underused municipal assets into state-of-the-art innovation hubs. These hubs serve two functions:

Reliability: Providing redundant fiber-optic internet and uninterrupted power supply (UPS), mitigating the infrastructure risks that scare off foreign employers.

Agglomeration: They recreate the "water cooler effect," allowing a freelance graphic designer to collaborate with a remote software engineer. This fosters the "Quadruple Helix" of innovation (Carayannis & Campbell, 2009), where University, Industry, Government, and Civil Society interact to generate local startups.

6.4. The "Digital Brain Bank"

Finally, the information asymmetry problem (finding the talent) requires a national solution. Albania should develop a government-backed (but privately managed) "Digital Brain Bank" a verified database of Albanian professionals open to remote work. Unlike a standard LinkedIn profile, this database would be optimized for AI crawlers and verified via blockchain credentials (issued by universities). When a global recruiter searches for "Python Developer European Time Zone," the "Brain Bank" ensures Albanian talent appears at the top of the algorithmic search results, backed by a "Government Verified" trust stamp.

7. Risks and Ethical Considerations: Navigating the "Dark Side" of the Smart Economy

While the "Smart Economy" offers a compelling pathway to "Brain Gain," it is not devoid of peril. The Call for Papers for SHKODRA IEC2025 rightly highlights the urgency of addressing "fairness, inclusion, data privacy, and algorithmic accountability." If mismanaged, the transition to AI-enabled remote work could exacerbate existing inequalities, transforming Albania from a reservoir of migrant labor into a "digital colony" of the Global North. This section critically examines three specific risks: the precariousness of the "gigified" workforce, the trap of low-value data labor, and the widening domestic digital divide.

7.1. The Threat of "Gigification" and the Digital Precariat

The most immediate risk is the erosion of labor rights. The "Virtual Migration" model often classifies workers not as employees, but as independent contractors. While this offers flexibility, it strips away the traditional social safety net—health insurance, paid leave, and pension contributions. Guy Standing (2011) defines this emerging class as the "Precariat." For Albanian policymakers, the danger is that a generation of talent moves into the global gig economy, earning high wages in the short term but accumulating zero long-term social security assets. This creates a "ticking time bomb" for the national pension system.

Mitigation: The "Smart Economy" cannot be a deregulated Wild West. Albania must explore "portable benefits" models, where social security contributions are attached to the worker rather than the specific employer, allowing freelancers to accumulate benefits pro-rata from multiple international clients.

7.2. The "Digital Sweatshop" Risk: Data Labeling vs. Value Creation

Not all AI work is high-value coding. A significant portion of the global AI economy relies on "Ghost Work" (Gray & Suri, 2019)—the invisible human labor required to train algorithms (e.g., image annotation, content moderation, and Reinforcement Learning from Human Feedback or RLHF). There is a distinct risk that peripheral economies like Albania could be relegated to these low-wage, high-stress roles, effectively becoming "Digital Sweatshops" for Silicon Valley. Unlike software development, this work offers no career progression and is highly susceptible to future automation.

Strategic Imperative: The University of Shkodra and local policymakers must aggressively distinguish between "using AI" (high value) and "training AI" (low value). Educational incentives must be targeted specifically toward creative and technical skills that occupy the top of the value chain, ensuring Albania captures the surplus value of the AI economy, not just its scraps.

7.3. Algorithmic Management and "Digital Taylorism"

As discussed in Section 4, "Algorithmic Management" builds trust, but it also introduces the risk of intrusive surveillance. "Bossware" that tracks keystrokes, eye movements, and

screen activity can lead to high levels of psychosocial stress and burnout.

In the context of the Western Balkans, where labor inspections are often under-resourced, there is a risk that foreign employers might impose surveillance standards on Albanian remote workers that would be illegal in their home jurisdictions (e.g., Germany or France).

Ethical Governance: As part of its EU integration process, Albania must enforce strict digital labor standards, ensuring that "Virtual Migration" does not bypass the fundamental human rights protections enshrined in the European Social Charter.

7.4. The Domestic Digital Divide: Shkodra vs. The Hinterland

Finally, there is a spatial risk. A successful "Smart Economy" strategy in Shkodra could lead to a dual economy: a class of affluent, foreign-currency-earning remote workers living alongside a local service class earning stagnant wages in Lek. This can trigger gentrification, driving up housing costs and sparking social resentment—a phenomenon already visible in digital nomad hubs like Lisbon and Mexico City. Furthermore, the "Digital Divide" threatens to leave the rural northern regions behind. If high-speed internet and digital literacy are concentrated solely in the urban center of Shkodra, the rural population remains excluded from these opportunities (Stephany et al., 2021).

Inclusive Growth: Revenue generated from the "Digital Export" tax incentives (proposed in Section 6) should be earmarked for rural broadband expansion and digital literacy programs in primary schools in the surrounding districts, ensuring the benefits of the Smart Economy are redistributed spatially.

8. Conclusion: From “Brain Drain” to “Brain Circulation”

As the global economy accelerates into the Fourth Industrial Revolution, the Western Balkans stands at a decisive historical juncture. For three decades, the region's development narrative has been defined by the physical exodus of its most talented citizens—a "Brain Drain" that has hollowed out local institutions and deepened economic dependency on remittances. However, as this research has demonstrated, the emergence of the "Smart Economy," catalyzed by the disruptive capabilities of Artificial Intelligence, offers a viable alternative to this structural decline.

The central thesis of this paper is that the "Proximity Paradigm" the economic law dictating that high-value work requires migration to high-income geographies has been rendered obsolete by the "Connectivity Paradigm." Through the mechanisms of **Intelligent Talent Matching**, **Algorithmic Trust**, and **Generative AI Augmentation**, the barriers of language, trust, and skill verification that previously isolated Albanian talent are being dismantled. We are moving toward a reality where "Virtual Migration" allows the Albanian workforce to integrate into global value chains without the social and demographic costs of physical displacement.

8.1. Summary of Strategic Imperatives

To transform this theoretical possibility into an economic reality, Shkodra and Albania must move beyond passive observation and adopt an active strategy of "Digital Market Shaping." Based on the comparative analysis of Estonia and Portugal, and the specific needs of the local context, this paper proposes three immediate pillars of action:

1. **For the University of Shkodra “Luigj Gurakuqi” (The Talent Engine):** Academia must pivot from being a reservoir of theoretical knowledge to a foundry of digital competency. The integration of "AI Literacy" and "Remote Work Soft Skills" across all faculties is not optional; it is a prerequisite for employability. The University has the potential to become a "Digital Lighthouse," certifying the readiness of its

graduates for the global market through blockchain-verified credentials that international employers can trust implicitly.

2. **For the Government of Albania (The Enabler):** Policymakers must recognize "Digital Service Exports" as a strategic industrial sector, equivalent in importance to tourism or agriculture. This requires a fiscal regime that incentivizes the formalization of freelancers (e.g., a "Digital Export Status" with simplified taxation) and an unwavering commitment to digital infrastructure. If the fiber-optic cables in Shkodra are as reliable as those in Berlin, the geography becomes irrelevant.
3. **For the Private Sector and Civil Society (The Ecosystem):** We must cultivate "Innovation Commons"—physical coworking spaces and hubs that combat the isolation of remote work. By fostering a community where returning diaspora, local students, and digital nomads interact, we generate the "knowledge spillovers" necessary to birth indigenous startups.

8.2. A Final Vision for the Region

The transition to an AI-enabled Smart Economy is not without risks. As discussed in Section 7, the threats of "gigification," the "digital sweatshop" trap, and the exacerbation of the digital divide are real. Governance must remain vigilant, ensuring that technology serves human well-being and that labor standards are upheld even in the virtual domain.

However, the cost of inaction is far higher. If we fail to adapt, the "Brain Drain" will continue until it becomes irreversible. Conversely, if Albania successfully leverages these technologies, it can achieve "Brain Circulation." In this scenario, Albanian professionals become global citizens who earn in Euros and Dollars but live, spend, and invest in Shkodra. They bring home not just capital, but the tacit knowledge of global business, seeding the ground for a prosperous, resilient, and truly "Smart" Albania.

The "Smart Economy" is not merely about algorithms or data; it is about dignity. It is about the right of a young person in Shkodra to realize their full potential on the global stage without having to say goodbye to their family and their home. That is the promise of the AI age, and it is a promise we must seize.

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CORRUPTION AS AN INSTITUTIONAL STRESSOR AND ITS IMPACT ON MENTAL HEALTH: A HEALTH PSYCHOLOGY PERSPECTIVE

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Abstract

This article approaches corruption not only as a legal and political problem, but as a persistent psychosocial stressor with tangible consequences for mental health. Focusing on post-1990 Albania, it integrates Health Psychology with socio-political analysis to examine how prolonged exposure to institutional dysfunction shapes emotional experiences, personal agency (the individual's sense of control and capacity to act), and psychological well-being. Anchored in Engel's biopsychosocial model, and informed by theoretical contributions on moral disengagement, moral self-concept, and power dynamics, the paper examines how learned helplessness, diminished institutional trust, and perceived injustice gradually erode individuals' sense of psychological security.

In the Albanian context, everyday interactions with corruption, particularly within public services and healthcare system are conceptualized as chronic stressors associated with heightened anxiety, emotional exhaustion, and depressive symptoms. To address this phenomenon empirically, the study advances a conceptual framework in which perceived corruption influences mental well-being through the mediating roles of institutional trust and moral distress, while social support and socio-economic status are treated as moderating conditions. A mixed methodological protocol is proposed, integrating standardized psychometric instruments with experimental vignette-based methods in order to capture both subjective experience and situational response patterns.

Rather than presenting original survey data, this article draws on national and international indicators to contextualize a theoretically informed and methodologically structured research design. Its contribution lies in reframing corruption as a public mental health concern and in positioning Health Psychology as a central discipline for understanding its emotional, moral, and behavioral consequences. From a policy perspective, the study argues for responses to corruption that extend beyond legal reform to include psycho-educational strategies aimed at restoring trust, strengthening psychological resilience, and promoting institutional accountability.

Keywords: *corruption, mental health, institutional trust, chronic stress, moral disengagement, Health Psychology*

1. Introduction

Corruption is commonly examined through legal, political, and economic frameworks; however, its consequences extend well beyond institutional malfunction. From the perspective of Health Psychology, corruption represents a psychosocial determinant of mental health because it directly influences emotional experiences, behavioral responses, and subjective well-being. According to Engel's (1977) biopsychosocial model, health emerges from the dynamic interaction of biological, psychological, and social processes.

When public institutions become unpredictable, inaccessible, or unjust, this interaction is disrupted, and corruption gradually assumes the role of a chronic stressor rather than a merely administrative problem.

Post-1990 Albania as a context of institutional stress

Following the collapse of the communist regime, Eastern European and Balkan societies entered a period of accelerated political and economic transformation. As argued by Diamond (2002), democratization processes in transitional states were often undermined by institutional fragility, weak rule of law, and limited accountability. In Albania, the abrupt dismantling of centralized structures was not accompanied by the timely establishment of stable democratic institutions, creating conditions in which corruption, clientelism, and informal practices proliferated.

Rothstein and Uslaner (2005) maintain that in societies characterized by high inequality and weak institutional trust, corruption becomes normalized and is frequently perceived as an unavoidable mode of social functioning. Over time, this normalization produces not only political consequences but also profound psychosocial effects: chronic insecurity, persistent perceptions of injustice, erosion of social cohesion, and emotional fatigue. Within the Albanian context, such patterns are particularly visible in healthcare, judicial institutions, and public administration, where citizens encounter ambiguity, lack of transparency, and informal payments for services that should be legally guaranteed.

Corruption as a chronic institutional stressor

The concept of learned helplessness introduced by Seligman (1975) offers a useful psychological framework for understanding how persistent exposure to uncontrollable situations affects mental health. When individuals repeatedly experience failures despite their efforts, they may internalize a sense of powerlessness and withdraw from active problem-solving. Corruption produces comparable conditions: bureaucratic obstacles, arbitrary decisions, and informal barriers undermine individuals' belief in the effectiveness of formal procedures.

As a result, corruption is associated with psychological outcomes such as:

- chronic stress,
- generalized anxiety,
- depressive symptomatology,
- cynicism and emotional disengagement,
- heightened perceptions of injustice.

Keltner et al. (2003) further argue that sustained exposure to unequal power structures fosters behavioral inhibition, fear, and excessive self-monitoring patterns that closely resemble the emotional adjustment observed among individuals living under corrupt systems. Over time, these psychological responses may evolve from situational reactions into stable patterns of emotional regulation.

2. Literature review

Health Psychology does not limit itself to the study of individual coping strategies but also examines the structural sources of psychosocial stress. In this regard, corruption constitutes a paradigmatic case in which:

- social conditions (dysfunctional institutions and clientelistic practices)
- generate psychological consequences (anxiety, mistrust, anger, moral distress),
- which may translate into biological dysregulation through sustained activation of the hypothalamic-pituitary-adrenal (HPA) axis, the system responsible for regulating hormonal stress responses (Marmot, 2004).

This article therefore treats corruption not merely as a governance issue, but as a public mental health concern that directly affects population well-being.

Objectives and conceptual framework

The primary objective of this study is to examine how corruption functions as an institutional stressor that undermines mental health, and to identify the psychological mechanisms through which this process unfolds. Based on the theoretical framework outlined above, a conceptual model is proposed in which:

1. higher exposure to, or perception of, corruption is associated with lower mental well-being and increased anxiety and depressive symptoms;
2. this relationship is mediated by reduced institutional trust and elevated moral distress;
3. social support operates as a moderating factor, buffering the psychological consequences of corruption.

In other words, individuals embedded within supportive social networks family, peers, and community are expected to display greater resilience in the face of institutional stressors. The sections that follow present a rigorously structured empirical protocol designed to test this conceptual model within the Albanian population.

3. Methodology

Overview of the conceptual model

The proposed model conceptualizes corruption as a chronic institutional stressor that affects mental health primarily through two psychological pathways: decreased institutional trust and heightened moral distress. Social support is introduced as a buffering factor that moderates the impact of corruption by enhancing individual resilience in the face of prolonged institutional adversity.

3.1 Participants

A representative sample of adults from across Albania (target $N \approx 500$) will be recruited, including individuals of different ages, genders, and socio-economic backgrounds. Participants will be recruited on a voluntary basis through community centers, healthcare institutions, and online platforms. Informed consent will be obtained from all participants prior to data collection, and confidentiality and anonymity will be guaranteed in accordance with ethical research standards in Health Psychology.

3.2 Design and procedure

Data collection will be conducted using a structured questionnaire designed to assess all key constructs included in the model. First, participants' exposure to and perception of corruption will be measured, including experiences with bribery, nepotism, and abuse of authority. Institutional trust will then be assessed by measuring confidence in central institutions such as government, healthcare, and the justice system.

Moral distress will be evaluated through measures capturing emotional responses such as guilt, frustration, anger, and moral conflict associated with perceived corruption in society. In parallel, social support will be assessed based on the extent to which participants report having access to emotional and instrumental support from family, friends, and broader social networks.

Mental health outcomes will be evaluated using internationally validated psychometric instruments, including measures of depression and anxiety such as the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI), or the General Health Questionnaire (GHQ). The quantitative phase of the study will adopt a cross-sectional correlational design.

3.3 Experimental component (optional)

To further investigate causal pathways, an optional experimental component is proposed. Participants will be randomly assigned to one of two experimental conditions:

- The experimental group will be exposed to a corruption-related scenario (e.g., a simulated situation in which a bribe is requested for access to essential public services).
- The control group will be presented with a neutral scenario with no reference to corruption.

Immediately after exposure, participants will report their emotional states, levels of moral distress, and trust in institutions. Where feasible, physiological indicators such as heart rate or salivary cortisol may be collected in order to provide additional evidence of stress activation.

3.4 Instruments

All instruments will consist of internationally validated scales or culturally adapted versions for the Albanian context. Perceived corruption will be measured using indicators developed by Transparency International, the World Bank, and the European Social Survey / World Values Survey.

Institutional trust will be operationalized based on models developed by Tom Tyler and by Rothstein and Uslaner. Moral distress will be assessed using the Moral Distress Scale-Revised (Hamric et al., 2012), while social support will be evaluated through the Multidimensional Scale of Perceived Social Support. Mental health indicators will be assessed using standardized instruments such as the BDI, BAI, GAD-7 and GHQ. Reliability will be evaluated using Cronbach's alpha coefficients, and construct validity will be examined through exploratory and confirmatory factor analyses.

3.5 Data analysis

Statistical analyses will be conducted to test mediation and moderation hypotheses. Pearson correlations will first be used to examine associations between the main variables. Multiple mediation analyses will then be performed to test whether institutional trust and moral distress explain the relationship between corruption and mental health outcomes. Moderation analyses will be conducted using hierarchical regression or interaction models to examine whether social support weakens the association between corruption and psychological symptoms. A moderated mediation framework may be applied using the PROCESS macro (Hayes) to integrate both effects within a single analytical model. Experimental findings will be analyzed using independent-samples ANOVA to compare emotional and physiological responses between experimental and control conditions.

3.6 Expected outcomes

The main hypotheses predict that:

- a) individuals reporting higher exposure to corruption will exhibit lower mental well-being and heightened symptoms of anxiety and depression;
- b) institutional trust and moral distress will function as mediating variables;
- c) social support will act as a protective factor by attenuating the psychological impact of corruption.

If confirmed, these findings would provide empirical support for the proposed model by demonstrating that corruption affects mental health through psychological mechanisms and that resilience depends on the quality of social environments.

3.7 Status of the study and methodological justification

This article presents a fully developed conceptual and methodological framework, while empirical data collection has not yet been conducted. This is not due to limitations in capacity, but rather to the scale of the project, which requires:

- extensive cultural adaptation of instruments,
- institutional ethical approval,

- financial support for nationwide sampling,
- adequate time for implementation and statistical analysis.

Within Health Psychology, the articulation of a detailed methodological protocol constitutes a contribution in its own right.

The present study therefore serves as a foundational phase in a larger empirical project by:

1. formalizing corruption as a health-relevant stressor in the Albanian context;
2. establishing a replicable research design;
3. supporting future funding applications;
4. ensuring that empirical work will be grounded in scientific rigor.

Accordingly, the present study should be understood as a necessary methodological first stage in the development of a comprehensive national-level empirical investigation. At this stage, the study is not intended to produce population-level conclusions, but to formalize a testable framework

4. Theoretical framework

The theoretical framework of this study integrates established models from Health Psychology with concepts drawn from social psychology, political science, and institutional economics. Given that corruption in Albania is not a marginal phenomenon but a pervasive everyday experience for citizens, an interdisciplinary approach is necessary to capture its psychological impact. The framework is organized around a set of complementary theories that explain how institutional dysfunction becomes psychologically internalized and translated into emotional distress, moral conflict, and impaired well-being.

4.1 Corruption within the biopsychosocial model

Engel's (1977) biopsychosocial model provides the overarching structure through which corruption is conceptualized in this study. Health is not understood as a purely biological condition, but as an outcome shaped by continuous interaction between physiological regulation, psychological interpretation, and social context.

Within this model, corruption interferes across all three domains. At the social level, weak institutions, informal practices, and administrative unpredictability function as chronic environmental stressors. At the psychological level, individuals encounter persistent uncertainty, anxiety, helplessness, and anger. Biologically, prolonged exposure to perceived injustice and threat is associated with dysregulation of stress-related systems, particularly through sustained activation of the hypothalamic-pituitary-adrenal (HPA) axis, which contributes to increased allostatic load and long-term vulnerability to mental and physical illness (Marmot, 2004).

Corruption therefore operates not as a distant structural issue, but as a daily stress exposure that gradually erodes emotional stability and undermines psychological security. Informal payments in healthcare, for instance, directly threaten existential safety by transforming access to medical care into a condition of uncertainty and fear.

4.2 Learned helplessness and institutional disengagement

Seligman's (1975) theory of learned helplessness explains how repeated exposure to uncontrollable conditions produces motivational decline, emotional exhaustion, and depressive symptoms. In institutional environments characterized by arbitrariness and opacity, individuals often cease to interpret effort as effective.

In Albania, this dynamic is reflected in experiences of bureaucratic obstruction, informal requirements, and arbitrary refusals. Over time, citizens may internalize the belief that institutional engagement is futile unless mediated by personal connections or illicit

exchanges. This perception fosters emotional withdrawal, reduced political and social participation, and chronic demoralization.

4.3 Moral disengagement and erosion of ethical responsibility

According to Bandura (2016), individuals strive to preserve a morally positive self-image. When systems reward unethical behavior, cognitive mechanisms of moral disengagement enable individuals to justify harmful actions and avoid psychological discomfort.

In environments shaped by corruption, justifications such as “everyone does it,” “nothing works otherwise,” or “the system forces you” become socially normalized. These mechanisms allow individuals to distance themselves from responsibility, minimize perceived harm, and reframe institutional abuse as routine behavior.

Yet the psychological consequences differ depending on one’s position: those who engage in corruption may experience moral numbing, while those exposed to it as victims often develop moral distress, collective shame, and emotional fatigue.

4.4 Self-concept maintenance and moral normalization

Expanding on this perspective, Mazar, Amir, and Ariely (2008) demonstrate that individuals tend to cheat only to the extent that they can preserve a positive self-concept. Corruption environments progressively shift ethical boundaries, allowing behaviors once considered unacceptable to be perceived as normal or even necessary.

In the Albanian setting, practices referred to as “favors” or “small gifts” are frequently reframed as cultural norms rather than violations. Over time, these symbolic reinterpretations contribute to moral relativism and identity fragmentation, weakening personal accountability and tolerance for institutional misconduct.

4.5 Power asymmetry and psychological inhibition

The approach-inhibition theory of power (Keltner et al., 2003) offers insight into how systemic inequality shapes psychological functioning. Individuals with power tend to act with greater autonomy and risk-taking, while those with less power develop heightened vigilance, emotional restraint, and threat sensitivity.

In corrupt systems, power becomes detached from accountability, producing vertical hierarchies that discourage resistance and reinforce submission.

Citizens occupying positions of low institutional power frequently display emotional suppression, distrust, and excessive self-monitoring patterns associated with chronic stress and internalized insecurity.

4.6 Procedural justice and institutional trust

Trust in institutions emerges when individuals perceive decision-making processes as transparent, fair, and respectful. Tyler (2006) emphasizes that legitimacy depends less on outcomes and more on how institutions treat individuals.

Rothstein and Uslaner (2005) add that societies characterized by systemic corruption develop generalized social distrust. In Albania, this manifests as cynicism toward public services, skepticism about legal redress, and an overall decline in social confidence. When institutions lose credibility, psychological security collapses alongside them.

4.7 Inequality, health, and corruption as a structural risk factor

The final component of the framework draws from social epidemiology. Marmot (2004) and Wilkinson and Pickett (2009) demonstrate that inequality and perceived lack of control are among the strongest predictors of both psychological and physical illness.

Corruption reinforces inequality by privileging access through connections rather than rights. Consequently, corruption must be understood not only as a governance issue, but as a structural determinant of population mental health.

5. Empirical evidence from national and international data sources

This section draws on data from international and national institutions, including Transparency International, Gallup World Poll, the World Happiness Report, Freedom House, the World Health Organization (WHO), and INSTAT, in order to contextualize the psychological analysis of corruption in Albania.

5.1 Trends in perceived corruption in Albania (2012–2024)

According to annual reports from Transparency International (2012–2024), Albania has consistently ranked among countries with low scores on the Corruption Perceptions Index (CPI), indicating persistent institutional vulnerability. Although modest improvements have been recorded in recent years, overall scores remain well below European averages.

From a psychological perspective, incremental changes in ranking do not necessarily translate into meaningful transformation of lived experience. Research suggests that perceived injustice and lack of transparency may persist even when formal indicators improve slowly, reinforcing institutional mistrust and emotional disengagement (Rothstein & Uslaner, 2005).

5.2 Financial strain and healthcare burden

Data from the WHO Global Health Expenditure Database (World Health Organization, 2023) show that Albania has among the highest levels of out-of-pocket health expenditure in Europe. High private payments expose households to economic vulnerability and amplify stress, especially when healthcare access depends on informal practices.

Studies on informal payments in healthcare in post-socialist countries demonstrate that such practices are associated with uncertainty, anxiety, and perceived loss of control (Vian et al., 2006; Tomini & Packard, 2011). From a Health Psychology perspective, financial unpredictability functions as a chronic stressor that undermines psychological security.

5.3 Mental health provision and institutional constraints

The WHO Mental Health Atlas (World Health Organization, 2020) documents limited mental health infrastructure in Albania, including shortages of mental health professionals and disparities between urban and rural services. Access barriers, combined with stigma and limited funding, place individuals under what may be described as a “double burden”: increased exposure to psychological stressors without corresponding access to support.

Comparable patterns have been identified in transitional health systems where weak service capacity exacerbates emotional suffering rather than mitigating it (World Health Organization, 2020).

5.4 Institutional confidence and emotional climate

According to the Gallup Global Emotions Report (Gallup, 2023), Albania is among countries reporting elevated daily stress, worry, and anger, alongside low institutional confidence. Emotional data provide insight into the affective climate within which governance is experienced, revealing widespread dissatisfaction and psychological vulnerability.

In parallel, data from Freedom House (2023) and the World Happiness Report (Helliwell et al., 2023) place Albania in a context of low trust, moderate subjective well-being, and democratic fragility. Low trust has been consistently associated with emotional instability and feelings of insecurity (Tyler, 2006; Rothstein & Uslaner, 2005). To integrate the empirical evidence presented above, Table 1 summarizes the main national and international indicators related to corruption, institutional trust, financial stress and mental health in Albania, providing the empirical context for the psychological mechanisms discussed below.

Table 1. National and international indicators related to corruption, institutional trust and mental health in Albania (contextual empirical framework).

Domain	Indicator	Albania (latest)	Source	Relevance for mental health
Corruption	Corruption Perceptions Index (0–100)	42 (2024)	Transparency International	Persistent perception of institutional unfairness
Governance	Trust in national government (%)	≈17–20%	Gallup World Poll	Psychological insecurity and civic disengagement
Health financing	Out-of-pocket health expenditure	59.7% (2021)	WHO / P4H	Chronic financial stress and vulnerability
Emotional climate	Daily stress reported	>40%	Gallup Global Emotions	Population-level psychological burden
Mental health capacity	Mental health professionals /100k	13.6	WHO	Limited access to psychological care
Mental health outcomes	Suicide rate /100k	4.3	WHO	Indicator of severe psychological distress

Note. All data presented in this table are derived from secondary sources and are included for contextual purposes. They do not constitute original empirical findings of the present study.

5.5 Psychological mechanisms associated with corruption

Synthesizing empirical trends and theoretical frameworks, the literature identifies several psychological pathways linking corruption to mental health outcomes:

- learned helplessness (Seligman, 1975)
- moral disengagement (Bandura, 2016)
- cognitive dissonance (Festinger, 1957)
- economic stress (Marmot, 2004)
- erosion of trust (Tyler, 2006; Rothstein & Uslander, 2005)

These processes operate cumulatively, contributing to emotional distress, reduced institutional engagement, and increased vulnerability to anxiety and depression.

5.6 Interpretive synthesis

Across macro, meso, and micro levels, corruption functions as a chronic institutional stressor. National and international indicators converge on a pattern defined by financial strain, institutional mistrust, negative emotional experiences, and limited access to psychological care.

Taken together, this evidence reinforces the conceptualization of corruption as a public mental health challenge. Anti-corruption policies should therefore be evaluated not only in terms of governance metrics, but also in terms of their psychological impact on populations (World Health Organization, 2020; Marmot, 2004).

6. Proposed conceptual model

The proposed conceptual model integrates insights from Health Psychology, social psychology, and governance studies in order to conceptualize corruption as a chronic institutional stressor with significant psychological consequences (Engel, 1977; Marmot, 2004). Rather than being treated as isolated ethical violations, corrupt practices are understood here as part of a structural environment that progressively undermines emotional stability, moral agency, and institutional confidence.

6.1 Direct effects of institutional corruption

Institutional stressors such as lack of transparency, administrative arbitrariness, and abuse of authority are associated with prolonged activation of stress response systems and

increasing emotional insecurity (Marmot, 2004). Recurrent exposure to unfair institutional practices reduces perceived control and predictability, two psychological resources essential for well-being (Engel, 1977). Over time, this sustained exposure to institutional dysfunction contributes to accumulative psychological burden and chronic distress.

6.2 Mediating mechanisms

The psychological consequences of corruption unfold primarily through three interrelated mechanisms.

Institutional trust: Declining trust in public institutions intensifies uncertainty and weakens compliance and social cohesion (Tyler, 2006; Rothstein & Uslaner, 2005). When citizens perceive institutions as illegitimate or biased, emotional distancing and civic disengagement increase.

Learned helplessness: Repeated experiences of institutional failure and injustice foster a sense of futility and powerlessness, characteristic of learned helplessness (Seligman, 1975). This cognitive–emotional pattern is associated with depressive symptoms, motivational deficits, and withdrawal.

Moral distress and moral disengagement: Individuals are psychologically motivated to maintain a morally coherent self-image. When exposed to normalized corruption, individuals either experience moral distress due to value conflicts or resort to moral disengagement to minimize internal tension (Bandura, 2016). These processes contribute to emotional exhaustion, cynicism, and ethical disorientation.

6.3 Moderating variables

The magnitude of psychological impact varies depending on individual and contextual resources.

Socio-economic status shapes exposure to institutional vulnerability and access to coping resources (Marmot, 2004). Social support functions as a critical buffer against stress by fostering emotional security and resilience (Cohen & Wills, 1985). Geographical context further conditions access to services and institutional reliability, especially in peripheral or rural areas.

6.4 Integrated model structure

Analytically, the model can be summarized as follows:

Perceived corruption → *Institutional stress* → (*Low institutional trust, learned helplessness, moral distress*) → *Mental health outcomes (anxiety and depression)*.

The strength of these pathways is moderated by socio-economic status, social support, and residential context.

6.5 Empirical testing strategy

To evaluate this model, a multi-stage research protocol is proposed. Quantitative assessment will document institutional exposure, psychological mediators, and mental health indicators, followed by experimental manipulations of institutional scenarios to examine emotional and cognitive responses. Structural equation modeling will be employed to test direct effects, mediation, and moderation pathways (Hayes, 2013).

7. Discussion

7.1 Synthesis of theoretical and empirical insights

The present analysis supports the conceptualization of corruption in Albania as a chronic institutional stressor with significant psychological implications. Across theoretical frameworks and international indicators reviewed in this study, corruption emerges not merely as an administrative failure but as a sustained psychosocial burden affecting emotional stability, civic engagement, and mental health. Consistent with the

biopsychosocial framework (Engel, 1977), corruption-related stress manifests simultaneously at:

the *physiological level*, through prolonged activation of stress-regulation systems;

the *psychological level*, via anxiety, hopelessness, and depressive symptomatology;

the *social level*, through erosion of trust, institutional disengagement, and social cynicism.

This multi-layered impact confirms that corruption should be treated as a determinant of mental and public health rather than as a purely legal or economic issue.

7.2 Corruption as an institutional stressor in the Albanian context

In line with learned helplessness theory (Seligman, 1975), institutional dysfunction in Albania undermines perceived personal control, a core psychological resource for resilience. Informal payments in healthcare, administrative arbitrariness, and perceived injustice transform routine interactions with public services into emotionally charged experiences. Particularly in healthcare settings, corruption becomes intertwined with fear, vulnerability, and existential insecurity, intensifying psychological distress during illness and crisis.

This finding aligns with international research showing that institutional unreliability magnifies stress responses and reduces adaptive coping (Marmot, 2004).

7.3 Mediating psychological mechanisms

Institutional trust: Low institutional trust is consistently associated with lower life satisfaction and elevated emotional distress (Tyler, 2006; Helliwell et al., 2023). When citizens perceive institutions as unfair or illegitimate, compliance is replaced by avoidance, and collective identification erodes. *Learned helplessness:* Perceived lack of institutional accountability fosters cognitive patterns of resignation and passivity, reinforcing depressive affect and behavioral withdrawal (Seligman, 1975). *Moral distress and moral disengagement:* Individuals morally committed to integrity experience emotional strain when corruption is normalized, resulting in moral distress, guilt, and anger (Bandura, 2016). When ethical compromise becomes unavoidable within institutional systems, some individuals experience moral disengagement, while others experience burnout and ethical exhaustion (Mazar et al., 2008).

7.4 Integration within Health psychology

By situating corruption within Health Psychology, this study extends conventional stress models beyond individual life events to systemic and structural stressors. Corruption:

- disrupts biological stress regulation
- shapes maladaptive coping patterns
- discourages help-seeking behavior
- contributes to social inequalities in mental health.

This reconceptualization advances Health Psychology toward a more socially embedded and politically informed discipline.

7.5 Implications for policy and institutions

Anti-corruption strategies should be reframed as *mental health and public health interventions*. In addition to legal enforcement, the following are recommended:

- strengthening procedural justice and transparency (Tyler, 2006)
- institutional training programs addressing moral distress among public employees
- increasing the systemic role of health psychologists within public sectors
- psychosocial education initiatives empowering citizens through legal awareness and reporting mechanisms.

7.6 Psycho-educational intervention pathways

Interventions may include:

- community-based emotional resilience programs
- civic education modules on institutional integrity and mental well-being
- public awareness campaigns linking corruption with depression and stress
- ethics and integrity training for healthcare and administrative personnel
- therapeutic approaches targeting learned helplessness and psychological empowerment.

7.7 Limitations and future research directions

This study is conceptual and methodological, relying on secondary data and theoretical synthesis. The absence of original empirical data reflects not a limitation but a deliberate methodological sequencing aimed at establishing a validated research framework prior to national implementation.

Future research should include:

- large-scale quantitative testing via structural equation modeling
- laboratory and field experiments on perceived injustice and emotional responses
- studies on moral distress among healthcare and civil service professionals
- longitudinal analyses of institutional trust and mental health trajectories
- regional comparative research contextualizing Albania within the Western Balkans.

In this sense, the present study should be understood as a foundational conceptual and methodological stage toward future national empirical investigation.

8. Conclusions

This article sought to conceptualize corruption in post-1990 Albania as a chronic institutional stressor and a psychosocial determinant of mental health, positioning the phenomenon within the analytical framework of Health Psychology. By integrating the biopsychosocial model (Engel, 1977), learned helplessness theory (Seligman, 1975), mechanisms of moral disengagement (Bandura, 2016), the approach-inhibition theory of power (Keltner et al., 2003), and the framework of procedural justice (Tyler, 2006), the study demonstrates that corruption constitutes more than an administrative deviation: it is a structural condition with profound emotional, cognitive, social, and physiological consequences.

The proposed conceptual model highlights the central role of two mediating mechanisms institutional trust and moral distress in transmitting the psychological effects of corruption, as well as the protective function of social support. Although empirical testing remains forthcoming, the model offers an integrative bridge between the literature on corruption and research on mental health, two fields that have previously developed largely in parallel rather than in dialogue.

Should future empirical findings confirm the proposed hypotheses, anti-corruption policies should be reframed not only as institutional reforms but also as investments in population mental health. Societies characterized by transparent and trustworthy institutions promote psychological security, civic engagement, and emotional resilience, while reducing learned helplessness, moral exhaustion, and chronic stress.

Although the present study does not yet include original empirical data, it makes a substantive contribution by offering an integrated theoretical model and a transferable methodological protocol. In a national context where corruption has rarely been examined from a psychological perspective, the article lays the groundwork for future research capable of empirically validating the proposed framework at scale. The planned empirical phase will enable formal testing of the hypotheses and contribute to the development of evidence-based public policy rooted in psychological science.

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THE CRISIS OF UNIVERSITIES OR THE CRISIS OF UNIVERSITY MANAGEMENT IN BOSNIA AND HERZEGOVINA IN THE PROCESSES OF BOLOGNA REFORMS

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Abstract

The third decade of the 21st century in Bosnia and Herzegovina, in addition to always turbulent political conditions, was marked by more than turbulent developments in the higher education sector. While the period 2005-2015 can be said to have been a period of post-war enthusiasm and institutional building of higher education institutions, the period 2015-2025 represents a period of reckoning and failure of the quality system from the previous decade. Why were these two decades taken for observation? In the first 2005-2015, Bosnia and Herzegovina entered the Bologna system, the state agency for the development of higher education and quality assurance (HEA BiH), the state agency for the recognition of foreign diplomas was formed, and the processes of accreditation of higher education organizations (HEIs) in BiH were started, and numerous other legislative and legal elements for quality development (laws, strategies, etc.) were completed. In the second decade, when qualitative data showing progress should have been expected and obtained, the fiasco of the system occurred: from numerous lawsuits due to the issuance of fake diplomas, fictitious faculties and students, drastically fewer students at all higher education institutions, fewer domestic and foreign projects, portals teeming with inscriptions from professors who have lost faith in both the system and the people who create the higher education system, to the non-recognition of diplomas from Bosnia and Herzegovina in Slovenia and Croatia. What went wrong? Some of the things were tried to be investigated and presented in this work. Of course, one such work cannot give a complete diagnosis, because a patient suffering from numerous diseases (HEI) requires a council of experts and the willingness of all authorities to support the treatment of a "patient" who is already clinically dead.

Keywords: *higher education, quality system, failure, Bosnia and Herzegovina, higher education organizations (HEIs)*

1. Introduction

The third decade of the 21st century in Bosnia and Herzegovina, in addition to always turbulent political conditions, was marked by more than turbulent developments in the higher education sector. While the period 1995-2005 can be said to have been a period of post-war enthusiasm and institutional building of higher education institutions, the period 2005-2015 was a period of stable work and development, the period 2015-2025 represents a period of reckoning and "settlement" of the quality assurance system from the previous decade.

We will take two decades for observation: 2005-2015 and 2015-2025. Why were these two decades taken for observation? In the second decade of 2005-2015, Bosnia and Herzegovina entered the Bologna system, which required significant reforms, changes in

the organizational structure brought about by the new Framework Law on Higher Education, the umbrella state agency for the development of higher education and quality assurance (HEA BiH), the state agency for the recognition of foreign diplomas was formed, and the processes of institutional external evaluation and accreditation of higher education organizations (HEIs) in Bosnia and Herzegovina were started.

Numerous other legislative and legal elements for quality development (laws, strategies, etc.) have been developed, and a large number of foreign projects have been developed through Tempus, Erasmus Mundus, FP 6 and 7, IPA and other EU programs. In the third decade (2015-2025), when qualitative data showing progress should have been expected and received, the system fiasco occurred: from numerous lawsuits due to the issuance of fake diplomas, fictitious faculties and students at them, a drastically lower number of students at all higher education institutions, a lower number of both domestic and foreign projects, portals teeming with inscriptions from professors who have lost faith in both the system and the people who create the higher education system, to the non-recognition of diplomas from Bosnia and Herzegovina in Slovenia and Croatia and other EU members.

Even the leaders of the state agency (HEA BiH) hardly know the exact number of higher education organizations in BiH today, because the number of ongoing court processes in which diplomas or entire higher education institutions are challenged is more than large. It mainly deals with 40+ higher education organizations in the rank of universities and even about 200 of them are in the rank of faculties or departments that issue diplomas. The number of teaching staff can hardly be known for sure because the same names appear both in various departments of the same faculty or university (a desirable phenomenon in rationalization), through various faculties in BiH (known as "traveling professors"), through combinations: public-private HEI arrangement, public administration and politics-HEI, private companies-HEI, and a number of other options.

The author of these lines has for years propagated the concept that a HEI should have 50-60% of its teaching staff in its permanent composition, that 20-30% should come from other HEIs and also that 20-30% should have their engagement in the business sector and at HEIs (in ratios of 20% to 80%). In this sense, this 30-year-old attitude has not changed even today because it provides an optimal variant of the "draught" stale concept according to which the Higher Education Institution has no idea what is happening in the business and social sector, and on the other hand, it prevents the business sector from turning the Higher Education Institution into an "evening school" to stamp diplomas that only the state sector needs.

2. Quality system development strategy in the organization of higher education institutions in bih

The Bologna process and its proclaimed pillars of existence and innovations in the EU higher education sector (three study cycles, ECTS credits, mobility, quality assurance system, recognition of diplomas and qualifications, etc.) started with the signatures of ministers in 1999 and timidly applied for the first 2-3 years saw their expansion in 2002-2005. Bosnia and Herzegovina put its signature on the Bologna Process in 2003, and therefore had the opportunity to start with a more serious approach only in 2005, with a slight backlog, but also an advantage, because many of the first solutions were very bad. It was then that one of the first ECTS system development projects at the Higher Education Institutions in Bosnia and Herzegovina began, in which all public universities from Bosnia and Herzegovina participated in the Tempus program. In the following years, through this program, numerous projects were developed that were directly or indirectly related to the

development of the quality assurance system at the Higher Education Institutions in Bosnia and Herzegovina. We will not talk about the projects that were done in parallel in the domain of NIR and professional work in this paper, because that would require several papers that are allowed by the scope of such proceedings and conferences. But NIR and professional work will not be neglected because they are part of the integral existence of the Higher Education Institution and are legally incorporated into numerous articles concerning the work and existence of the Higher Education Institution.

In the period 2004-2015, numerous projects in the field of QA were carried out, which resulted in all public universities receiving the functions of QA managers at the university and some QA managers at the faculty/department level. Then the functions of vice-rector for QA began to appear. It also started with the serious creation of internal evaluations, which in scope and content represented what was done by Western universities that were involved as know-how carriers in these projects.

It should be noted here that the first serious external evaluation was carried out by EUA (European University Association) from Brussels during 2003-2005, which was paid for by the EU from its own funds for BiH public universities. In addition to self-evaluation projects as preparations for external evaluations of the state agency for higher education (HEA BiH), development projects for monitoring key performance indicators (KPI - Key Performance Indicators) and software received by public universities for the digitized process of monitoring these indicators and connecting them with other important elements of the work of the Higher Education Institution (e.g. financial elements, project realizations, extrabudgetary funds, etc.) were of particular importance.

Unfortunately, the process of re-external evaluation that was supposed to be done by the EUA during 2009-2010 at 8 public universities in BiH was carried out only at the University of Zenica and the University of Mostar. Namely, at that time there was no more EU donation for these purposes and the universities themselves had to provide funds both for internal "cleaning up" and for external evaluation, which then amounted to around 30,000 - 50,000 euros.

Here we should point out a few more positive examples from the academic area of BiH regarding the process of external evaluations and accreditations. In the first place, the process that the University of Zenica as a whole went through with the State Agency for Higher Education of Slovenia, then already a member of the EU and ENQA, and several individual cases from the faculty that underwent external evaluations by eminent foreign agencies, such as the evaluations of the Faculty of Electrical Engineering in Sarajevo and Banja Luka by ASSIN Germany or the Agency for Quality Assurance in Education from Vienna in the case of the Faculty of Economics in Sarajevo.

2.1 problems of the application of qa in higher education in bih in the current decade (2015-2025)

Why did the positive trends from the period 2005-2015 (serious development of the quality assurance system, integration of universities according to Western standards, momentum of internationalization, increase in the number of projects in various fields, etc.) when the State Agency for Quality Assurance and Development of Higher Education (HEA BiH) began its work, not continue in the second decade of application of the Bologna process in BiH (period 2015-2025). There are many reasons that cannot be covered in just one such work. In the following, the focus will only be on internal reasons within the Higher Education Institutions, which at least to some extent detect key problems and things that should be intensively worked on in the next decade (2025-2035 years) if the higher education sector as it has been known in the ex-YU area for the last hundred

years or so is to be preserved.

If external factors have other visions, all the efforts of HEIs to survive this situation will be in vain. In the following, the key problems that burden public HEIs in BiH today and which in the first place led to the current chaotic situation in many HEIs, both in the university and faculty ranks, are detected.

2.2 Ignorance of the organizational structure of the Higher Education Institution by the key actors of the process

The integration processes that BiH public universities entered after the year 2000 led to the transfer of the legal status from the faculty to the university (one administrative board at the university level, transfer of budget funds to the university, etc.) but did not lead to true integration in scientific and teaching areas, so that even today, with changed names, we have the same numerous departments, the same departments, etc. In the "democratic atmosphere" of the new work system, everyone saw themselves at the head of departments, faculties, universities, forgetting that in this sphere of management, neither Murphy's Law nor the rule of 10% especially gifted people applies. Namely, practice shows that today in the positions of dean or vice-dean, not even "the square root of the number of permanently employed staff" can be found, and at the level of the rector, the 3 root of the number of employees. Perhaps such rigid formulations cause repulsion, and some will say a technocratic view of the organization.

But the matter is much more serious when you consider that such systems have hundreds of permanently employed people, hundreds of those engaged under contracts and thousands of students who also actively participate in all the processes of the Higher Education Institution.

Dean of the Higher Education Institution = Second root of the number of employees in an adequate scientific title

Rector of Higher Education Institution = Third root of the number of employees in an adequate scientific title

In this sense, the legislative framework that the Higher Education Institution allows and promotes "the formation of centers of innovation, technological transfer, science and technology parks and other forms of organization", which defines the organizational and sub-organizational units of the university (centers, institutes, etc.), the internal organization of the Higher Education Institution, the forms of work in scientific and research activities, the participation of students in NIR and professional work, and the own income of the Higher Education Institution remained dead letters on paper.

The statutes of the Higher Education Institution recognized the basic goals of work in higher education, academic freedom, the right to higher education, which explicitly prohibits any abuse based on race, gender, nationality, religion, ethnicity, age, etc. and equality and the prohibition of discrimination are clearly emphasized. Managements of HEIs would have to implement non-discrimination on all grounds, have the obligation to carry out scientific research work at HEIs, protect staff from discrimination and enable the right to publish the results of scientific and research work. The cantons whose scope of work also includes the legality of the work of the Higher Education Institutions have prescribed as a special interest in the development of scientific and research activities, especially in the domain of creating conditions for scientific and research activities in the domain of technological, innovative and overall development, international cooperation and encouraging invention and innovation, defined the principles on which scientific and research activities are based, the freedom of scientific and research activities, the freedom to publish the results of scientific and research activities and determined the holders

scientific research activities.

Unfortunately, all this "well-tailored legislation" is a dead letter because today's managements of Higher Education Institutions are largely unable to draw or understand the organizational scheme of the faculty they lead, let alone go towards more serious branching lines of organizational schemes.

2.3 Ignorance of the labor law and decades of practice of academic work in the Higher Education Institutions

Public higher education organizations in the Balkans are not creations created by the Bologna Process. Some have a tradition of more than a century (Belgrade, Zagreb, Ljubljana) and some have a tradition of several decades (Sarajevo, Banja Luka, Split, Podgorica, Mostar, Skopje, etc.). Although formally young as the University and the city of Zenica, with its technical faculties, it has recorded an enviable tradition as part of the University of Sarajevo.

The decades-long practice of higher education in the Balkans, following the tradition of Western universities with a long tradition, took place in the proclaimed principle of the triple-helix model (authority, academic community and business sector), where everyone had their own role and clear rules of conduct. Higher Education Institutions were organizations without working hours, without fences, although they had formal campuses (to clarify, you did not leave Ident documents, etc. if you were a guest or were at the Higher Education Institution for business), they had the freedom to express their opinion, work on projects, publish the results of their work and overall contribution to the development of the third mission of the Higher Education Institution. At that time, little was known about the third mission of the Higher Education Institution from a theoretical point of view, but it was known informally that it was a "lighthouse and leader of society". What went wrong so that it is not the same today?

Without much digression, it is enough to say that today's management neither know nor understand the decade-long practice of academic work in HEIs. Unfortunately, they do not even understand the self-written Regulations on the work of the Higher Education Institution, which clearly specify that the academic staff has irregular hours and work outside the Higher Education Campus, the role of the Higher Education Institution, academic freedom, etc. principles of organizing higher education institutions, principles of work of higher education institutions, social responsibility of higher educational institutions, importance of cooperation among higher education institutions, etc. and that equality and the prohibition of discrimination have completely collapsed. The terms "shift, coefficients, prohibited, rejected, office, hourly rate, request for certificates, permits, dozens of procedures that "ensure legality and QA" are today's image of the Higher Education Institution in Bosnia and Herzegovina. The paradoxical formal report on monthly work created according to the formula (Number of working days X 8 hours) thus becomes a MODEL OF WORK according to which the most important thing is to have the number of hours in the facility of the Higher Education Institution and that does not have to be accompanied by any visible results of the work (projects, works at conferences and magazines, work on the development of the third mission of the Higher Education Institution, role in the development of the region, business cooperation and NIR, etc.)

2.4 Ignorance of scientific research and professional work at the Higher Education Institution

Since the majority of today's managers of higher education institutions completed their entire education at one institution, progressing according to the established matrix "assistant trainee-assistant-senior assistant-assistant professor-associate professor-full

professor" and as with the independence of Bosnia and Herzegovina as a state and the application of the Bologna process, it became even more drastic, it is logical that the good practice that Bosnia and Herzegovina's faculties and universities had fell into pieces. Namely, scientific research (NIR) and professional work that was abundantly supported by large business systems such as RMK Zenica, Energoinvest, UNIS, Rudi Čajevac, SOKO, Šipad, Vatrostalna and others. was closely related to the technical, economics and other faculties.

How strong that relationship was is evidenced by the fact that one of the main founders, e.g. The Faculty of Mechanical Engineering in Zenica was the Workers' Council of the RMK system by decision of October 18, 1977. For years, the same Faculty of Mechanical Engineering generated almost 40-50% of its budget based on NIR and professional work through its own NIR projects and cooperation with the economy.

The new generations of higher education managers did not know that concept nor did they accept it, relying mainly on the budget funds of the canton, so that today they book perhaps 10% of the former realization as their own income, that is, less than 3-4% of the total budget.

Where and why, this drop and why today Bosnia and Herzegovina has drastically fewer indexed works or projects than the countries of the region Serbia, Croatia, Montenegro, Macedonia and Slovenia. Suffice it to say that if we were to reduce all the indexed papers from BiH to the summary of the non-existent University of BiH, even that would not be enough for HEIs to be in the Top 1000 HEIs on the Shanghai list. And for years there have been universities from Belgrade, Zagreb, Ljubljana and even from Novi Sad. This is a topic that certainly deserves significantly more attention than it has and can be grasped by work like this. However, even a superficial analysis of managers who were created in scarce research conditions and an environment that is not inclined to science indicates that today they too behave more like managers of Penitentiary Homes and less like managers of Higher Education Institutions.

2.5 The current model of QA and the path to the downfall of HEIs

From all of the above, it is clear that the current model of QA in HEIs, which was largely created as a compromise between what the business sector demanded (ISO 9000, ISO 14000, etc.) and the system propagated by ENQA, has experienced its complete fiasco in BiH and in numerous countries of the region and the EU.

The mere insistence on "paper-based internal evaluations" that are also "thickly made up" led to the fact that an extremely small number of HEIs in Bosnia and Herzegovina and the region did not receive the green light in the processes of external evaluations and accreditations. The academic sector does not pay attention to the remarks that the business sector, dissatisfied with the knowledge, competences and skills of new employees, has sent abundantly over the last 2-3 decades. The "Bologna" model became the object of ridicule of those who completed their academic studies earlier. It is clear that the present times are completely different. But even for such times, we need to have adequate teaching staff at the Higher Education Institution, and especially adequate managers.

How else to explain that today's cooperation with the business sector is equal to zero, or in value terms 2-3% of the total budget of the Higher Education Institution. How to explain that today a student at the Higher Education Institution in Bosnia and Herzegovina costs significantly more than a student at the Sorbonne, Bologna or Berlin? How to explain that the former EUA standard for internal evaluations of HEIs of 30-35 pages has now been increased to 120-130 pages at HEIs?

Clearly, when you have nothing to show in the NIR segment, classes and the third mission of the Higher Education Institution, then you reach for web news and photos that should improve the situation.

How to explain to the management that VŠO is not a high school or a penitentiary where "references are not obtained by sitting in cells and behaving well"? How to explain that today

95% of all those who work at the Higher Education Institution have obtained almost all their titles at the parent institution where they work? How to explain that in addition to the strong stories about internationalization and mobility, not even 1% of employees or students consume it?

2.6 Complete neglect of the development of the third mission of the Higher Education Institution

It is clear based on the previous analyzes that the current managements are not even able to understand the development of the third mission of the Higher Education Institution, and especially not to implement it. In the complex sociological conditions in which HEIs work today, when we are in the gap between Industry 4.0 and Industry 5.0, when artificial intelligence with all its flaws and good sides becomes part of reality and other turbulent changes brought by the third millennium, HEIs find themselves in completely new working circumstances. In this sense, work on the systematic development of the third mission of higher education institutions (3M) is something that higher education institutions need to practice as actively as possible in their work, because similar to artificial intelligence: if it is allowed to determine the rules of the "game" on its own, it will not be good for anyone. What is the third mission of the Higher Education Institution?

Everything that is not direct teaching or direct scientific research or professional work according to its narrow definitions, which has to do with the scope of work of the Higher Education Institution. There are many debates and research about 3M issues today at the Higher Education Institution. It is not completely defined.

However, it is also clear that HEIs must return to the "original model of Humboldt University as a beacon of society" just as Industry 5.0 is returning man to the center of attention. The time of quality assurance at higher education institutions (QA) based on the model of advanced business systems of eastern philosophy has passed. We will not say here that the QA system did not bring certain benefits to the Higher Education Institution, but the further insistence on "procedures and business rules" that will regulate human relations, and work is only an insistence on "care for a patient who died a long time ago, but no one told us about it". However, process controllers will say that all QA system procedures have been followed. For those who can hardly fathom what can be included in 3M HEI, let's try to explain it using a practical example: if the student plenum in Belgrade, at the end of 2024 and at the beginning of 2025, was a "student revolt for a better society in Serbia", it was 3M HEI.

The moment he became a tool of the opposition or certain professors; it was no longer 3M HEI. Unfortunately, it is difficult to talk about 3M at the Higher Education Institution in Bosnia and Herzegovina because it is very simple to say: what kind of management - such are the students.

3 Space for improvement

Of course, not all ships in the higher education sector in Bosnia and Herzegovina have hopelessly sunk, but this sector could potentially not recover in the next decade (2025-2035) of the application of the Bologna model. In this sense, we propose the following as key processes:

- Entrust emergency evaluations and accreditations exclusively to foreign experts from outside the ex-SFRJ area who, through work with HEA BIH and AVORS, will create clear and impartial procedures to approve the work of a department, faculty or university (VŠO);
- Clearly and based on unambiguous KPIs, prescribe conditions for the existence of departments, faculties and universities that would be equal for both private and public HEIs;
- Open HEIs to the community as a gathering place for the most competent people whose academic dignity was not achieved by political or business influence and trade.

- To recognize the importance of 3M VŠO as a place of creation of social development and stop being a formal "slave" of the quality system that turned VŠO into penal correctional centers (KPD).

Of course, there is still a lot of room for improvement. This paper consciously did not want to deal with the financial elements of the Higher Education Institution because, however painful this topic may be, it is of essential importance for the survival of the entire society. Societies that understand that education is the first foundation of society and not the army, police, healthcare, politics are societies that hardly have a future of their own. I will underline one thing: you cannot have good doctors and healthy people if they are not adequately educated, just as there is neither the business world nor the economy, neither the army nor the police. We will always have politics, and it has existed since prehistoric times until today. Painful but without problems, and if we go back to the Stone Age, the first occupation will be a politician. They didn't call him that then...maybe wise head, "philosopher", smart guy or something.

4. Conclusion

It is clear from everything written that the recovery in the decade ahead (the period 2025-2035 years) will not be easy at all. But the treatment that needs to be accessed urgently requires a serious diagnosis that HEA BIH cannot do. That is why it is necessary to invite the help of respectable foreign agencies, members of ENQA, which, after adopting a set of minimum measures for evaluations and accreditations, will start "combing" HEIs. To begin with, it is enough to make a respectable wounding and anyone who cannot cross the threshold of e.g. 20 points out of a possible 100 would get the key in the lock. From department, faculty to university. This would somewhat restore the confidence of the wider community that "the patient has accepted the treatment" and that there is some hope for the Higher Education Institution. This would give hope to the wider community, so that there is still hope for everyone in BIH to live in an environment that values knowledge, work and order.

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DEVELOPMENT OF THE CIRCULAR ECONOMY IN THE CONDITIONS OF A TURBULENT ENVIRONMENT – CASE STUDY IN BIH

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Abstract

Through the RTIT project (EU Interreg: xxxxxx), in which CIP UNZE also participates, the authors of this paper examine how the academic community—namely higher education institutions and their affiliated centers—can identify business problems and transform them into business opportunities.

Wood–plastic composites (WPC) have recently become a highly popular material in both exterior and interior construction. They are used in building applications, structural elements, and the furniture industry. Due to increased production, wood raw materials are currently being consumed on a large scale. Contemporary lifestyles contribute significantly to environmental pollution; therefore, recycling has become an important factor in addressing waste management issues. Waste management is carried out with the aim of reuse and consists of collection, separation, processing, and the production of new products.

Wood–plastic composites represent one example of modern materials obtained by combining two substances that are most often products of recycling. In order for production to be economically viable and feasible, the project team is engaged in researching the technology of combining plastic materials, wood, and added components, as well as mapping the potential of the sector in the Central Bosnia region for techno-economic production. Using the example of a single business system, the process of mapping material balances is demonstrated.

Keywords: *wood–plastic composite, technology, mapping, recycling, waste raw materials*

1. Introduction

Within the framework of the RTIT INTEREG EU project, a project of practical application of technological transfer from the Higher Education Institutions to the economy was realized with the aim of developing a new product - WPC, i.e. Wood Polymer Composite, which would basically be made from waste materials - wood and plastic. This paper presents a part of the research that was done with the aim of looking at the complete conditions (technical, economic, human, etc.) that should give an adequate assessment of whether the Zenica-Doboj Canton (ZDK).

Bosnia and Herzegovina (BIH) have the strength and resources to deal with the production of such a demanding product from waste. Namely, numerous studies conducted in previous years in Bosnia and Herzegovina have shown that waste materials have their place in the circular economy. The CIP UNZE project team recognized a very attractive product that is a mixture of wood flour and plastic, but which, despite its very wide application, is not

produced anywhere in the Balkans. Especially not from waste materials. The main reason for the implementation of this project component is the lack of system solutions for the disposal of industrial plastic waste in the area of ZDK, and currently, as a disposal option, the collection of this waste by the company Alba and recycling in the facilities of the OMORIKA factory in Doboj is practiced. In addition to the challenges of plastic waste management, through the consultation meetings that the CIP UNZE team conducted during the preparation of the Project Terms of Reference, challenges were identified in the way of disposal of wood residues from companies from the ZDK area that deal with wood processing, which involve direct combustion in their own boiler rooms. An additional challenge relates to the complexity of furniture waste management (post consumer waste). In accordance with the challenges identified in the framework of the preliminary research on the issue of waste generation in ZDK, the stated project activity aims to provide a detailed insight into the flows of waste generated in the municipal and industrial application of plastics and the wood industry, i.e. in the furniture production industry in the Zenica-Doboj Canton, and to identify the potential to use it as a resource for the local economy. This includes mapping and analysis of waste flows (Material Flow Analysis - MFA) in ten wood companies, and five medium or large wood processing companies (including furniture production), which operate in ZDK, and the identification of concrete measures to increase circularity along the entire waste flow in these companies.

2. Concept of practical research

The composition of waste, which is not classified as mixed municipal waste, is dominated by industrial waste, the amount of which has increased by 1.6 times compared to 2021 and amounts to 1,463 tons.

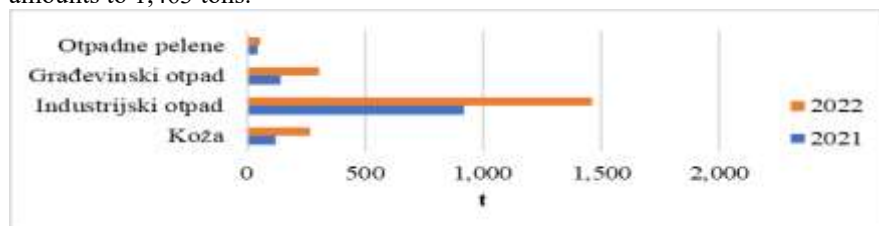


Figure 1. Quantities of specific waste categories received at the Mošćanica landfill in 2021-2022 from the ZDK area

In the structure of industrial waste, textile waste dominates, the amount of which in 2022 was 1,448.45 tons.



Figure 2. Structure and quantities of industrial waste from the area of ZDK 2021-2022. According to the project task, the goal and scope of the material flow analysis from the wood sector:

- Mapping, quantification and analysis of waste streams in 10 large and medium-sized companies from the wood sector from the area of ZDK, which dispose of their waste at the Moščanica Regional Landfill or burn it.
- Identification of concrete measures for the sustainable management of waste streams, guided by the principles of circularity, while defining the prerequisites that are necessary for the implementation of the proposed measures.
- Reviewing the achieved level of Industry 4.0 application in each of the companies

The methodological approach is described below through 5 key steps:

1. Selection of companies for analysis within the project
2. Preparation of the framework for material flow analysis
3. Data collection in the field
4. Analysis of material flows on the sample

Proposal of concrete measures for sustainable management of waste streams:

On the basis of the previous step, that is, the analysis of material flows, the identification of concrete measures for the sustainable management of waste flows was carried out, guided by the principles of circularity, while defining the prerequisites that are necessary for the implementation of the proposed measures. Each measure is presented as a practice, and described following the following structure:

- Name of practice
- Waste streams
- A brief description of the practice and products resulting from the implementation of the practice
- Examples of good practice
- Economic aspects
- Prerequisites
- Stakeholders involved in the implementation of the practice.

3. Example of material flows of one of the companies

The company Pero d.o.o. from Zenica sells construction and installation materials, and cuts wooden panels. Wooden panels are used to make custom-made elements for kitchens, wardrobes and chests of drawers, which customers can later assemble themselves. For the development of new products, the company relies on a team of experts who create cutting lists according to the specific requirements of end customers, providing customized solutions that meet market needs. The company does not operate on the Lohn principle, and its products are mainly sold to the markets of Bosnia and Herzegovina and Slovenia.

In 2022, the company's production capacity was 1,075.46 tons of elements adapted for kitchens, wardrobes and chests of drawers. In this production, the largest capacity was occupied by elements for kitchens (approx. 597 t), then elements for wardrobes (approx

. 359 t) and finally elements for chests of drawers (approx. 120 t) (Figure 65).



Figure 65. Production capacity of the company Pero d.o.o. for the year 2022

Raw materials:

As basic raw materials for the production of furniture, the company Pero d.o.o. uses different types of artificial wood, including chipboard, worktops, edging strips, MDF boards and OSB boards.

Unnecessary stocks of large quantities of raw materials are not created, but procurement is planned according to the specific requirements of end customers. In this way, the company optimized the use of raw materials, preventing excess stock that could result in an increased amount of waste.

In 2022, the company used a total of 1,130.46 tons of raw materials, which are shown by specific types (Table 20), with the largest amount being chipboard (66.21% of the total amount of raw materials used) (Figure 66).

Table 20. Distribution of input raw materials by specific types in 2022 in Pero d.o.o.

Materials	Quantity [t]
Chipboard	748,50
Countertop	71,39
Edge band	2,86
Medium Density Fiberboard - MDF	207,67
Oriented Strand Board - OSB	100,04
Summary	1.130,46

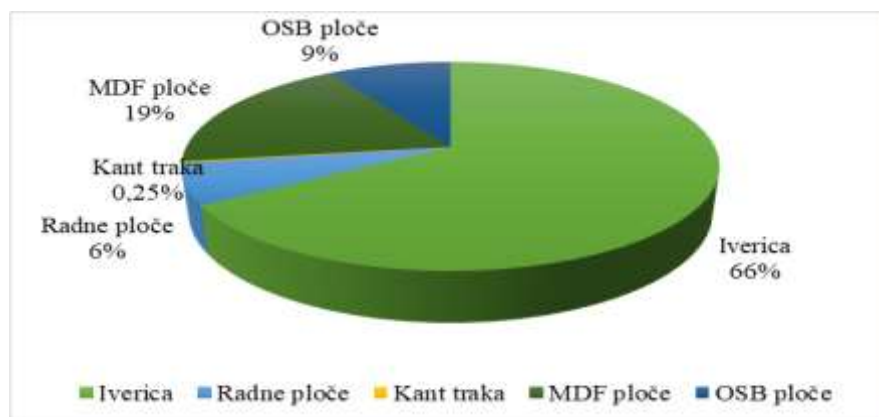


Figure 66. Raw materials by composition in Pero d.o.o.

Waste from the production process:

The production processes of cutting chipboard and OSB boards are the parts of production where the largest amount of wood waste is generated. Although production continues continuously throughout the year, there is a tendency to increase activity from March to August, so that in that period it is also possible to create larger amounts of waste.

The generated wood waste from the company Pero d.o.o. is classified in category 03 01 05: Sawdust, shavings, wood cutting waste, wood, chipboard and veneer that do NOT contain hazardous substances.

Table 21. Types, quantities and method of disposal of waste generated in 2022 in Pero d.o.o.

Waste	Amount[t]	Disposal method
Chipboard and MDF board pieces	25,00	Handover to a third party for incineration purposes
Cutting dust	30,00	Handover to a third party for incineration purposes
03 01 05: Sawdust, shavings, wood cutting waste, wood, chipboard and veneer NOT containing hazardous substances	55,00	

The company cites the problem of disposal of waste from the production process, and for this reason it is forced to store the resulting wood waste in a specially designated place within the company. After that, waste disposal is done every 10 days by handing it over to a third party for incineration.



Figure 67. Waste storage at Pero d.o.o.

Material flow

In order to show the company's material flow, a Sankey diagram was created (Figure 68).

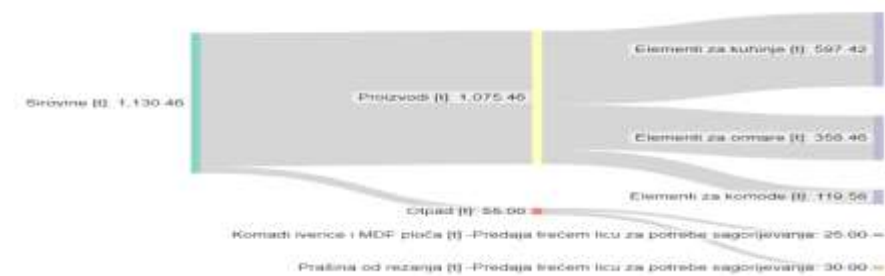


Figure 68. Sankey diagram of the company Pero d.o.o.

Based on the presented data from the Sankey diagram, it can be concluded that the

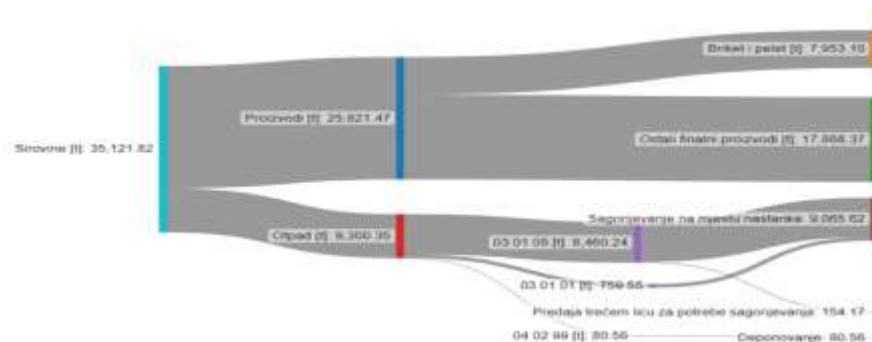
company has very well optimized the process of cutting panels and thereby reduced the amount of generated waste, which in this case amounts to 4.86% of the total raw material at the entrance.

4. Directions of further research

Based on the presentation of one of the companies from ZDK, it is clear that techno-economic analyzes for the potential production of WPC - Wood Polymer Composite must be done for the planned other companies from the wood processing sector in the Zenica-Doboj canton and in other cantons of FBH and Republika Srpska in order to get an overall picture of wood waste from the entire territory, which is seen as a unique economic base for the production of a new product based on the postulates of a circular economy.

At the time of writing this paper, 6 companies from the Zenica-Doboj canton were processed, and in the research process are the companies Prograd, Glovis, Domus-Aredi, etc. For the 6 companies processed, a summary of the material flow diagram is given as follows.

In order to draw conclusions about the current method of disposal of waste streams from the wood industry, a Sankey diagram was created showing summary data for the analyzed sample of six companies from the ZDK area: Krivaja TMK, Prevent Interior, Secom, Nansi, Pero and Interprocess (Figure 74).



Slika 1. Sankey dijagram analiziranih kompanija drvnog sektora u ZDK

73.5% of the product (25,821.47 t/year) and 26.5% of waste (9,300.35 t/year) are created by processing the input raw material.

As much as 30.8% of the product range of the analyzed companies, i.e. 7,953.10 t/year, is pellets and briquettes, while 69.2% refers to final products such as furniture, parquet, prefabricated houses. This implies that of the total amount of raw materials, 22.6% of the resulting waste flow was diverted to the production of energy (pellets and briquettes) which is placed on the market as a final product and from which additional income is generated.

The dominant way of disposing of wood waste (03 01 05 and 03 01 01) is incineration at the place of origin, that is, the use of the waste as energy in our own boilers with a share of 98% in relation to the total amount of wood waste generated. The thermal energy obtained from this waste is used, in addition to meeting the company's heat needs, for the needs of dryers.

Certain companies stated that due to insufficient amounts of their own waste for incineration, they buy additional amounts to meet their own heat needs. The rest of 2% is also used for incineration purposes, but by handing it over to a third party.

A special problem in wood processing is created by manufacturers who predominantly work with artificial types of wood such as MDF-medijapan, chipboard, hardboard, etc. and who practice burning this type of wood waste (in our sample, the company PERO Zenica, Prevent Interior). These semi-products, and ultimately the waste streams, contain a lot of glue and other artificial resins which, when burned, give off unfavorable and dangerous flue gases, significantly pollute flue systems and cause problems in the operation of conventional boilers. In this sense, the research of potential methods of using these materials in recycling and reuse in some products is gaining particular importance.

5. Conclusion

Based on the analysis, it is clear that the companies recognized the economic importance of processing wood residues into fuel and thus invested in plants for the production of pellets and briquettes. Nevertheless, the analysis showed that the amount of waste that continues to be generated is not negligible, even after the introduction of energy production practices, so 26.5% of the input raw material becomes a waste stream. According to the hierarchy of waste management, these are the two least desirable waste disposal options (incineration and landfilling) that do not create added value, but rather additional pressure on the environment.

It is particularly important to emphasize that at this moment in BIH there is no problem of wood waste from natural wood, because almost 100% of it ends up in products such as pellets, briquettes or wood chips. The problem is the waste of artificial wood assortments such as chipboard, mediapan, veneer, etc. products that contain numerous non-combustible elements for direct combustion processes. Combining such waste with plastic waste and developing the production of WPC-type products would significantly solve the existing environmental problems generated by this waste as well as plastic waste.

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THE NEXUS BETWEEN ECONOMIC GROWTH AND EXCHANGE RATES: IMPLICATIONS FOR MACROECONOMIC STABILITY IN AN OPEN ECONOMY.

(The Moderating Role of Remittances and FDI on the Real Exchange Rate–Economic Growth Linkage: A VECM Analysis for Albania (2005–2023))

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Abstract

The dynamic relationship between economic growth and exchange rates is a central theme for economists and policymakers, primarily due to its significant implications for macroeconomic stability, international competitiveness, and national development strategies. This study investigates the theoretical foundations and policy relevance of the link between a country's economic growth, measured by changes in Real Gross Domestic Product (Real GDP), and fluctuations in the Real Exchange Rate (RER).

We specifically consider their interdependence with macroeconomic policies and trade linkages. While a strong exchange rate can signal economic strength and attract foreign investment, high volatility potentially leading to currency appreciation poses a considerable threat to trade competitiveness.

To analyze this interaction, the study employs a Vector Autoregressive (VAR) econometric model and Vector Error Correction Model (VECM) in first differences on quarterly data for the Albanian economy spanning the period 2005–2023. The analysis focuses on the design and implementation of monetary policy and its impact on exchange rates and credit-related economic growth.

Key Findings: Long-Run Cointegration: A long-run cointegrating relationship exists between the Real Exchange Rate and Real GDP. Negative Impact of Appreciation: Rapid currency appreciation has a negative but delayed impact on the trade balance and Real GDP, particularly via the export sector. Monetary Policy Moderation: The Central Bank's monetary policy intervention through interest rates significantly affects exchange rate stability. However, the effectiveness of this policy is moderated by high flows of Remittances (REM) and Foreign Direct Investment (FDI).

These results underscore that macroeconomic parameters cannot be conceptualized in isolation over an extended period. The study offers crucial policy implications, emphasizing the need to balance exchange rate management to prevent market disequilibrium and negative impacts, while ensuring more effective coordination between monetary and economic growth policies for long-term stability.

Keywords: *Real Exchange Rate, Economic Growth, Cointegration, VAR/VECM Model, Monetary Policy, Remittances, FDI, Dutch Disease.*

1. Introduction

1.1. Broad Context and Global Significance

The dynamic relationship between economic growth, measured by Real GDP, and the RER

constitutes a cornerstone of macroeconomic theory, vital for price stability and a nation's trade competitiveness. Exchange rates-whether nominal or real-represent the value of a country's currency relative to others and fundamentally affect international trade and capital flows. Exchange rate policy acts as a critical transmission channel for monetary policy, influencing relative prices and, consequently, investment and trade decisions. In many developing and transitioning economies, the efficacy of monetary policies in managing the exchange rate and stimulating economic growth is increasingly challenging, illustrating that this essential link cannot be conceptualized in isolation.

1.2. Narrowing the Focus and Research Gap

While the classic Mundell-Fleming model highlights the role of the exchange rate as a transmission channel, its assumptions regarding capital flows are often simplified. This study addresses a research gap by modeling the long-term cointegration between GDP and the exchange rate and analyzing the mitigation of interest rate efficiency by non-trade capital flows (Remittances and FDI). Large flows of Remittances and FDI, often driven by non-interest rate factors, significantly reduce the impact of Central Bank interest rate changes on the RER, thereby questioning the efficient functioning of monetary policy.

1.3. Specific Case Study (Albania) and Study Objective

The Albanian economy serves as a compelling case study to address these gaps. During the post-crisis period (2005–2023), the country has experienced persistent and high in flows of remittances and FDI. These flows generate a constant appreciation pressure on the currency, challenging the Bank of Albania. This pressure creates a policy dilemma: How can the Central Bank maintain price stability through the interest rate when its transmission mechanism is being circumvented by non-trade-related capital inflows?

The primary objective is to use a rigorous VAR/VECM approach with quarterly data (2005–2023) to:

- Test the long-term cointegration relationship between the Real Exchange Rate and Real GDP.
- Quantify the impact of currency appreciation on Real GDP using Impulse Response Functions (IRF).
- Empirically evaluate how capital flows (Remittances/FDI) moderate the efficiency of the interest rate policy.

2. Literature Review

2.1. Theoretical and Empirical Linkage: Real Exchange Rate and Economic Growth

The link between the RER and economic growth is fundamental yet often debated in two directions.

- The Trade Competitiveness Channel (Marshall-Lerner Effect): Appreciation (increase) in the RER makes exports more expensive and imports cheaper. This weakens the trade balance, reduces aggregate demand for domestic goods, and inhibits GDP growth. This paper confirms this channel, showing that long-term appreciation causes a 1.25% decrease in Real GDP. Studies, such as Yang (2008), argue that a sustainably managed or undervalued RER is critical for developing export industries and long-term growth.
- The Demand/Equilibrium Level Channel (Balassa-Samuelson Theory): Economic growth (increase in GDP) often contributes to RER appreciation. When productivity

growth in the tradable goods sector (exports) is faster than in the non-tradable sector, it raises relative wages across the economy and increases the prices of non-tradable goods. This price increase leads to RER appreciation. The finding of a long-term cointegrating relationship confirms that these two macroeconomic parameters are fundamentally linked in long-run equilibrium.

2.2. Monetary Policy Challenges from Capital Flows (Moderating Role and Dutch Disease)

Context of the Dutch Disease: The presence of large non-trade capital flows, such as Remittances (REM) and FDI, causes the phenomenon known as the **Dutch Disease** (Sachs & Warner, 1995).

- **Mechanism:** These capital inflows increase demand for non-tradable goods and services (e.g., construction, domestic tourism).
- **Effect:** The increased demand leads to relative price inflation in the non-tradable sector, causing RER appreciation. This appreciation severely harms the export and tradable goods sector, transforming a capital benefit (REM/FDI) into a competitive curse. This study confirms that Albania is susceptible to this phenomenon.

The Moderating Role of Capital Flows: While Mundell-Fleming suggests the exchange rate is the primary transmission channel for monetary policy, this study highlights a gap: the efficiency of the interest rate policy is mitigated (moderated) by large capital flows.

- **Reason for Mitigation:** Remittance and FDI flows, especially in small, open economies like Albania, are often driven by non-interest factors (e.g., family ties for Remittances, or geopolitical/structural demands for FDI).

Implication: As Variance Decomposition Analysis shows, REM and FDI flows together explain about 35% of the RER fluctuations in the medium term, whereas the interest rate explains only about 8%. This indicates that the Central Bank has limited control over the RER via its main instrument, thus questioning the efficient functioning of monetary policy.

3. Methodology

3.1. Data and Study Period

The study utilizes quarterly data for the Albanian economy over the period 2005–2023. The use of quarterly data provides a sufficient number of observations ($N \approx 76$) to apply the VAR model.

The main macroeconomic variables used are:

- Real GDP ($\ln rY$): Measures economic growth.
- Real Exchange Rate ($\ln rEX$): Measures trade competitiveness.
- Interest Rate (i): Represents the Central Bank's monetary policy instrument.
- Remittances ($\ln REM$) and FDI ($\ln FDI$): Represent non-trade capital flows.

All time series data are expressed in natural logarithms.

Table 1: Descriptive Statistics of Variables (2005 – 2023)

Variab le	Measur ement	Me an	Standard Deviation	Minim um	Maximu m	Observations (N)
ln rY	Log of Real GDP	12. 35	0.21	11.98	12.79	76
ln rEX	Log of Real Exchange Rate	4.5 8	0.08	4.45	4.75	76
i	Interest Rate (In %)	2.5 5	1.32	0.50	5.50	76
ln REM	Log of Remittanc es	6.8 2	0.45	6.05	7.68	76
ln FDI	Log of FDI	6.4 4	0.38	5.75	7.12	76

3.2. Econometric Approach: Cointegration Tests

After confirming that the variables are non-stationary in levels but are I(1) (stationary in first differences), the Johansen & Juselius (1990) cointegration test was applied to determine the number of cointegration vectors, utilizing a Vector Error Correction Model (VECM).

The implemented VECM model is of the form:

$$\Delta Y_t = c + \pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i Y_{t-i} + \epsilon_t$$

Where:

- ΔY_t – The change (first difference) of the vector of endogenous variables measures short-term movements.
- πY_{t-1} – The error correction part. This ensures that the variables do not permanently deviate from their long-term relationship.
- $\sum_{i=1}^{p-1} \Gamma_i Y_{t-i}$ – Matrix representing short-term dynamics (lagged effects).
- ϵ_t – Is the error term (white noise).

Stationarity Tests (Unit Root): The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used to confirm I(1).

Lag Length Selection: The optimal lag length was selected using the Akaike Information Criterion (AIC) and the Schwarz Criterion (SC), which suggested a lag of k=2 in the VAR/VECM model.

Table 2: Johansen Cointegration Test Results (Trace Test)

H ₀ Hypothesis (Rank)	Trace Statistic	Critical Value (5%)	Critical Value (1%)	Conclusion
$r=0$ (No cointegration)	88.54	69.82	76.07	Reject H ₀
$r \leq 1$ (Max 1 vector)	46.12	47.85	55.43	Do Not Reject H ₀
$r \leq 2$ (Max 2 vectors)	25.33	29.79	35.46	Do Not Reject H ₀

Conclusion: Both tests (Trace and Maximum Eigenvalue) suggest the existence of one cointegration vector ($r = 1$) at the 5% significance level. This confirms a long-term equilibrium relationship between the macroeconomic variables.

4. Econometric Results and Discussion

4.1. Long-Term Equilibrium Relationship and the Risk of Currency Appreciation

The VECM implementation confirmed that the quarterly data for the Albanian economy during 2005–2023 possess a single cointegration vector ($r = 1$) at the 5% significance level. This verifies a long-term equilibrium relationship between the Real Exchange Rate (RER), Real GDP, and capital flows.

The estimated long-term equilibrium equation, standardized with respect to Real GDP ($\ln rY$), is as follows:

$$\ln rY = 15.52 - 1.25 \ln rEX + 0.35 i + 0.50 \ln REM + 0.40 \ln FDI + \epsilon_t$$

Variables: $\ln rEX$ (Real KKK); i (Interest Rate); $\ln REM$ (Remittances); $\ln FDI$ (FDI)

Table 3: Long-Term Cointegration Vector (β Vector) and Error Correction Coefficient α (ECT)

Variable	β Vector Coefficient (Long-Term Equilibrium $\ln rY=1.00$)	α Coefficient (ECT) For $\Delta \ln rY$
$\ln rEX$ (Real RER)	-1.25 ***	-0.18 (t-Stat = -2.50)**
i (Interest Rate)	+0.35 **	
$\ln REM$ (Remittances)	+0.50 ***	
$\ln FDI$ (FDI)	+0.40 **	
Constant	+15.52 ***	

β – Cointegration Vector (long-run equilibrium).

α – Error Correction Mechanism Coefficient (ETC) (speed of return to equilibrium).

Statistical Significance: *** denotes $p < 0.01$; ** denotes $p < 0.05$.

Interpretation of Long-Term Coefficients β Vector):

- **Negative Impact of RER:** The Real Exchange Rate coefficient ($\ln rEX$) is negative and statistically significant ($\beta = -1.25$). This indicates that any long-term currency appreciation (an increase in $\ln rEX$) harms economic growth. A 1% increase in the RER in long-term equilibrium is associated with a 1.25% decrease in Real GDP. This result highlights the severity of the damage inflicted on Albania's trade competitiveness, particularly through the export sector.
- **Support from Capital Flows:** The positive coefficients for Remittances ($\ln REM = +0.50$) and FDI ($\ln FDI = +0.40$) suggest that these flows, despite causing appreciation pressure on the RER, play a supportive role in long-term Real GDP growth by providing capital, technology, and household consumption.
- **Interest Rate (i):** The positive coefficient ($+0.35$) suggests that the Central Bank's interest rate may be an indicator of stability and confidence, signaling a healthy financial environment that supports long-term GDP, contrary to simple expectations.
- **Speed of Adjustment:** The Error Correction Coefficient (ECT), which is negative and statistically significant ($\alpha = -0.18$), confirms the adjustment mechanism towards equilibrium. Any deviation is corrected at a rate of 18% per quarter.

4.2. Asymmetric and Delayed Impact of Currency Appreciation

The Impulse Response Function (IRF) analysis revealed the short-term dynamics of currency appreciation's impact on economic growth. A positive shock to the Real Exchange Rate (appreciation) causes a negative and statistically significant impact on Real GDP. This impact is not immediate but reaches its negative peak after approximately four quarters (1 year). This transmission lag is typical and reflects the time required for exchange rate shocks to fully affect trade agreements, investment decisions, and consumer spending. This finding aligns with the concerns raised in the Dutch Disease theory, demonstrating that appreciation pressures generated by non-trade capital harm the tradable goods sector.

4.3. Moderated Efficiency of Monetary Policy by Capital Flows

The most fundamental finding of this study relates to the moderating role of non-trade capital flows on the efficiency of the Central Bank's interest rate policy. The Variance Decomposition Analysis assesses how much of the Real Exchange Rate fluctuations are explained by shocks from other variables.

Table 4: Variance Decomposition Analysis for the Real Exchange Rate ($\ln rEX$)

Shock (Source of Variation)	Percentage of Variation Explained in $\ln rEX$ (Quarter 4)	Percentage of Variation Explained in $\ln rEX$ (Quarter 10)
Shock to $\ln rEX$ (Own Shock)	$\approx 75\%$	$\approx 50\%$
Shock to Interest Rate (i)	$\approx 5\%$ (Low Percentage)	$\approx 8\%$ (Low Percentage)
Shock to $\ln REM$ (Remittances)	$\approx 12\%$ (High Percentage)	$\approx 20\%$ (High Percentage)
Shock to $\ln FDI$ (FDI)	$\approx 8\%$ (High Percentage)	$\approx 15\%$ (High Percentage)
Other Shocks (GDP)	$\approx 0\%$	$\approx 7\%$

These results demonstrate a clear dominance of non-trade flows:

- **Limited Interest Rate Efficacy:** The impact of the interest rate policy (i) is minimal, explaining only about 8% of the Real Exchange Rate variation in the medium term. This confirms that the monetary policy transmission mechanism is weakened and moderated by capital flows.
- **Capital's Appreciation Pressure:** Remittance and FDI flows together explain approximately 35% of the Real Exchange Rate fluctuations. These capital inflows, often driven by non-interest factors (such as migration or structural investment demands), exert continuous appreciation pressure on the domestic currency.

This moderation of efficiency raises a significant policy dilemma for the Central Bank, underscoring that the standard interest rate instrument is insufficient for managing the Real Exchange Rate and competitiveness in an open economy with high capital flows.

5. Conclusions

This study analyzed the dynamic link between economic growth and exchange rates in Albania during the 2005–2023 period, focusing on the moderating role of Remittances and FDI. Using a Vector Error Correction Model (VECM), three key conclusions were revealed:

Key Conclusions:

1. **Long-Term Equilibrium and Competitiveness Risk:** A long-term cointegrating relationship exists between the RER and Real GDP. A rapid and delayed currency appreciation of 1% shows a 1.25% negative impact on Real GDP in the long term, severely damaging the country's trade competitiveness.
2. **Delayed Impact:** The Impulse Response Function (IRF) analysis highlighted that this negative impact peaks after approximately four quarters (1 year), indicating a significant transmission lag.
3. **Monetary Efficacy Moderation:** The efficiency of the Central Bank's interest rate policy in managing the RER is limited and mitigated. High flows of Remittances and FDI together explain about 35% of the RER fluctuations in the medium term, while the interest rate plays a much smaller role. This challenge is a manifestation of the Dutch Disease in Albania.

Policy Implications:

These results emphasize that macroeconomic parameters cannot be conceptualized in isolation. To ensure long-term macroeconomic stability and balance the effects of capital flows, three lines of action are recommended:

- **Policy Coordination and Macro-prudential Instruments:** More effective coordination between monetary and structural/fiscal policies is essential. To compensate for the mitigated efficiency of the interest rate, the Bank of Albania may need to increase the use of macro-prudential instruments. These could include managing exchange rate risk in the financial sector or setting risk-weighting restrictions for foreign currency loans.
- **Balanced Exchange Rate Management:** Policymakers must be careful to avoid high instability that could lead to market disequilibrium. The goal is to find a balance between attracting investment and maintaining trade competitiveness.
- **Structural Policies for Capital Absorption (Against Dutch Disease):** Fiscal policies should be redirected towards investment in the tradable sector. Investing in export-supporting infrastructure, technology, and workforce education is crucial to increase

the productivity of the tradable sector, thereby cushioning the RER appreciation pressures and counteracting the negative effects of the Dutch Disease.

Future Research

Future research should focus on developing more detailed structural models, specifically considering the role of capital flows in financing specific sectors such as tourism and real estate, and their impact on internal price dynamics.

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SOLUTION OF NEGATIVE ENVIRONMENTAL ASPECTS AS A PILLAR FOR THE DEVELOPMENT OF CIRCULAR ECONOMY

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Abstract

Plastic waste represents one of the most critical environmental challenges in Bosnia and Herzegovina (B&H), where each resident is estimated to release 10–15 kg of plastic into the environment annually. Despite legislation aligned with EU directives, recycling performance remains extremely low, with less than 2% of plastic waste being recovered. In parallel, the industrial sector in Central Bosnia generates substantial amounts of wood residues and fine particulates from the processing of artificial wood products, including chipboard and MDF (medium density fibreboard). These waste streams, alongside growing volumes of post-consumer plastics, present significant yet underutilized potential for circular-economy applications. Within the EU-funded RTIT (Research, Technology and Innovation Transfer) project, researchers at the University of Zenica are investigating the techno-economic feasibility of producing wood-polymer composites (WPC) from locally available waste resources. WPC materials are increasingly used worldwide in construction, facade systems, and interior and exterior applications due to their durability, versatility, and reduced reliance on virgin raw materials. Their development in B&H could strengthen domestic manufacturing capacity, diversify product portfolios, and reduce the environmental burden of unmanaged waste. Achieving these outcomes, however, requires investment in material-processing technologies and policy support aimed at enabling innovative waste valorization. This study highlights the environmental urgency, industrial potential, and strategic pathways for integrating plastic and wood waste streams into sustainable composite production.

Keywords: *waste, artificial varieties of wood, plastic, composites, circular economy*

1. Introduction

Despite the existence of laws and secondary legislation aligned with EU directives, the public in Bosnia and Herzegovina (B&H) expresses a negative attitude toward the current state of waste management, pointing fingers primarily at politicians. This research attempts to examine how significant the role of economics is, versus public awareness, culture or education, and many other invisible and intangible parameters, in tackling the pressing and visible environmental problem: tons of plastic waste all around us. Of course, there are also tons of other forms of waste that are often less visible (wood, rubber, textile, metal, etc.) but are nonetheless very important pollutants of the environment — and first of all, they create unpleasant landscape images that stand in stark contrast to the natural beauty of B&H.

Waste management activities in the Federation of B&H are carried out by 69 municipal waste utility companies. As stated in the Federal Environmental Protection Strategy for 2022–2032 [1], these utility companies are “poorly supplied, have outdated equipment, and are most often financially unstable.” According to the Strategy, dry recyclable waste — which includes plastic, glass, paper, metals, cans, and PET (Polyethylene terephthalate) packaging — makes up 24–38% of the total waste, and the goal is to recycle 55% of packaging waste. By 2032, the target is to recycle 19% of plastic. One of the strategic goals defined by the Strategy is to reduce the volume of waste and increase the amount of reused materials.

According to the 2022 Environmental Status Report, published by the Environmental Protection Fund of the Federation of B&H [2], special regulations have been adopted to govern packaging waste, electronic and electrical waste, and their recycling. However, in the period from 2013 to 2020, only 0.3% of the total collected municipal waste was processed. The Report also states that there are four authorized waste-management system operators for the territory of the Federation. According to the data of the Environmental Protection Fund, between 2012 and 2020 these operators delivered some 195,722 tonnes of packaging waste for recycling or other purposes.

Nevertheless, each citizen in B&H annually “disposes” into nature 10–15 kilograms of plastic waste. The consequences of this system inefficiency are visible across the country. Rivers such as the Bosna, Drina, Neretva, and Vrbas routinely accumulate large amounts of floating waste, particularly during heavy rainfall and snowmelt. The 2024 disaster on the Neretva near Jablanica dramatically illustrated this problem: pluvial erosion washed enormous quantities of plastic into the riverbed, forming extensive floating deposits (Figure 1). Similar accumulations appear behind major hydropower dams in Višegrad, Zvornik, Bočac, Grabovica, and other locations. It is particularly alarming that the Drina River, designated as a national park, functions as a collector of plastic, car tires, and other debris. Illegal landfills along riverbanks further exacerbate this situation and were a key factor in the “hydrocide” on the Drina, where approximately 10,000 m³ of plastic formed a floating island [3].

While plastic was initially celebrated as a resource-saving substitute—starting with Leo Baekeland’s invention of Bakelite, which reduced the use of wood and cellulose—uncontrolled growth in plastic production has created one of the most serious environmental problems of the modern era [4].

Plastic is non-biodegradable, accumulates in ecosystems, and poses a threat to living organisms. In B&H, each inhabitant consumes around 70 plastic bottles per year, yet only a small fraction is recycled. UNDP data show that nearly 150,000 tonnes of plastic waste were generated in 2018, but less than 2% entered recycling streams [5].

Some initiatives demonstrate progress. Ekopak, a non-profit packaging waste management company, reported in 2024 that it delivered 22,000 tonnes of packaging waste for recycling from all cantons of the Federation, including 3,287 tonnes of plastic—exceeding the plastic recycling target by 6% [6]. However, this system covers only a portion of the total plastic waste generated. Data from ALBA Zenica d.o.o. illustrate the complexity of waste collection: although 28,000–33,000 tonnes of municipal waste are collected annually for approximately 120,000 residents, PET packaging constitutes around 19% of the waste stream, yet much of it is collected informally by individuals, making precise and reliable data difficult to obtain [7].

Figure 1. Floating Waste Accumulation on the Neretva River after the Jablanica Incident



Beyond solid waste accumulation, plastic production itself contributes significantly to climate change: manufacturing one tonne of plastic emits 2.5–3 tonnes of CO₂. Environmental risks extend to the pedosphere, where microplastics deposited by rivers accumulate in agricultural soils, potentially degrading into nanoplastics that cannot be removed and may infiltrate the food chain. These particles pose a threat to soil fauna and can have cascading effects across entire ecosystems. With macroplastics capable of entangling wildlife and microplastics able to enter living organisms—including humans—the need for systematic recycling, expanded ecological awareness, and regulatory reforms is increasingly urgent [8]. The severity of the problem has already led 45 countries to adopt deposit-return systems for polluting packaging, highlighting international recognition of the scale of plastic pollution.

2. European experiences

Global world plastic production has increased exponentially over recent decades — from 1.5 million tonnes in 1950 to 359 million tonnes in 2018 [9]. The low recycling rate in the EU represents significant economic and environmental losses. The recycling rate of packaging plastics in the EU is increasing, but remains a challenge. According to Eurostat, for 2023 the EU recycled around 42.1% of plastic packaging (data published in 2025 for 2023). PPWR (Packaging and Packaging Waste Regulation), the new EU regulation, have been defined three main objectives:

Avoidance – limit unnecessary packaging and promote reusable and refillable packaging. Recyclability – by 2030, ensure all packaging placed on the EU market can be recycled in a sustainable way. Secondary raw materials – reduce reliance on virgin resources and develop markets for recycled plastics through binding targets.

Collection targets are also set for bottles and packaging and a gradual increase in the minimum proportion of recycled content (for single-use plastic bottles progressively to high percentages by 2040). The EU's target under the Green Deal and the new PPWR regulation is 55% recycling of plastic packaging by 2030 [10,11]. It is estimated that a large part of the value of plastic materials is lost due to single, short-term use and improper circulation of the material; the exact percentage varies by source. In terms of greenhouse gas emissions, a 2019 analysis by CIEL estimates that plastic production and incineration contributed more than 850 million tonnes of CO₂-equivalent in 2019 [12], while the OECD's Global Plastics Outlook estimates around 1.8 billion tonnes of CO₂-eq for 2019 — the differences stem from the methods and life cycle scope used in the analyses [13]. The projections show significant increases in emissions if circular economy measures are not implemented. By 2050, those emissions could rise to 2.8 billion tonnes — but better

recycling practices could significantly reduce this.

Some references and summaries of public reports mention targets for the share of recycled PET in plastic bottles (earlier proposals mentioned targets such as 25% by 2025 and 30% by 2030), but the final and agreed binding targets in the latest agreements (PPWR) include a progressive increase in the minimum recycled content for single-use bottles and a gradual increase towards 2040 (e.g. up to 65% in some stages) [14].

According to the International Union for Conservation of Nature (IUCN) 33 Mediterranean countries collectively discharge around 229,000 tonnes of plastic into the Mediterranean Sea each year — equivalent to more than 500 shipping containers (with a range of estimates of 148,000–610,000 t/year depending on the scenario). The IUCN report warns that without significant action, the amounts could increase significantly by 2040, and that more than a million tons of plastic have already accumulated in the basins of the seas [15].

Beyond conventional industrial pollution, perhaps the greatest threat comes from plastic entering the food chain and ecosystems. Annual per capita plastic production exceeds 50 kg — globally, that amounts to roughly 400 million tonnes [16,17]. For over a decade, we have known that microplastics are present inside aquatic organisms. More than 80% of waste in marine environments is plastic, and it is estimated that plastics contribute to the deaths of at least one million birds, 100,000 mammals, and countless fish [18-24].

Since not all plastics are recyclable, different waste-management approaches are necessary. According to the European Parliament, about one-third of EU plastic is recycled, while 25% is either incinerated or landfilled, and a substantial share is exported to other countries for disposal. Plastics take more than 500 years to degrade, which highlights their long-term environmental harm. Moreover, their degradation and incineration generate greenhouse gases, adding to climate change [25-27].

Addressing these negative impacts requires long-term planning and policy strategies. One example of good practice is Croatia's deposit-return system for PET bottles, which has significantly reduced plastic litter. According to a statement from the Ministry of Environmental Protection and Green Transition, from 2006 to 2023, the Environmental Protection and Energy Efficiency Fund paid a total of 843.7 million euros in refundable fees, and in 2024, an amount of 60 million euros is planned for the payment of refundable fees [28].

3. Project activities

Within the RTIT INTEREG EU project (Research, Technology and Innovation Transfer), initial research into the practical application of technology transfer from higher education institutions to the economy was carried out with the aim of developing a new product — WPC, or Wood Polymer Composite, which would be basically made from waste materials — wood and plastic. Namely, numerous studies conducted in recent years in Bosnia and Herzegovina have shown that waste materials have their place in the circular economy.

Wood-plastic composites consist of a polymer matrix and wood pulp as a filler. As with other composite materials, the constituent materials retain their basic properties, but by combining them, a new material is achieved with a favorable price and mechanical and physical characteristics suitable for various applications [29-32]. They are formed into boards or beams that can be used for outdoor and indoor flooring, fences, park benches, outdoor and indoor furniture (e.g. chairs, car seat backs) and door and window frames (Table 1).

Table 1. Examples of the use of wood-plastic composites [33]

PUBLIC SPACES		
Sound walls Fences Pedestrian bridges Urban furniture Park structures Children's playgrounds		
EXTERIORS		
Terraces Facades Garden elements Fences Architectural details Stairs		
INTERIORS		
Floor and wall coverings Furniture Kitchen surfaces Revolving doors Door and window frames Partition walls		
TRANSPORT		
Floors and coverings in vehicles Technical panels Cabin and engine parts Seat supports Ship floors Interior door linings		

Most low-cost polymer materials — such as polypropylene (PP), high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyethylene terephthalate (PET), and polystyrene (PS) — typically exhibit relatively low mechanical strength. For that reason, mineral fillers (for example, calcium carbonate, CaCO_3) are commonly added during processing to improve mechanical performance.

However, the increasing price of inorganic fillers has stimulated research into more environmentally friendly alternatives. Wood fibers and fibers from various plant sources (e.g., wheat straw, rice husk, flax) have been demonstrated as effective replacements for mineral fillers. Wood is particularly attractive as a filler because of its structure, low density, and favorable mechanical properties [34-36].

In comparison to natural wood and traditional wood-based products, wood-polymer composites (WPCs) are relatively new materials. In developed countries, their use is widespread: they are manufactured by mixing recycled plastics with milled wood of various particle sizes — from larger chips to wood flour. However, this technology has not yet been developed on an industrial scale in Western Balkan countries [37].

Incorporating wood particles into a polymer matrix generally enhances stiffness and some strength characteristics, while the polymeric phase reduces water uptake and swelling of the lignocellulosic fraction. Utilizing wood and agricultural residues as fillers thus yields materials with good physical-mechanical properties and at the same time supports efficient waste valorization and reduced environmental impact [38].

4. Economic parameters for potential production

In 2024, the export value of Bosnia and Herzegovina's wood industry amounted to **1,623,960,717 BAM**, representing a **decline of 8.5%** compared to 2023, when exports totaled **1,774,748,938 BAM**. In terms of quantity, exports decreased by **2.4%**, falling from **1,298,776,682 tonnes** in 2023 to **1,266,985,494 tonnes** in 2024. The import value in 2024 reached **549,823,010 BAM**, which is **6.3% lower** than in the previous year, when imports were valued at **587,088,826 BAM**. Quantitatively, imports decreased by **18.5%**, from **498,022,305 tonnes** in 2023 to **405,957,859 tonnes** in 2024. The total foreign trade volume of the wood industry in 2024 amounted to **2,173,783,727 BAM**, while the export-to-import coverage ratio stood at **295%**, resulting in a foreign trade surplus of **1,074,137,707 BAM** [39].

In the first half of 2025, wood-industry imports into BiH amounted to **282.9 million BAM**, a rise of 2.6% compared to the same period the previous year. In terms of volume, imports totaled **236,905 tonnes**, a 14.6% increase, confirming heightened domestic demand for raw materials and semi-finished wood products. These imported volumes are critical for research into waste materials that could serve as feedstock for wood-polymer composites [40].

Specifically, the focus is on artificial wood assortments such as MDF, particleboard, glued veneer, and OSB boards. It is estimated that around **half a million tonnes** of these materials are utilized annually in B&H, with cutting waste from panel furniture accounting for 10–20%, i.e., **50,000–100,000 tonnes** of wood waste per year [41].

The vision of the wood industry in Bosnia and Herzegovina is to maintain its leading position as a regional exporter of highly processed wood products. Bosnia and Herzegovina have long-standing experience in exporting higher value-added wood products to EU markets, which is supported by export performance indicators, international certifications, and design and quality awards [42].

The country's wood sector is particularly recognized for the export of solid beech furniture, which strengthens its competitiveness and reduces dependence on imports [43]. The sector's key objectives include enhancing competitiveness, ensuring stability across the value chain, and developing human resources in line with market needs. One of the strategic challenges remains the implementation of recycling technologies within the wood-based panel sector, whereas in the solid-wood segment such technologies have

already been almost fully applied (e.g., pellet, briquette, and wood-chip production). Achieving these objectives would improve the overall image of the Bosnian wood industry, increase foreign-exchange inflows through exports of higher value-added products, and enable more efficient use of raw materials, along with greater employment of qualified labour.

The European Union implements a variety of measures to reduce plastic waste; however, a significant portion is still energy-recovered or landfilled, while around **25% continues to be stored long-term** [44]. Due to China's restrictions on plastic waste imports, the EU faces a risk of increased incineration and landfilling, highlighting the need for circular plastic management models [45]. It is estimated that **95% of the value of plastic materials is lost after single use**, while plastic incineration and production generate over **850 million tonnes of CO₂ annually**, which could reach **2.8 billion tonnes by 2050** [46].

In **Bosnia and Herzegovina, approximately 150,000 tonnes of plastic waste are generated annually**, of which only **2% is recycled**, while **98% ends up in landfills** [4]. Several authorized operators handle the sorting and recycling of packaging waste, and sorted materials can be relatively easily reprocessed into new packaging. Due to its high calorific value, plastic can also serve as an alternative fuel; however, the primary goal remains recycling and reuse [44].

By combining **waste wood materials and plastic polymers**, it is possible to produce **WPC**, thereby reducing waste, increasing environmental efficiency, and developing new sustainable materials. This is the core objective of the **INTERREG RTIT project**, implemented by CIP UNZE in cooperation with industrial partners, aiming at developing circular-economy technologies and valorising waste.

The identified quantities of **50–100 thousand tonnes of waste wood** and a similar amount of **waste plastic** provide an opportunity for significant business development within the green and sustainable economy. On a per-unit area basis of WPC, with global market prices ranging from **EUR 20–80/m²** (depending on composition, thickness, surface quality, and other key characteristics), this opens potential earnings of **EUR 200–400 million**, depending on production capacity, applied technologies, and marketing complexity [47,48]. Even if not all types of waste plastics can be used in the technological process, combining plastics of guaranteed composition with waste artificial wood still contributes significantly to environmental cleanliness and public health.

5. Conclusion

The problem of waste management in Bosnia and Herzegovina, especially plastic and wood waste, represents one of the most urgent environmental and social challenges today. Although the legal and strategic frameworks are formally harmonized with the practices of the European Union, their application in practice is insufficient, fragmented and limited by institutional capacities, outdated equipment and financial instability of utility companies. The consequences of such a system are manifested in the form of an extremely low recycling rate. Because of this, huge amounts of macro- and microplastics end up in nature, especially in river watercourses where they create huge floating landfills and directly threaten ecosystems, the health of the population and the country's tourism potential.

On the other hand, the timber industry of Bosnia and Herzegovina represents one of the most successful industrial sectors, with a significant surplus in foreign trade, a high degree of product finalization and a long-standing export-oriented tradition. However, within this sector, significant potential remains untapped in terms of recycling and valorization of waste from the panel industry. It is estimated that between 50,000 and 100,000 tons of waste is generated annually from cutting panels for panel furniture, which represents a precious but neglected resource.

It is precisely in the combination of these two problems – excess plastic waste and large amounts of wood waste – that there is room for sustainable solutions based on the principles of circular economy. The results of conducted research and European experience clearly show that by combining waste from the wood and plastic industry, new, technologically valuable and market-attractive materials such as wood-polymer composites (WPC) can be developed.

By combining 50-100 thousand tons of wood waste and similar amounts of plastic waste, it is possible to develop a production capacity that, with the current market prices of WPC products, could generate income in the range of 200 to 400 million euros per year. This would not only increase the industrial competitiveness of the country, but would also directly contribute to the reduction of pollution, the development of sustainable technologies, the growth of employment in highly qualified sectors and the strengthening of the circular economy at the state level.

The application of the concept of wood-polymer composites in B&H also has a wider strategic dimension: it enables the connection of the academic community, industry and the public sector into a unique innovation ecosystem, which increases the country's technological resilience, reduces dependence on the import of raw materials and opens up space for the development of new products and markets. The implementation of the INTERREG RTIT project confirms that domestic institutions and industry already possess the knowledge, motivation and minimum necessary infrastructure to establish this type of production. Successful implementation requires coordinated support from the state, improvement of recycling capacities, strengthening of local communal systems and active involvement of business entities. By combining adequate policies, economic profitability and ecological benefits, Bosnia and Herzegovina can become a regional leader in sustainable waste management and in the production of modern composite materials of high potential.

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THE IMPORTANCE OF TRANSFORMATION OF HIGHER EDUCATION INSTITUTIONS FOR THE EDUCATIONAL PROCESS ON THE PREMISES OF INDUSTRY 4.0?

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Abstract

Business processes in modern world relations have gone through four more than obvious industrial revolutions in the last 150 years, so that today's business in the 21st century is characterized by a mix of Industry 4.0 and 5.0. The very number of pillars on which Industry 4.0 rests is constantly increasing, and artificial intelligence "threatens" to seriously shake many of them. During that time, higher education, especially in its primary mission (education), has seen little change over the past several centuries. True, today there are computers and smart boards that have replaced chalk and the traditional green board, but in terms of approach to education or content, everything has been the same for decades and longer. The curricula and programs of higher education institutions are still 90% identical to those of 100 years ago. If we compare factories and faculties today and 100+ years ago, it is clear that anyone "whom we wake up" after a "hundred-year sleep" will clearly recognize the faculty, while the factory will have a lot of trouble. The issue of education adapted to the needs of the labor market in secondary schools and faculties in BiH, the Western Balkans region and beyond has been the subject of numerous debates and projects for decades. This paper aims to emphasize the necessity of organizational changes at higher education institutions, especially in the domains of scientific research and professional work that higher education institutions do very rarely or almost never. Of course, these changes should also be reflected in the educational process, because that is the only way they make sense. Therefore, the goal is to influence the creation of new models of the second mission (scientific research and professional work) through strategic changes within the first mission of the Higher Education Institution (HEI), and to open up the space and knowledge of management and academic staff in the development of the third mission of the HEI (3M), without which the first two HEI missions would remain just a "shell" without meaning. What is the third mission of the Higher Education Institution? This paper also tries to explain in a simple way. In order for the paper not to be just a theory, concrete solutions and suggestions are also given, where it is specifically observed, one of the most referenced institutions in the field of metallurgical engineering: the former Metallurgical Institute in Zenica and today the Institute "Kemal Kapetanović" of the University of Zenica.

Keywords: *transformations of higher education organizations (HEO), science and technology parks (STP), third mission of HEO, learning factory, dual education model, Industry 4.0*

1. Introduction

Business processes in modern world relations have gone through four more than obvious industrial revolutions in the last 150 years, so that today's business in the 21st century is characterized by a mix of Industry 4.0 and 5.0. The very number of pillars on which Industry 4.0 rests is constantly increasing and artificial intelligence "threatens" to seriously shake many of them. In that time, little has changed in higher education in the last few centuries. Of course, today we have computers and smart boards that have replaced chalk and the traditional green board, but little has changed in the approach to academic education. The curricula and programs of higher education are still 90% identical to those of 100 or more years ago. If we compare factories and faculties today and 100+ years ago, it is clear that anyone "whom we wake up" after a hundred-year sleep will clearly recognize the faculty, while the factory will have a lot of trouble. Today, there are numerous debates about education adapted to the needs of the labor market in secondary schools and faculties in Bosnia and Herzegovina and the Western Balkans region, and numerous projects are also being worked on. In the processes of post-war transformation of higher education (HE) and scientific research organizations (SRO-s) in Bosnia and Herzegovina, on the one hand we had the phenomenon of rapid growth in the number of HE-s and on the other hand a rapid decline in the number of SRO-s. One of the institutions that managed to survive all these turbulences and had the prefix of institute in its title, first the Metallurgical Institute under the name Hasan Brkić and later under the name of the Institute "Kemal Kapetanović" (IKK). Today it is an organizational unit within the University of Zenica, whose Senate excluded this organizational unit from its membership because "science no longer resides in universities" and on the other hand, attempts to connect science and profession through the formation of the Science and Technology or just Technology Park of the University of Zenica in the past 30 years have not yielded results. Thus, this Institute remained a "captured" unit of the SRO within the "powerful HEI" whose teaching staff forgot that HEI teachers are primarily researchers and people who work on technological transfer from SRO to the business sector "and that, supplemented with theory, they teach" in their lectures. The views and strategic visions presented in this paper are an attempt to reconcile the gap between the scientific research and professional work that characterizes a scientific research organization (SRO) and, on the other hand, the teaching process, training and coaching that are characteristics of a HEI. In this sense, the development of SRO should follow the economy and be ahead of it. Why do we not have a single scientific-technological or technological park in B&H today, except for the INTERA Mostar Technology Park, and the Intera Technology Park itself was formed primarily through the efforts and investments of the private sector with a small participation of higher education institutions? Why do we still not have, and 30+ years have passed since certain changes in the Western Balkan countries, a stronger know-how from higher education institutions to the economy than we had in the period, for example, 1960-1990. Changes, transformations and modern development that characterize the economic sector should also be the "modus vivendi" of HEI and SRO.

2. The development of the third mission in higher education organizations

Since their foundation in the Middle Ages, higher education institutions have been inseparable from the society in which they operate; however, in different historical periods, priority was given to different missions. In addition to teaching and research as the basic university missions, the third mission of the university is understood as the relationship

between the university and the community, [1]. On the other hand, the process of joining the European Union (EU) is certainly one of the most frequently mentioned terms in the regional political sky. Politicians in B&H are not far behind in this, as are all stakeholders of this complex process (government organizations and institutions, numerous civil society organizations, the academic sector, non-governmental organizations, foreign organizations in B&H, etc.). The role of higher education institutions everywhere in the world, as already pointed out, is mainly known through its two segments of work: the first, the teaching and scientific process, and the second, scientific research and professional work. And in this, there are well-known rules and ways of working established for hundreds of years, levels of allocation at the state level or private financing, the role of regions and states, etc., the role of line ministries, the ways in which this work is evaluated, valorized, ranked or otherwise observed. However, the issue of the third mission (3M) of universities is something that preoccupies both contemporary and traditional universities in Europe and the world today, and in short, it is "everything that higher education organizations do for the good of their students, region, state and the world in general that does not have the character of the first two crucial roles of higher education". So today, in order to develop precisely this "third mission of the university", universities in the EU and beyond, instead of the vice-chancellors for quality assurance (QA) introduced by the Bologna Process, increasingly have vice-chancellors for the development of the third mission of the university (3M). And it is precisely this third mission of the university that is extremely important in the broad area of negotiations between the candidate country and the EU, in which teaching staff, researchers and students can make a huge contribution. On the other hand, the third mission of the university (HE) is playing an increasingly important role in multidimensional systems of ranking HEI-s in the World. The ranking of universities, no matter how controversially it is treated and discussed, occupies an increasingly important place among decision-makers and policy makers (ministries), contributing to a significant decrease or increase in the number of enrolled students, domestic and international promotion and knowledge and recognition of HEI-s, to the broadest observations about HEI-s as a significant factor in the social reality of a region, country or wider space. In the paper, [2] Sonja Zlatović presents Arno Meerman's UBC Ecosystem model as a result of research on cooperation between universities and public and private organizations in Europe (EU and EEA). It is shown that this cooperation is crucial for the development of a knowledge society.

Through such cooperation, universities improve their student's prospects for successful employment, the success of their own research and the transfer of technology to society. Researchers and teachers receive higher-quality research and teaching content, better opportunities for project funding and better opportunities for publication. Companies benefit from the development of products and services, the necessary skills and knowledge, and future income. The model distinguishes eight interrelated forms of cooperation: research and development cooperation, student mobility, commercialization of research and development results, lifelong learning, curriculum development and teaching, entrepreneurship, management, and mobility of researchers and teachers. One in three universities in Europe has little or no cooperation with industry. Approximately two out of every five researchers and teachers are responsible for most of this cooperation, and previous experience in cooperation with the business sector is essential for future cooperation.

From there the recommendation to employ researchers and teachers with experience of working in companies or to ensure opportunities for employee mobility. All respondents

see obstacles in bureaucracy and lack of funding, however, the elimination of these obstacles is not enough to revive the desired cooperation. For this, the action of individuals who can develop mutual trust, commitment and common goals with other participants is more important. It is shown that the existence of an appropriate strategy, program, agency and/or responsible person has a significant impact on stimulating European cooperation between universities and the business sector, [2].

The main types of 3M activities mapped in institutional cases at EU universities are:

1. Creation of large-scale long-term projects for joint strategic research.
2. Valorisation of research results in various forms including the creation of spin-offs and licensing of proprietary research results.
3. Funding of chair positions supporting both teaching and research activities.
4. Contractual research.
5. Rental of research equipment and facilities.
6. Lecturer positions.
7. Curriculum development and course offerings.
8. Continuous training for employees.
9. Organization of internships for students in companies.
10. Graduate recruitment services involving facilities for students and businesses.
11. Developing an entrepreneurial culture.
12. Cultural, social and sporting activities jointly funded and developed by businesses and universities.
13. Financial participation by universities in non-spin-off companies.
14. Participation in university governing bodies, [3].

This complex diversity of activities is supported by structures and services at the institutional level to facilitate their development. Support structures are organized entities at central, faculty, departmental or other level that offer academics.

3. Ikk transformation model

In the development concept of higher education, scientific research and professional work, and the development of the third mission at UNZE, the former Metallurgical Institute occupies a special place. The development of UNZE as well as changes of a fundamental nature (organizational, etc.) should lead to the current Institute "Kemal Kapetanović" - IKK in the future being the UNIVERSITY SCIENCE AND TECHNOLOGY PARK "KEMAL KAPETANOVIĆ" - USTP with the following units: INSTITUTE OF METALLURGY AND MATERIALS; INSTITUTE OF ENVIRONMENTAL ENGINEERING; DATA CENTER ZDK AND LEARNING FACTORY - LAB.

The proper development of the IKK is one of the key issues for the future of higher education in Zenica, because the teaching and scientific staff of UNZE must also approach the forms of the developed West in this way. Therefore, that scientific and research work is carried out at the institutes, and that the teaching and scientific process (education) is carried out at the faculties or universities, and that the OECD norm that a teacher spends 50% of the time teaching and 50% of the time on R&D obligations is fully respected in the time ahead. The strategic goal of UNZE should be to achieve the already mentioned OECD norm on the representation of R&D work at the University in order to increase the scientific fitness of teachers and thus increase the quality of knowledge of graduates by including them in projects that have a professional and scientific character and that would be carried out through the institute.

In this sense, a fundamental change is needed in the Program of Scientific and Research

Activities of the Zenica-Doboj Canton (ZDC) for the next five-year period. This document should be based on the observed state of science in the region and wider, i.e. in the FB&H, and should rely on the document of the Strategy for the Development of Science in B&H, which was prepared by the Ministry of Education and Culture of B&H and the Strategy for the Development of Science in the FB&H for the period 2010-2020 (ANU B&H). The main goal of the aforementioned Program is to elaborate the global commitments of the ZDC in a way that remediates the current state of science in the Canton and opens up higher-quality processes in scientific and research activities appropriate to today's needs for the overall development of the ZDC and the region, which also implies paving the way for inclusion in the family of EU countries through the development of a knowledge-based society.

Through the USTP form, it is possible to achieve a fundamental separation of teaching staff who have spent their entire lives "only in teaching and education" and teaching staff who understand all three missions of the HEI and want to develop their work on the premises of these three missions. The modern era in which we live imposes a clear need for better connections with the business sector, which is the first step of the intention through the creation of the concept of a "Learning factory" at USTP Kemal Kapetanović, and through the development of a modern Data Center, ZDC would take major steps closer to the concept of SMART regions of Europe and the World.

4. Modern concept of science and technology parks

Science and technology parks (STP) are a more or less broad term used to describe various attempts to stimulate the development of innovation and entrepreneurship through the establishment of knowledge-based SME-s (small and medium enterprises) within a country. This term has many synonyms, the most common of which are "science park", "technology park", "science and technology park", "research park" and "technopolis". Although there are several definitions of STP, the fact is that it represents an agglomeration of SME-s led by some "body", which has the following characteristics:

- is connected to educational or research institutions,
- provides infrastructure and services for the activities of the gathered SME-s, primarily real estate, know-how and business premises,
- facilitates the process of technology transfer,
- is intended to stimulate the economic development of the region in which it is located.

Or perhaps it is clearer mathematically:

STP = LAND + BUILDINGS/EQUIPMENT + KNOWLEDGE PEOPLE SERVICES

It is clear that such parks have their place in the constellation of all new organizational forms that are currently emerging in the economy of South-Eastern Europe (SEE). In addition to Slovenia, which made a significant step forward in this segment back in the last century, the third decade of the 21st century has shown that some countries that are not members of the EU can do this well, such as Serbia with STP-s in Belgrade, Novi Sad, Niš and Kragujevac or EU member Bulgaria with an enviable STP in Sofia.

It is clear that the expectations of all Western Balkan countries (WBC) are high, especially today, at a time when the entire region is going through difficult economic times and where NTPs should be a generator of innovative SME development. They should be a place where:

- motivation and climate for skill-based enterprise development within the enterprise,
- promotion of self-employment as a modern social trend,

- creating a positive image of entrepreneurs,
- providing detailed information and solutions to business people,
- creating new jobs and businesses in the region,
- leadership in the formation of clusters,
- assistance in converting regional potential into commercial enterprises,
- giving the region's high-tech enterprises a market profile through foreign partners and international contact networks.

Therefore, the role of centers of excellence/science and technology parks (TP or USTP, regardless) should be to stimulate the economy so that it can be competitive in the time of the general process called globalization. The economy and science in the region are currently largely incapable of dealing with such challenges at all and incapable of defining and financing projects that would help them in this.

The evolution of the STP concept throughout the period so far has basically contained the following important determinants:

- University campuses of the 50s/70s (USA)
- Government initiatives in the 70s/80s (Europe/Japan)
- Incubators of the 90s (Europe/Asia)
- Knowledge economy: Service-oriented STP (late 90s and XXI century).

It should be emphasized here that STPs are not just an agglomeration of SME-s in the field of metal processing, IT or related activities. Technology parks can also include agricultural, chemical, environmental, energy, tourism or metallurgical activities, depending on the expressed preferences of the region in which they are built. They can also carry another designation in their title such as ecological park, agricultural park or bio-park, such as the Ecological Techno-Park in Turin, the Department for Biomedical Research of the Technology Park in Barcelona or the Sector for the Development of Wood Processing TP Joenseu in Finland. Basically, all of these are centers of excellence/technology parks because each area of human activity has its own technological laws.

And so that everything does not seem too easy and simple, let us emphasize that the new NTPs can indeed help the recovery of the economy and the transformation of SEE universities, but:

- deep knowledge of the critical points of local/regional knowledge and competences must be clearly articulated and achieved before starting the STP planning;
- the system of relationships and relations must be clearly set out as follows: University/research + entrepreneurs/industry + local/regional/national governments + banks/financial institutions;
- real estate management and service strategies must be planned simultaneously; and implemented;
- apply a bottom-up approach;
- think locally and globally.

5. The necessity of a dual model in higher education in b&h and the region

For many years, discussions and debates have been taking place in the secondary and higher education sectors in B&H about how the educational process implemented by higher education organizations does not provide the necessary competencies needed by the labor market. While the process in secondary schools according to the VET (Vocational Education Training) model has already yielded tangible results, unfortunately the process

in higher education, with the exception of Serbia, is mostly stagnant. Serbia is the only one in the region that has adopted full legislation in the field of higher education and has made some progress. On the other hand, for years employers have emphasized that university graduates are well-versed in theory, but that the practical part of their knowledge is very questionable, and that companies spend as much time as formal education at universities to bring employed academics to the "necessary usability" for work in a specific business environment.

Developed Western countries have long understood that in addition to purely academic education and higher education programs, there must also be vocationally oriented studies, including those that are even more closely linked to practice, expressed as models of dual study or cooperative study models. Leaders in such an approach, countries such as Germany, Austria, Switzerland or Denmark, have been developing this concept in close cooperation with the business environment for decades, and it is constantly being improved and modified in accordance with business trends (development of the IT sector, the Industry 4.0 concept, etc.). Let us emphasize here again that each country should develop its own model, because the business, educational or state level and regulations are not the same anywhere and a copy-paste model from Germany or Austria is impossible. Second, the model is built over years and no isolated and excellent projects can be a complete solution, but only one step in the construction of the system. Statistical data from Western countries that have developed these study models show that 60-70% of students in these studies go directly to work after completing their studies, which provide them with an excellent combination of professional, transversal and generic knowledge and competencies that employers are looking for, [4]. Today, there are more than 40 higher education organizations in B&H at the level of universities with more than 200 faculties and colleges and probably more than 1000 study programs that provide the same number of exit diplomas. The number of study departments that are vocationally oriented is estimated to be only up to 3%, and this number includes those that at least formally practice dual education.

Anyone who has stepped foot in a higher education institution in the region today knows that they are poorly equipped for what the business sector is looking for. On the other hand, even the little existing equipment is not used effectively even 10% of the time because higher education institutions, through budget financing, have no desire or will to compete for additional research projects, cooperation with the economy, etc. In such a system, the educational process and the student whose knowledge remains mostly theoretical and based on reading books that are usually written decades ago and not for the time to come are the most disadvantaged.

6. Terminology and definition of learning factories

A learning factory is a learning environment where processes and technologies are based on a real industrial location that allows direct access to the product creation process. Learning factories are based on a didactic concept that emphasizes experimental and problem-based learning. The philosophy of continuous improvement is supported by the participants' own actions and interactive involvement in the process, [5].

The International Association of Learning Factories (IALF) is a group of research institutions that operate learning factories. IALF aims to foster collaboration among its members to achieve excellence in education and research in the field of manufacturing engineering through learning factories.

The members of the association are committed to:

- sharing knowledge and good practices,
- synergies in the physical establishment of learning factories, and
- leadership through innovative improvements.

Figure 1 shows the general concept of a learning factory.

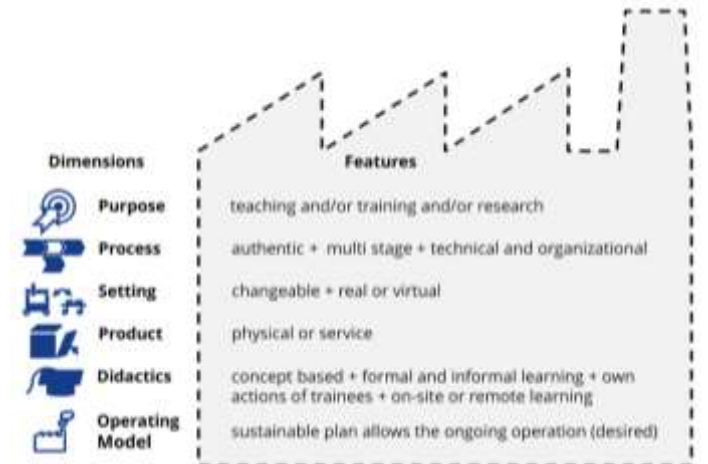


Figure 1: Key features of the learning factory

In 2010, the Learning Factory network consortium was established in Darmstadt, Germany, which then consisted of:

- Institute for Production Management, Technologies and Machine Tools (PTW), TU Darmstadt;
- ESB Business School, Reutlingen-University, Germany;
- Royal Institute of Technology, Stockholm, Sweden;
- Laboratory for Manufacturing Systems and Department of Automation, Faculty of Mechanical Engineering and Aeronautics, University of Patras, Greece;
- Faculty of Electrical Engineering, Mechanical Engineering and Shipbuilding; University of Split, Croatia;
- Institute for Management, TU Vienna, Austria;
- Institute for Production Engineering and Laser Technologies, TU Vienna, Austria;
- Institute for machine tools and production management; TU Munich, Germany;
- Center for Integration and Process Innovation and Institute for Computer Science and Automation; Hungarian Academy of Sciences and Arts and University of Technical and Economic Sciences Budapest, Hungary;

In the meantime, the concept of the Learning Factory has spread throughout the world, so that today a large number of universities are included in the global network, Figure 2.

7. Development of the learning factory concept at the university of zenica

Since its foundation, the University of Zenica has strived for the concept of an "entrepreneurial university". The history of the beginnings of the first higher education in the 1950s is based on a close connection between the economy and academia. The development of the Metallurgical Institute with institutes-laboratories for prototype production and later for the real production process at the Zenica Iron and Steel Works and

the Zenica Mining and Metallurgical Combine system created the foundations for the avant-garde model of a "factory within a faculty", which was one of the rare models of its kind in Europe. This concept gave excellent results until the 1990s, both in terms of education and professional innovation.

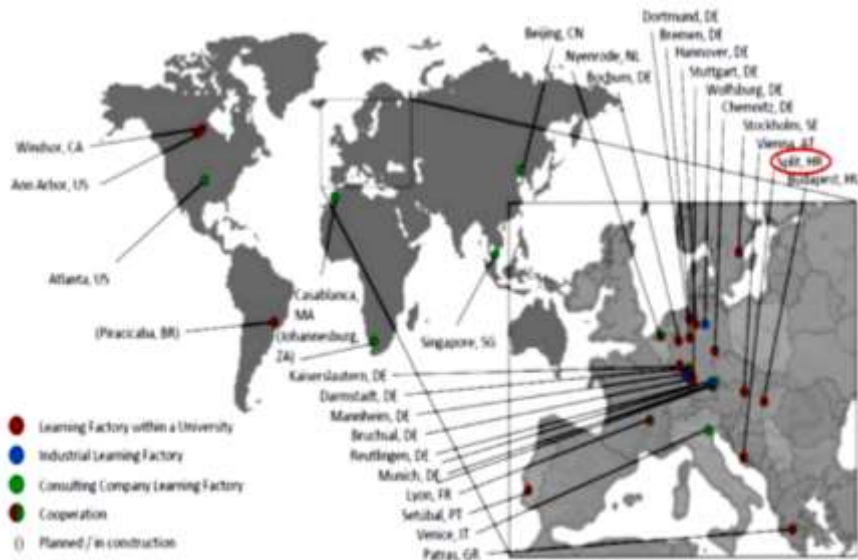


Figure 2: The Learning Factory concept around the world, [9]

The major industrial crises of the 1990s led to the research of a new model of work for the steelworks of the former SFRY, which was studied by British Steel Consulting-BSC for the then government of the SFRY led by Ante Marković. However, the implementation of the solutions and recommendations of the BSC were never implemented in the factories because the former state (SFRY) was dissolved and new ownership relations occurred in all the steelworks of the former state (Jesenice, Sisak, Split, Zenica, Nikšić, Smederevo, Skopje) and their institutes or development centers. The "Kemal Kapetanović" Institute was formed in Zenica from the "Hasan Brkić" Metallurgical Institute from the 1970s, first registered as a special economic entity (*l.l.c*) with the designation "metallurgical", and later as an organizational unit of the University of Zenica without the designation of scientific "affiliation".

Based on the visions for the development of dual education at the Department of Design and Technologies in Wood Processing (DDT) at the Faculty of Mechanical Engineering, in 2022 this concept of LF (Learning Factory) development was actualized with companies in ZDC and CBC (InterProcess, Empress, Pero, Tamex, Tisal, FisAmbyenta, etc.).

Unfortunately, even then there was no response to the idea of developing the LF concept and educational renovation of the Institute "Kemal Kapetanović", where one of the "unused" halls would be renovated and adapted to the concept of factory learning for students in welding, deformation processing, joining, cutting, CNC technology, Additive technologies, etc., in the wood processing and metal processing sectors (Figure 3. and Figure 4.).



Figure 3. Photo of the current premises of the Learning Factory at IKK

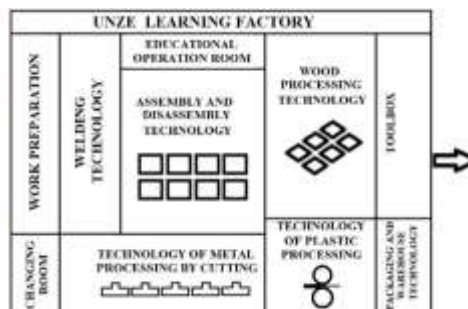


Figure 4. Layout of the LF system that was planned at the Institute

In the adapted space, students would have real factory departments for production preparation, technology development, a mini-warehouse, production islands, a developed internal transport and packaging system. This would enable students in the first and second years of study to actually prepare and become familiar with technological processes, work preparation, occupational safety and other important activities of real business systems that would await them in the third and fourth years of study under the dual model. In this way, students would be optimally prepared for the real dual concept in business systems in B&H and beyond.

For the full success of the Learning Factory concept, and later on the Dual Study Model, the CIP project team of the University of Zenica proposes to higher education institutions in Bosnia and Herzegovina and beyond a model that would contain 40% of theoretical teaching conducted by a professor and 60% of practical teaching (Figure 5.).

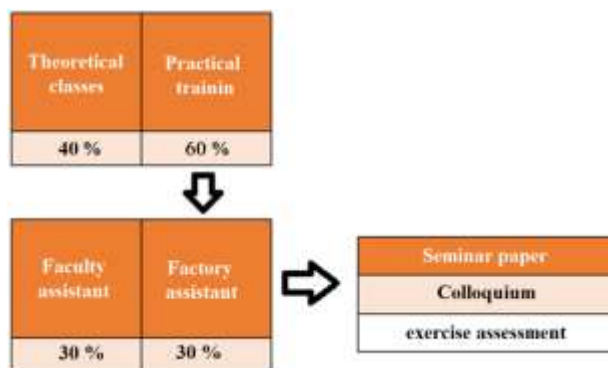


Figure 5: Proposed concept of dual education in higher education institutions in B&H

These 60% of practical teaching would be divided into 30% each, which would be conducted by a faculty assistant and a factory assistant (a practical expert). This requires a thorough reform of the curriculum (curriculums and programs), sometimes a change in the legislative and legal framework, a thorough change in the approach to higher education for areas that would be part of the dual education system, and other significant changes in the higher education system.

Since each LF concept must have its own original concept of development and work in order to become part of the World Network, the LF at IKK should also be developed in that sense as a center that would mainly deal with:

- sustainable development, circular economy and ecological efforts to transform the process economy of the region towards sustainable goals and the UN green agenda;
- learning and researching all basic technologies on which the technical sciences and economy of the region in which UNZE operates are based;
- bio-specific service and base of lifelong learning for businessmen of the region and technology transfer in the domains of its excellence.

8. Conclusion

This is the current vision of the project team of the Center for Innovation and Entrepreneurship (EIC) UNZE project team, which, together with researchers from IKK, is working on efforts to create project and organizational changes in the work of higher education institutions. It remains to be hoped that the concept and model of UNTP Kemal Kapetanović with the institutes, LF lab and Data Center ZDC will be recognized by those who today create educational processes in Bosnia and Herzegovina: management of higher education organizations, businessmen, ministries and other key stakeholders of this important process.

The prerequisites for this development have been created: space, a critical mass of human resources who recognize the need for change and the desire of the founders of UNZE, the Government of Zenica-Doboj Canton, to develop higher education in their environment. The concept of STP is not "revolutionarily" new and successful examples from the region (Belgrade, Novi Sad, Ljubljana, Rijeka, Kragujevac, Niš, Sofia, etc.) show that it is also possible in the Balkans.

In the development concept of higher education, scientific research and professional work and the development of the third mission at UNZE and ZDC, the former Metallurgical Institute occupies a special place. Its 64 years of existence and work, its infrastructure and the visionary project of academician Kapetanović, should not be destroyed by the current crisis in which UNZE finds itself. The development of UNZE as well as changes of a fundamental nature (organizational, etc.) should lead to the current "Kemal Kapetanović" Institute-IKK in the future being the UNIVERSITY SCIENCE AND TECHNOLOGY PARK "KEMAL KAPETANOVIĆ" - UNTP with the following units: INSTITUTE OF METALURGY AND MATERIALS; INSTITUTE OF ENVIRONMENTAL ENGINEERING; DATA CENTER ZDC and LEARNING FACTORY - LAB.

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TAXING RESILIENCE: THE DIVERGENT PATHS OF PERSONAL INCOME TAX AND SOCIAL SECURITY CONTRIBUTIONS IN ALBANIA DURING CRISIS

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Abstract

This study explores how Albania's Personal Income Tax (PIT), Social Security Contributions (SSC) and Health Insurance Contribution (HI) behaved differently during the COVID-19 crisis, shedding light on deeper structural and behavioural patterns in the country's tax system. Drawing on annual data from 2015 to 2020, and combining time-series analysis and forecast comparisons, the research examines why PIT revenues dropped sharply in early 2020 while SSC revenues remained comparatively stable. The results reveal that this divergence was not simply a temporary anomaly triggered by the pandemic but part of a broader trend of greater PIT volatility. In fact, PIT revenues began declining after September 2019 peak, shortly before the November 2019 earthquake, and continued to fall throughout the lockdown period. SSC revenues, by contrast, showed resilience and a quicker rebound. The key lies in how the two systems are designed: PIT is progressive and highly responsive to changes in individual income, whereas SSC applies a flat rate based on declared wages within fixed minimum and maximum thresholds. As firms cut hours and wages during lockdowns, many employees fell into lower or zero PIT brackets, while SSC payments persisted on the basis of minimum-wage declarations. Government support schemes, such as the "war salary" and wage-grant programs, further accentuated this asymmetry—sustaining SSC flows but generating little or no PIT liability. Additional factors reinforced the gap, including delayed PIT filings, liquidity-driven compliance changes among firms, and continued SSC payments by the self-employed even when their earnings collapsed. Forecast data from 2015–2019 underline these differences: SSC projections typically deviated less than 3% from realized values, whereas PIT forecasts often missed by more than 10%, highlighting its greater sensitivity to labour market and income distribution shocks. The series also confirm that PIT became markedly more volatile during crises, while SSC exhibited a smoother, cyclical rhythm aligned with quarterly self-employment payments. Post-2020 data further confirm this structural divergence: PIT rebounded strongly after 2021, showing double-digit forecast errors in several years, while SSC maintained its pattern of stability with deviations mostly below 5%. This suggests that PIT volatility is not only crisis-driven but persists in periods of economic recovery, reinforcing the need for adaptive forecasting models. These insights underline the importance of incorporating behavioural dynamics into fiscal policy design, especially in times of crisis. For Albania, the policy implications are clear: improving real-time monitoring of payroll declarations, adjusting SSC minimum thresholds to better reflect labour market realities, and refining tax-revenue forecasting models to account for elasticity and progressivity under stress. Strengthening these mechanisms can enhance fiscal resilience and promote a fairer, more adaptive taxation system capable of withstanding future economic shocks.

Keywords: *Personal Income Tax, Social Security and Public Pensions, Fiscal Policy.*

JEL classification: *H24, H55, E62*

1. Introduction

The resilience of tax systems during periods of economic stress has become an important focus in fiscal policy research, especially for emerging economies where structural vulnerabilities, informality, and compliance capacity remain central concerns. Albania provides a compelling empirical case in this regard, owing to two consecutive shocks that hit the economy within a short time span: the November 2019 earthquake and the COVID-19 pandemic in early 2020.

These events affected labour markets, firm productivity, and household earnings, triggering a heterogeneous response across different components of the tax system. While the pandemic led to contraction in economic activity, not all labour-based revenue instruments declined at the same pace or intensity. Understanding these variations offers valuable insight into the underlying architecture and behavioural foundations of the national tax system.

This paper examines the divergent behaviour of Personal Income Tax (PIT) and Social Security Contributions (SSC) during the crisis and identifies structural and behavioural mechanisms behind these patterns. Albania relies substantially on labour-based revenues, making these instruments critical for fiscal stability. Monthly administrative data show that PIT revenues peaked in September 2019 and then began a downward trajectory that intensified during the lockdown period. By contrast, SSC revenues exhibited greater persistence and a faster post-lockdown normalization, even as labour-market participation temporarily weakened. These dynamics raise two analytical questions: first, why tax instruments that share the same base, declared wages, produced contrasting outcomes; and second, whether this divergence represents temporary disruption or deeper structural asymmetry.

Existing literature highlights the increased elasticity of progressive income taxes during downturns. Because PIT is directly tied to fluctuations in salaries, employment contracts, and tax-bracket thresholds, even small wage adjustments can produce disproportionately large effects on tax liability (OECD, 2020; IMF, 2021). This sensitivity has been documented across Central and Eastern Europe, where wage subsidies and temporary layoffs reduced taxable earnings during 2020. Bulgaria recorded significant PIT shortfalls (European Commission, 2021), while Romania and Croatia faced volatility due to government-financed wage support schemes (IMF Fiscal Affairs Department, 2022). Albania followed a similar pattern, although the onset occurred earlier due to pre-pandemic disruptions following the earthquake.

Holzmann and Palacios (2001) emphasize that systems anchored in fixed thresholds provide mechanical stability, even in cyclical downturns. Evidence from Albania's General Directorate of Taxes confirms that many firms continued reporting minimum-wage-based contributions, partly due to legal obligations and partly due to eligibility requirements associated with COVID-related government support schemes. Public-funded support instruments, such as wage-grant subsidies and the "war salary", reinforced contribution continuity without necessarily generating PIT liabilities.

Moreover, compliance behaviour played a crucial role in shaping PIT dynamics. Firms facing liquidity shortages and uncertainty exhibited precautionary reporting strategies, temporarily minimizing taxable obligations by declaring reduced working hours, delaying filings, or reorganizing contract terms. This aligns with theoretical evidence that economic shocks intensify tax-minimization incentives (Slemrod, 2019; Besley & Persson, 2014). Initial lockdown restrictions also increased informality, especially among young workers

and temporary employees, and delayed filing extensions caused a temporal distortion in recorded PIT values. Quarterly administrative reports submitted to Parliament indicate that these timing effects extended beyond the immediate lockdown period, reinforcing the divergence.

This paper contributes to ongoing discussions on tax resilience in three ways. First, by demonstrating that divergence was not solely crisis-generated but observable months before the pandemic, it situates the problem within structural rather than short-term behaviour. Second, it identifies institutional design, progressivity versus fixed-threshold liability, as a core determinant of resilience. Third, it highlights implications for tax administration and forecasting accuracy in economies where revenue systems depend heavily on labour-linked instruments.

The paper is structured as follows. Section 2 provides the background, outlining the institutional and regulatory setting of Albania's PIT and SSC systems. Section 3 develops literature review, positioning this study within broader debates on tax responsiveness, fiscal resilience, and crisis-period behavioural dynamics. Section 4 presents and interprets empirical results, highlighting the divergence between PIT and SSC during the observed period, and examines the policy implications, focusing on revenue stability, administrative enforcement, and crisis-response mechanisms. Finally, Section 5 concludes, offering recommendations related to contribution-threshold adjustments, improved payroll monitoring systems, and more adaptive forecasting approaches that incorporate behavioural variations under economic stress. The crisis period spanning late 2019 and 2020 exposed notable asymmetries in Albania's revenue system, particularly between Personal Income Tax (PIT) and Social Security Contributions (SSC). Although both rely on declared labour income, their behaviour diverged sharply once economic conditions deteriorated. PIT fell significantly from its late-2019 peak and continued declining throughout the lockdown phase, whereas SSC remained comparatively stable and recovered more rapidly, this contrast did not emerge solely because of temporary disruption; instead, it reflected deeper institutional characteristics.

Progressive PIT responds directly to changes in actual earnings. When wages are reduced, hours suspended, or contracts temporarily interrupted, taxable incomes decline disproportionately. International evidence confirms that progressive tax instruments tend to be more sensitive to employment shocks (OECD, 2020; IMF, 2021; European Commission, 2021). By contrast, SSC in Albania is anchored to fixed contribution floors and ceilings. Even when real earnings declined or employment relations weakened, firms retained the obligation to declare contributions at or above statutory minimum levels. This structural rigidity provided a mechanical stabilizer, maintaining SSC flows even during the most uncertain phases of lockdown.

Government support policies have amplified this stability. Wage-subsidy schemes and the so-called "war salary" ensured continuity in declared wages for many employees, thus sustaining SSC inflows but producing limited PIT liability, since subsidies were often exempt or fell below taxable brackets. Moreover, self-employed individuals, legally obliged to continue contributing, added further persistence to SSC, even when their revenue base contracted.

Behavioural responses also shaped the divergence. Firms confronted with liquidity constraints frequently postponed PIT declarations, reorganized working schedules, or shifted employees into lower-taxable categories. Such strategies mirror well-documented patterns in crisis settings, where economic uncertainty incentivizes temporary tax minimization (Slemrod, 2019; Besley & Persson, 2014). Administrative delays further

widened the temporal gap, as PIT filings postponed under emergency provisions appeared with a lag, reinforcing measured volatility.

Historical forecast data reveal that this divergence aligns with long-standing trends rather than being an isolated pandemic-related anomaly. Prior to COVID-19, SSC forecast deviations were consistently small, indicating a stable base unaffected by short-term fluctuations. PIT, however, routinely generated larger deviations, signalling structural sensitivity to wage composition, seasonal contracts, and compliance cycles. Understanding these mechanisms is essential for enhancing revenue forecasting, designing countercyclical support measures, and adapting institutional reforms aimed at strengthening revenue stability during crises.

2. Literature Review

Research on tax system responsiveness during economic shocks highlights the uneven effects that downturns impose on distinct revenue instruments. Early theoretical contributions emphasize that progressive tax systems are inherently more elastic since liabilities fluctuate non-linearly with income changes (Musgrave & Musgrave, 1989; Atkinson & Stiglitz, 2015). In periods of contraction, even moderate reductions in wages can shift taxpayers into lower brackets or exempt categories, thus amplifying the revenue impact relative to economic decline. Recent empirical work further confirms this elasticity. For instance, OECD (2020) and IMF (2021) reports document substantial declines in wage-based tax revenues during the COVID-19 lockdowns across the EU, particularly in economies characterized by strong progressivity and relatively high reliance on earned income.

Studies focusing on transition economies reveal similar patterns. European Commission (2021) tracking data show that PIT fell sharply in Romania, Croatia, and Bulgaria during 2020, owing to layoffs and temporary wage-subsidy programs. Avram and Milcheva (2022) find that temporary income support schemes reduced effective PIT bases in Central Europe by shifting a significant portion of workers into zero-threshold positions. These findings align with the classic view that PIT reacts strongly to economic cycles and is highly sensitive to income redistributions, labor churn, and reporting incentives.

In contrast, the literature on social security contributions identifies a stabilizing role in downturns. Because SSC is often tied to statutory floors or mandatory minimum contribution bases, its nominal values remain relatively rigid even when earnings decline (Holzmann & Hinz, 2005; Palacios & Whitehouse, 2006).

Several empirical analyses of pension-based financing systems demonstrate that contribution floors serve as automatic stabilizers, sustaining inflows despite labor-market disruptions (Boeri & Garibaldi, 2019). During the pandemic, SSC stability was recorded in Italy (Dell’Arlinga, Lucifora & Pagani, 2021), Greece (Karagounis, 2022), and Croatia, largely due to continued mandatory declarations, even when earnings derived from state-financed wage supports rather than market activities.

Another strand of literature highlights the behavioral dimension of tax response. Compliance tends to weaken during recessions, especially among liquidity-constrained firms, which may delay filings, underreport wages, or reclassify employees (Slemrod, 2019). Besley and Persson (2014) argue that institutional enforcement, information systems, and administrative rigidity influence whether shocks translate into revenue losses. Empirical work by Dwenger and Steiner (2014), based on administrative data from Germany, demonstrates that reporting adjustments tend to target flexible tax liabilities, such as PIT, rather than rigid mandatory contributions.

More recent post-COVID studies emphasize forecasting challenges associated with elastic tax instruments. A study by Castro, Labeaga, and Marti (2022) shows that PIT revenues deviated significantly from model predictions in Spain due to sudden changes in working arrangements and the expansion of subsidized non-taxable income. In contrast, SSC outcomes aligned more closely with baseline forecasts, reinforcing their structural inertia.

This literature offers three broad insights that are relevant to the Albanian context. First, PIT volatility is theoretically grounded in its progressivity and empirically validated during crises in multiple economies. Second, SSC stability derives from legal design, where minimum contributions act as binding commitments, even in downturns. Third, compliance behavior increases divergence, as firms strategically adjust tax-exposed obligations first, while continuing to meet mandatory contribution rules.

Albania, therefore, fits directly within established analytical debates. The observed early decline in PIT, preceding pandemic lockdowns, aligns with findings on anticipatory compliance behavior and income reclassification. Meanwhile, the persistence of SSC, despite falling actual earnings, reflects institutional rigidity embedded in contribution structures.

The present study contributes by documenting these effects in a longitudinal manner, employing historical forecasting deviations, seasonal adjustments, and trend differentials, thus extending comparative observations into an understudied emerging-economy context.

3. Methodology

This study employs a mixed quantitative approach combining time-series analysis, forecast-realization comparisons, and structural interpretation of tax-revenue behaviour. The objective is to assess how Albania's PIT, SSC and Health Insurance (HI) contribution behaved relative to government forecasts, and to identify the underlying institutional and behavioural mechanisms driving forecast errors over the period 2015–2025. The analysis relies only on official fiscal data published by the Ministry of Finance of Albania.

We interpret observed forecast errors not purely as technical failures but as reflections of deeper structural characteristics to tax system's design.

In this paper, there are two categories of annual data used: (i) Revenue Plans (Forecasts), which represent the government's approved projections for PIT, SSC and HI revenue, published in the annual Budget Laws and accompanying fiscal tables. Planned values reflect the macroeconomic assumptions, tax-policy parameters, and administrative expectations used in the government's medium-term budget framework; and (ii) Revenue Outturns (Actual Collections). These refer to realized PIT, SSC and HI revenues reported in the Ministry of Finance annual execution reports. Actual figures include tax revenues collected by the General Directorate of Taxes, ex-post adjustments, and end-year reconciliations. While the Actual PIT data generally reflects the executed budget for all years, the figure for 2025 is based on the last normative act rather than actual execution. This distinction is important when interpreting the trend, as the 2025 value may not fully represent realized outcomes.

The dataset covers the years 2015–2025 and includes the following variables for each tax category: planned revenues; actual revenues; annual percentage deviation between actual and planned values; annual percentage change in planned revenues (a proxy for forecast revisions, expectations, and policy changes). More precisely, to assess forecasting accuracy and identify structural patterns, we compute descriptive statistics including mean absolute errors, error ranges, and year-over-year volatility measures for both tax categories across distinct time periods: the pre-crisis baseline (2015–2019), the crisis year (2020),

immediate recovery (2021-2022), and the post-crisis adjustment period (2023-2025). This periodization allows us to isolate the effects of the COVID-19 pandemic and the November 2019 earthquake from longer-term trends in tax administration capacity and economic formalization. We pay particular attention to the relationship between forecast errors and the magnitude of planning adjustments, examining whether revenue authorities incorporated past forecast failures into subsequent year projections or exhibited systematic biases such as post-crisis conservatism.

5. Tax system structure and rates

The personal income tax system in Albania operates within a progressive framework that distinguishes different income sources and categories of taxpayers. This tax is governed by Law No. 29/2023 “On Income Tax”, which consolidated and modernized provisions for personal and corporate income taxation. This law replaced earlier fragmented rules and introduced clearer definitions, scope, and compliance mechanisms. PIT operates as a progressive system with graduated marginal rates designed to increase tax burden with income levels. PIT applies to resident individuals, and non-residents on Albanian-source income for employment income, business income, rental income, dividends, interest, and capital gains. However, there are certain exceptions such as certain social benefits, scholarships, and small agricultural income are exempt.

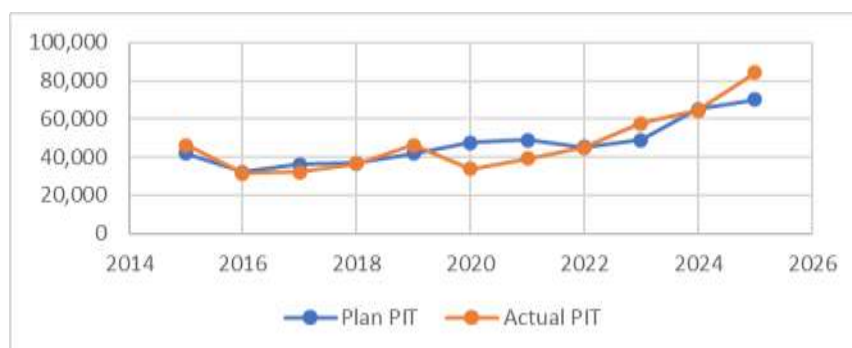
SSC function as a flat-rate system with employer and employee components. Employers contribute 15% of declared gross wages, while employees contribute 9.5%, yielding a combined rate of 24.5% on the contribution base. These contributions are subject to both minimum and maximum thresholds: contributions must be calculated on at least the national minimum wage, regardless of actual compensation, and are capped at a maximum contribution base.

HI contributions operate similarly to SSC with a flat-rate structure but at lower rates. Employers contribute 1.7% of gross wages while employees contribute 1.7%, yielding a combined 3.4% rate. These contributions are also subject to minimum and maximum thresholds aligned with the SSC system, ensuring that health insurance financing remains stable even when actual wage distributions shift.

5.1 Revenue trend: PIT, SSC and Health Contributions

The PIT trend shows significant volatility over the 2015–2025 period, with notable deviations that reflect shifts in labour market conditions, policy changes, and the broader economic cycle. PIT collections rise sharply in 2015, fall substantially in 2016 and 2017, and then recover more modestly in 2018 and strongly again in 2019. The largest drop occurs in 2020, consistent with the contraction in employment and working hours during the pandemic. After 2020, PIT revenues resume an upward trajectory, expanding steadily through 2021–2024 before accelerating strongly in 2025. By 2025, actual PIT revenue nearly doubles compared to the 2020 trough, indicating restored employment levels, wage growth, and potentially improvements in tax compliance.

Figure 1. Trend Analysis of Planned vs. Actual PIT (2015–2025)



Source: Ministry of Finance

The SSC trend is comparatively more stable and demonstrates a clear, long-term upward trajectory. Actual SSC revenues rise almost continuously from 2015 to 2025, with minor fluctuations in crisis years but no structural decline. In 2020 there is a small contraction, yet the system recovers quickly in 2021 and then accelerates strongly from 2022 onward.

The rapid increases in 2022–2025 suggest rising formal employment, adjustments in the minimum wage and improved enforcement mechanisms by the tax administration. By 2025, SSC revenues are nearly double their 2015 level, similar to PIT trend, making SSC the most consistently expanding component of employment-based revenues.

The HI trend follows a slightly smoother pattern, increasing steadily across almost the entire period. Unlike PIT, HI revenues do not experience major declines, even during the pandemic year. After minor decreases in 2015–2016 and again in 2018–2020, collections rebound strongly from 2021 onward. The growth in 2022–2025 reflects both the broadening of the contributor base and higher contribution payments linked to wage adjustments. HI revenues grow by more than 75 percent between 2015 and 2025, indicating a stable and increasingly well-funded health contribution base.

Figure 2. Trend Analysis of Planned vs. Actual SSC and HI (2015–2025)



Source: Ministry of Finance

Overall, the three revenue categories show differentiated dynamics where PIT is more

sensitive to economic fluctuations and labour market shocks, SSC shows strong resilience and long-term expansion; and HI grows consistently with minimal volatility. Their combined trend for 2021–2025 points to a sustained post-pandemic recovery, structural improvements in compliance, and rising labour incomes, which together reinforce the stability of Albania's employment-linked revenue system.

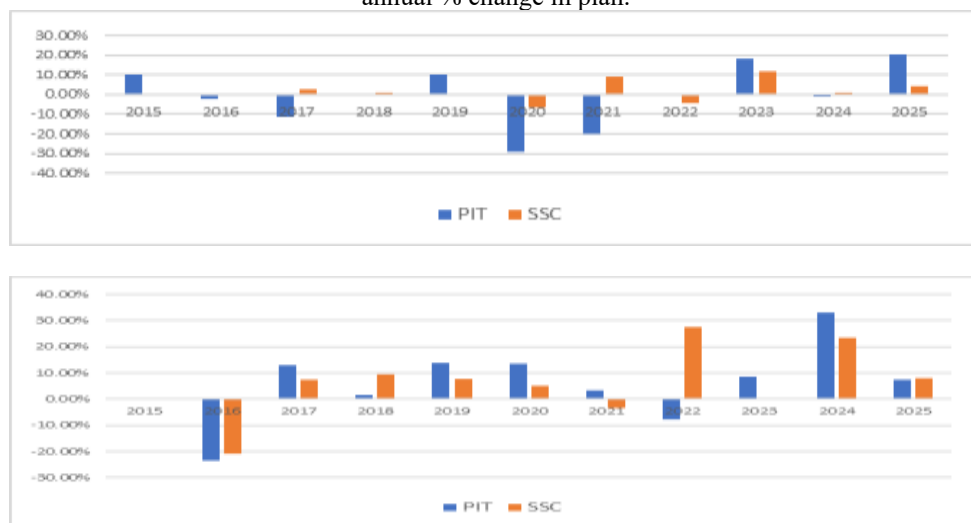
5.2 Forecasting trend

This study explores how forecasts and actual behaviours of Albania's PIT and SSC diverged across the decade 2015–2025, exposing persistent structural and behavioural dynamics in the country's tax system. While the COVID-19 crisis provides a clear stress test, the broader dataset shows that the divergence between PIT and SSC is systemic, not episodic. By integrating annual forecast errors with long-term trends, the analysis highlights why PIT revenues demonstrate high volatility and frequent mis-forecasting, whereas SSC revenues exhibit relative stability and more predictable behaviour.

During 2015–2020, PIT remains substantially more elastic and more sensitive to changes in labour income, employment structure, and crisis conditions. Forecasts for PIT frequently miss actual outturns by double-digit margins, often exceeding 10–20%, particularly in shock years such as 2016, 2017, 2020, 2021, 2023, and 2025. By contrast, SSC forecasts typically deviated by only 0–3% in the pre-COVID period, and although variance increases after 2020, forecast errors remain far smaller than those observed for PIT. This long-run pattern supports earlier findings that PIT is highly responsive to wage fluctuations, hours worked, and income distribution shifts, whereas SSC follows a much smoother trajectory.

The COVID period (2020–2021) illustrates this asymmetry. PIT collapsed sharply, actual revenues in 2020 were 29% below plan, continuing a decline that had begun after the September 2019 peak and was further worsened by the November 2019 earthquake and the 2020 lockdown. As firms suspended employment, many workers fell into lower or zero PIT brackets. In addition, delayed PIT filings and liquidity-driven behavioural adjustments by firms intensified the shortfall. SSC, dependent on declared wages and reinforced by minimum-wage floors, dropped much less (only –6.7% from plan in 2020) and rebounded quickly in 2021, even outperforming forecasts by +9%.

Figure 3. (a) forecasting errors of PIT and SSC, as a % difference actual-plan and (b) annual % change in plan.



Source: Ministry of Finance, authors' calculations.

The broader dataset confirms that this divergence is not limited to the COVID shock. In the post-pandemic period, PIT forecasting errors become even more pronounced (Figure 3). Strong wage increases, minimum wage reforms, labour-market tightening, and changes in formalization dynamics drive large positive deviations of actual PIT from planned values in 2023 (+18%), 2024 (−1%), and 2025 (+20%). These results demonstrate how sensitive PIT is to upward wage shocks and compliance dynamics. SSC follows similar macro trends but exhibits far smaller deviations (generally within $\pm 10\%$), reflecting the stabilizing effect of contribution thresholds and mandatory declarations.

These insights underline the need to integrate behavioural and structural dynamics into fiscal-forecasting and tax-policy design. Albania's experience demonstrates that PIT requires more sophisticated forecast methodologies, better real-time monitoring of payroll declarations, and models that incorporate compliance behaviour under stress. SSC, being more stable, would benefit from periodic adjustment of minimum thresholds to ensure alignment with actual labour-market conditions and to avoid distortions during large wage shifts.

Strengthening these mechanisms is essential for improving revenue forecasting accuracy, enhancing fiscal resilience, and building a more adaptive taxation system capable of resisting future economic shocks.

6. Conclusion

Using a mixed-method approach that combines time-series analysis, forecast error evaluation, and comparative trend assessment, this study examined the behaviour of Albania's PIT, SSC, and HI revenues over the period 2015–2025. The methodology involved comparing planned versus actual collections, calculating percentage deviations, and analysing structural patterns before, during, and after the COVID-19 crisis. This analysis of Albania's PIT, SSC and HI forecast errors provides a quantitative validation for structural asymmetries between progressive income taxation and flat-rate social contributions, while extending understanding of how these differences manifest across crisis and recovery periods.

More specifically, this paper demonstrates that Albania's tax system exhibits structural asymmetries in revenue stability, with PIT remaining highly volatile and SSC showing consistent resilience across both crisis and recovery periods. While the COVID-19 shock amplified these differences, post-2020 data confirm that PIT volatility persists even during economic rebound, driven by its progressive design and sensitivity to income fluctuations. In contrast, SSC's flat-rate structure and reliance on declared wages within fixed thresholds continue to provide a stabilizing effect. These findings emphasize the need for adaptive forecasting models and policy reforms that account for behavioural dynamics, ensuring greater fiscal predictability and resilience in the face of future economic shocks.

The findings suggest that Albania should improve real-time payroll monitoring and digital reporting to reduce delays and enhance forecast accuracy. Updating SSC minimum and maximum thresholds to reflect actual wages would maintain fairness during shocks, while PIT forecasting models need to account for income elasticity and behavioural changes.

Introducing temporary measures, such as PIT rate adjustments or SSC relief during downturns, could help stabilize revenues and support taxpayers. These steps would make the tax system more resilient, predictable, and fair in both crises and recovery periods.

Future studies should explore more advanced forecasting techniques, such as machine learning or dynamic models, to improve accuracy for PIT and SSC. Researchers could also analyse quarterly or monthly data to capture short-term fluctuations and better understand

behavioural responses. Another important area is studying compliance patterns and the impact of digitalization on tax reporting. Finally, comparing Albania's experience with other countries in the region could provide valuable insights into best practices for building resilient tax systems.

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AI IN ALBANIAN HIGHER EDUCATION: BUILDING SKILLS FOR AN INTELLIGENT ECONOMY

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Abstract

Artificial Intelligence (AI) is increasingly recognized as a transformative force in higher education, capable of reshaping teaching methodologies, learning processes, and student skill development. In Albania, however, AI integration remains in its nascent stages, with limited exposure among students and minimal institutional implementation. This paper offers a **conceptual analysis** of AI adoption in Albanian higher education and examines its potential contributions to **skill enhancement, professional readiness, and the advancement of a resilient, intelligent economy**.

Drawing upon a comprehensive review of international literature, policy frameworks, and exemplary practices from countries with advanced AI integration, including Estonia and Finland, this study identifies key factors for successful AI implementation. It emphasizes the importance of **curriculum modernization, faculty capacity building, and strategic institutional planning**, while also considering potential challenges such as digital infrastructure limitations and the need for stakeholder training.

Through this theoretical framework, the paper illustrates how AI can serve as a **catalyst for innovation, smart specialization, and economic transformation** in emerging contexts. The analysis provides actionable insights for policymakers, educators, and university administrators, offering guidance on how to leverage AI to prepare students for a **technology-driven, competitive labor market**, while simultaneously supporting the development of a knowledge-based, innovative economy in Albania.

Keywords: *Artificial Intelligence, Higher Education, Skill Development, Innovation, Smart Specialization.*

1. Introduction

Artificial Intelligence has become a central focus of educational reform worldwide, providing tools that enable personalized learning, real-time assessment, and evidence-based institutional management. Universities globally are using AI for adaptive learning platforms, intelligent tutoring systems, predictive analytics, and automation of administrative processes. These technologies have been shown to improve student engagement, enhance retention rates, and facilitate the development of high-demand skills. In Albania, the integration of AI in higher education is still in its nascent stages. Only a few universities have begun experimenting with AI applications in teaching, assessment, or administrative management. Factors contributing to this slow adoption include limited infrastructure, low faculty digital literacy, and absence of comprehensive national policies

on AI in education. Despite these challenges, the potential benefits of AI adoption are substantial. AI can enable personalized learning, enhance faculty productivity, improve decision-making, and most importantly, equip students with skills essential for a competitive, technology-driven labor market. The aim of this paper is to investigate how AI can be strategically integrated into Albanian higher education to foster the development of an intelligent economy. The study focuses on understanding the current adoption levels, identifying challenges and opportunities, and drawing lessons from international best practices that could be adapted to the Albanian context.

2. Literature Review
2.1 Global Perspective on AI in Higher Education

Research from countries with advanced AI integration demonstrates the transformative potential of AI in teaching, learning, and institutional efficiency. Estonia, for instance, has implemented adaptive learning platforms that monitor student progress in real time and adjust course content based on individual performance. Finnish universities emphasize faculty development, equipping instructors with AI-related pedagogical skills and technological proficiency to integrate AI effectively into the curriculum. In Singapore, AI applications extend to administrative processes, such as automated student advising, predictive course planning, and institutional decision-making, improving both educational quality and operational efficiency. These international cases highlight several common factors necessary for successful AI integration: robust infrastructure, continuous faculty training, alignment with curriculum objectives, and institutional support for experimentation and innovation. AI adoption in higher education is not merely about technology; it is a systemic process that requires coordination across multiple institutional levels.

2.2 AI in the Albanian Context

In Albania, the adoption of AI in higher education is largely experimental. A small number of universities have introduced introductory AI courses or pilot programs employing AI-based assessment tools. Student exposure to AI concepts remains limited, and faculty training in AI applications is rare. Infrastructure constraints, such as outdated computer labs and limited access to high-speed internet, further impede adoption. However, there is increasing awareness among policymakers and educational institutions of AI's potential to improve student outcomes, enhance employability, and support economic development. Albanian universities have begun exploring ways to integrate AI into curricula and administrative processes, though these efforts remain uncoordinated and inconsistent.

2.3 Comparative Analysis

Table 1 : Comparative Analysis of AI Integration in Higher Education

Aspect	Estonia	Finland	Albania
AI Integration	High; embedded in curriculum	Moderate; faculty-driven	Low; pilot projects
Curriculum	AI literacy across programs	Problem-solving and AI courses	Limited exposure

Faculty Training	Continuous and mandatory	Workshops and certifications	Rare and informal
Infrastructure	Advanced computing labs and platforms	Reliable internet and AI tools	Limited computing resources

The comparison shows that while Estonia and Finland have institutionalized AI adoption, Albania faces strategic and structural barriers. Learning from these examples, Albania can develop a tailored strategy that combines policy support, infrastructure development, and faculty capacity building.

3. Methodology

This study adopts a **conceptual, qualitative, and comparative methodology** aimed at understanding how Artificial Intelligence (AI) can be effectively integrated into Albanian higher education to build skills for an intelligent economy. The research framework combines three interrelated dimensions: institutional readiness, curriculum design, and student competencies. These dimensions were selected because they collectively determine the success of AI implementation in higher education, influencing both educational outcomes and labour market alignment.

3.1 Conceptual Framework

The conceptual approach involves synthesizing insights from international literature, policy documents, and case studies of countries with advanced AI adoption in higher education, such as Estonia, Finland, Singapore, and South Korea. The framework provides a structured lens to examine the enablers, challenges, and potential outcomes of AI integration. It allows for identifying best practices that could be adapted to the Albanian context, considering institutional capacity, technological infrastructure, faculty readiness, and socio-economic conditions.

3.2 Data Sources

This study relies on multiple sources of information:

1. **Academic Literature:** Peer-reviewed journals, books, and conference proceedings were reviewed to understand global trends, educational strategies, and skill development initiatives related to AI in higher education. Key focus was placed on adaptive learning, predictive analytics, intelligent tutoring systems, and curriculum innovation.
2. **Policy Documents:** National and international policy frameworks were analysed, including the European Commission's AI in Education Policy Brief (2020) and Albania's Digital Transformation Strategy for Higher Education (2022). These documents provided insights into policy recommendations, strategic priorities, and potential institutional support mechanisms.
3. **Case Studies:** Comparative examples from Estonia and Finland were studied to highlight successful AI integration models. Variables such as faculty training, curriculum embedding, infrastructure readiness, and student engagement were examined to identify transferable strategies.

3.3 Analytical Approach

The analysis follows a **qualitative synthesis method**, combining evidence from literature, policy frameworks, and international case studies. The study identifies key enablers and barriers of AI adoption and evaluates their relevance to the Albanian context. Factors such as institutional culture, technological infrastructure, faculty capacity, and curriculum relevance were critically assessed. Comparative tables and narrative analysis were used to illustrate differences and similarities between the Albanian system and international benchmarks.

3.4 Rationale for Method Selection

A conceptual and comparative methodology was chosen because Albania has limited empirical data on AI adoption in higher education. This approach allows for generating actionable insights based on existing knowledge and experiences in other countries while taking into consideration local constraints and opportunities. By emphasizing qualitative synthesis rather than purely quantitative measures, the methodology provides a holistic view of AI integration, including technical, pedagogical, and socio-institutional dimensions.

3.5 Limitations

While the conceptual methodology offers valuable insights, it also has inherent limitations. The reliance on secondary data and case studies means that the findings are interpretative rather than empirically verified within the Albanian context. Additionally, differences in socio-economic conditions, institutional structures, and cultural factors may limit the direct applicability of international best practices. Future research could complement this study with quantitative surveys, interviews with faculty and students, and pilot implementation studies to validate and refine the recommendations presented.

3.6 Implications for Practice

Despite these limitations, the methodology provides a robust framework for understanding AI adoption in Albanian higher education. It identifies priority areas such as infrastructure investment, curriculum modernization, faculty development, and policy alignment, which are essential for building skills for an intelligent economy.

The framework also allows policymakers and university administrators to evaluate the feasibility of AI interventions, anticipate potential challenges, and design targeted strategies for sustainable integration.

4.1 Opportunities

4.1.1 Personalized Learning

One of the most transformative opportunities offered by AI in higher education is **personalized learning**. AI systems, such as adaptive learning platforms and intelligent tutoring systems, can analyse student performance in real-time and adjust instructional content to match individual learning needs. For example, a student struggling with a specific concept in economics can receive targeted exercises and additional resources automatically, while students excelling in certain areas can be provided with more advanced challenges.

International examples highlight the effectiveness of this approach. In Estonia, universities utilize AI-driven learning platforms that tailor content to students' proficiency levels, leading to improved engagement and better academic outcomes. Similarly, in Finland,

adaptive learning technologies enable students to progress at their own pace, increasing motivation and retention. In Albania, introducing such systems could mitigate disparities in student preparedness and learning styles, fostering a more inclusive and efficient educational environment.

4.1.2 Faculty Development

Another major opportunity lies in **faculty development**. AI tools can enhance teaching by providing instructors with analytics on student engagement, comprehension, and learning gaps. However, these benefits are contingent on faculty being trained to effectively use AI tools.

Professional development programs, workshops, and collaborative learning communities can equip educators with both technical proficiency and pedagogical strategies to integrate AI into their teaching.

For example, Finnish universities invest heavily in continuous faculty training programs, ensuring instructors are familiar with AI applications in the classroom. This has been shown to improve both student outcomes and faculty confidence in using AI-driven resources. For Albanian institutions, systematic faculty development is necessary to avoid underutilization of AI technologies and to ensure that adoption translates into real educational benefits.

4.1.3 Industry Collaboration

AI integration offers universities the opportunity to **strengthen partnerships with industry**. Collaboration with technology firms and research institutions can provide students with practical experience in AI applications, preparing them for employment in innovative sectors. Programs such as internships, joint research projects, and AI hackathons allow students to apply theoretical knowledge in real-world scenarios, enhancing problem-solving and critical thinking skills.

In Estonia, universities collaborate closely with tech companies to provide students with hands-on AI experience. In Singapore, students participate in industry-led AI projects that are embedded in their curricula.

For Albania, fostering similar partnerships can help bridge the gap between academic learning and labour market needs, producing graduates with the competencies demanded by a rapidly evolving economy.

4.1.4 Administrative Efficiency

AI can also transform university **administrative operations**, making institutions more efficient and responsive. Predictive analytics can be employed to identify students at risk of failing, allowing timely interventions. AI-based scheduling systems can optimize course timetables, resource allocation, and faculty workload management.

In South Korea, AI-assisted administrative tools have reduced bureaucratic delays and improved student services, enhancing the overall university experience. Adopting similar systems in Albania would allow institutions to streamline operations, improve decision-making, and provide data-driven insights that can enhance academic performance and institutional management.

4.2 Necessities

4.2.1 Infrastructure

A fundamental necessity for AI integration is robust **digital infrastructure**. This includes high-speed internet access, modern computing facilities, AI software platforms, and cloud-based tools. Without these resources, AI initiatives cannot be implemented effectively. In Estonia and Finland, universities invested early in building such infrastructure, creating the

foundation for widespread AI adoption. For Albania, investment in infrastructure is a critical prerequisite, particularly in regions where digital resources remain scarce.

4.2.2 Policy Support

Another essential requirement is strong **policy support**. National and institutional policies should provide guidelines, funding mechanisms, and incentives to facilitate AI adoption. Policies can also standardize ethical AI use, promote research in AI, and support curriculum modernization. For example, the European Commission's policy frameworks emphasize coordinated efforts between governments, universities, and industry to ensure sustainable AI integration. In Albania, developing clear AI policies and strategic plans is necessary to align institutional objectives with national economic goals.

4.2.3 Ethical Considerations

Ethical issues are a critical necessity in AI integration. Universities must ensure **responsible AI use**, including protecting student data privacy, maintaining transparency in automated decision-making, and preventing bias in AI algorithms. Incorporating ethics into the curriculum, along with training faculty and students on responsible AI use, is essential to foster trust and accountability. Finland has implemented comprehensive ethical guidelines for AI in education, ensuring that technological advancement aligns with societal values. Adopting similar standards in Albania will help mitigate risks and build public confidence in AI-driven educational systems.

4.2.4 Faculty and Student Readiness

Finally, the readiness of both faculty and students is a necessity for successful AI adoption. Faculty must be willing and able to adapt teaching methods, while students must possess the digital literacy to engage effectively with AI tools. Capacity-building programs, workshops, and pilot projects can help develop this readiness. Without a prepared and motivated academic community, even the best infrastructure and policies may fail to achieve meaningful outcomes.

5. Discussion

The integration of Artificial Intelligence (AI) in higher education is not merely a technological advancement but represents a strategic opportunity to align academic programs with the demands of a rapidly evolving labour market. In this discussion, the focus is on the implications of AI for skill development, labour market readiness, faculty engagement, institutional efficiency, and broader societal impact.

5.1 Skill Development and Labor Market Alignment

AI adoption in higher education allows universities to develop a workforce equipped with skills that are highly valued in the 21st-century economy. These include critical thinking, problem-solving, data analysis, computational literacy, and digital competency. By embedding AI into curricula, universities can create learning pathways that foster both technical and transferable skills.

International evidence suggests that AI-enabled education enhances employability. In Estonia, adaptive AI learning platforms help students master complex topics in science, technology, engineering, and mathematics (STEM) while simultaneously developing soft skills such as collaboration and project management. Similarly, Finnish universities emphasize the integration of AI into project-based learning, ensuring that graduates are not only theoretically proficient but also capable of applying knowledge in real-world contexts. In Albania, aligning curriculum content with industry requirements is critical. AI can help identify skill gaps and enable targeted interventions, ensuring students acquire

competencies that match labour market needs.

Moreover, AI supports lifelong learning, allowing graduates to continue developing skills beyond university. Online AI-driven platforms can provide ongoing professional development opportunities, which is essential in a fast-changing global economy where technologies and job requirements evolve rapidly.

5.2 Faculty Engagement and Pedagogical Transformation

Effective AI integration requires faculty engagement and transformation in teaching practices. AI tools can assist instructors in analysing student performance data, providing feedback, and customizing instructional methods. However, successful adoption depends on faculty willingness to embrace technological change and adapt pedagogical approaches accordingly.

Countries such as Finland and Singapore have demonstrated the importance of structured faculty development programs. In Finland, AI workshops and training modules equip educators with both technical skills and pedagogical strategies, resulting in higher adoption rates and improved learning outcomes. Albanian universities can replicate these approaches by introducing mandatory AI training for faculty, creating communities of practice, and providing incentives for innovative teaching methods. Faculty engagement is also critical for ethical AI usage, ensuring that algorithms are applied responsibly in assessment, grading, and student support.

5.3 Institutional Efficiency and Decision-Making

Beyond skill development, AI provides opportunities for enhancing **institutional efficiency**. Predictive analytics can help identify students at risk of academic failure, enabling timely interventions and reducing dropout rates. Automated administrative tools streamline processes such as course registration, timetable planning, and resource allocation, freeing faculty and staff to focus on teaching and research.

International examples underscore the impact of AI on university management. In South Korea, AI systems support administrative decision-making by analysing enrolment trends, forecasting student performance, and optimizing class schedules. In Albania, AI-based management systems could similarly improve operational efficiency, reduce administrative bottlenecks, and ensure better allocation of resources, ultimately enhancing the overall quality of education.

5.4 Challenges and Mitigation Strategies

Despite its benefits, AI integration presents several challenges. Infrastructure limitations, limited faculty expertise, financial constraints, and resistance to change are key barriers in the Albanian context. Additionally, ethical concerns, including data privacy, algorithmic bias, and transparency, must be addressed to foster trust and ensure responsible AI use.

Mitigation strategies include:

- Developing robust digital infrastructure and AI software platforms
- Implementing comprehensive faculty training and professional development programs
- Establishing clear ethical guidelines and policies for AI use
- Encouraging pilot programs and phased AI implementation to manage resistance and adapt to institutional culture

Collaboration with international institutions and industry partners can also provide guidance, technical support, and resources, making adoption more feasible and

contextually appropriate.

5.5 Comparative Insights and Lessons for Albania

Comparing the experiences of Estonia, Finland, and Singapore provides valuable insights for Albanian higher education. Successful AI adoption requires a **holistic approach**, combining infrastructure investment, curriculum innovation, faculty engagement, and ethical oversight.

Estonia's approach demonstrates the importance of embedding AI in curricula while simultaneously investing in digital infrastructure. Finland highlights the necessity of faculty development and pedagogical adaptation. Singapore shows the value of integrating AI into administrative operations to enhance institutional efficiency.

For Albania, these lessons suggest that piecemeal approaches or isolated pilot projects are insufficient. Instead, a coordinated, multi-dimensional strategy is required. By addressing infrastructure gaps, enhancing faculty competence, and embedding AI into curricula and administrative processes, Albanian universities can achieve sustainable AI integration, improving both educational outcomes and labor market readiness.

5.6 Broader Societal Implications

AI adoption in higher education also has broader implications for society. By equipping students with relevant skills, universities contribute to economic growth, innovation, and competitiveness. AI can also promote inclusivity by enabling personalized learning for students from diverse backgrounds and varying levels of preparedness. Moreover, ethical AI practices in education help build trust in technology, preparing students to navigate AI responsibly in the workplace and society.

Ultimately, AI integration is not just an educational tool but a strategic enabler for Albania's transition toward a knowledge-based, intelligent economy. It can foster a generation of graduates who are adaptable, technologically proficient, and capable of driving innovation across sectors, thus contributing to long-term economic resilience and social progress.

6. Conclusions

Artificial Intelligence (AI) has emerged as a transformative force in higher education worldwide, reshaping the way knowledge is delivered, skills are developed, and institutions operate. In the Albanian context, AI presents both challenges and unprecedented opportunities for aligning higher education with the needs of a knowledge-driven, technology-intensive economy. This study demonstrates that integrating AI into Albanian universities can enhance personalized learning, improve student engagement, develop workforce-relevant skills, and optimize institutional efficiency.

A key conclusion is that AI should not be viewed merely as a technological tool but as a **strategic enabler** of educational modernization and economic development. By embedding AI in curricula, universities can foster the development of critical thinking, problem-solving, data literacy, and adaptability—competencies that are increasingly demanded by employers in a competitive, global labor market. Moreover, AI facilitates lifelong learning, enabling graduates to continue upskilling in response to rapid technological changes.

Successful AI integration requires a **holistic approach**, combining infrastructure investment, curriculum innovation, faculty development, and policy support. International comparisons indicate that countries like Estonia and Finland have benefited from

coordinated strategies that align these dimensions, producing graduates who are well-prepared for technologically advanced economies.

Albanian universities, in turn, can adopt similar approaches while tailoring them to local needs, resources, and institutional contexts.

Ethical considerations are also critical. Universities must ensure that AI systems are used responsibly, protecting student data, promoting transparency, and preventing algorithmic bias. Integrating ethical AI practices into both teaching and administration ensures that technological progress aligns with societal values and public trust.

Finally, AI adoption has **broader societal implications**. It promotes inclusivity by providing personalized learning opportunities for students with diverse backgrounds and varying levels of preparedness. It also strengthens the connection between higher education and industry, fostering innovation and entrepreneurship. By investing strategically in AI integration, Albanian higher education can serve as a catalyst for building an intelligent, knowledge-based economy, producing graduates capable of driving sustainable economic growth and social development.

In conclusion, AI represents a pivotal opportunity for Albanian higher education to modernize its teaching, enhance skill development, and contribute to a competitive, innovative economy.

Through deliberate planning, strategic investments, and a commitment to ethical and inclusive practices, universities can harness AI as a driver of long-term educational excellence, workforce readiness, and societal progress.

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SHIFTING GROWTH NARRATIVES AND POLICY INFLUENCE IN THE BALKAN COUNTRIES

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Abstract

This paper examines how evolving economic narratives have shaped policy advice and influenced government decision-making in Balkan countries over the period 1991–2024. Drawing inspiration from Cherif, Engher, and Hasanov’s *Crouching Beliefs, Hidden Biases: The Rise and Fall of Growth Narratives*, we analyze approximately 1,000 IMF Article IV reports and documents using a vocabulary of 113 growth-related keywords. Through hierarchical clustering and frequency analysis, we identify four dominant narratives: Economic Structure, Washington Consensus, Structural Reform, and Washington Constellation. Our findings reveal a profound transformation in policy discourse. The Economic Structure narrative, once dominant in the early 1990s (36.4%), declined sharply to below 10% by 2024, reflecting a shift away from sectoral priorities. The Washington Consensus narrative peaked during the transition years of the 1990s (28.2%) but virtually disappeared after 2010 (1.9%). In contrast, the Structural Reform narrative surged in the early 2000s, reaching over 45% by 2018, before moderating in recent years. Most notably, the Washington Constellation narrative—an eclectic mix of governance, inequality, and business environment—rose steadily from 8.4% in 1991 to nearly 40% by 2024, signaling a new paradigm focused on resilience and inclusivity. These trends underscore the power of ideas and narratives in shaping international policy advice and domestic economic strategies. The paper contributes to the literature on narrative economics and political economy by linking discourse evolution to policy outcomes in a region marked by transition, crisis, and integration.

Keywords: *Narrative economics, Balkan countries, transition economy, economic growth, structural reforms.*

1. Introduction

Ideas, Narratives, and Policy in Political Economy

The role of ideas and narratives in shaping economic policy has long intrigued scholars of political economy. As Keynes famously noted, “the ideas of economists and political philosophers... are more powerful than is commonly understood.” This insight underscores the foundational belief that policy decisions are not merely the product of empirical evidence or technical expertise, but are deeply influenced by prevailing intellectual currents and the stories societies tell themselves about economic development. Recent scholarship has increasingly emphasized the narrative dimension of economic thought. (Shiller, 2017), (Shiller, 2019) introduced the concept of narrative economics, arguing that popular stories—whether grounded in fact or myth—can significantly

influence economic behavior and policy outcomes. Narratives, in this view, act as cognitive frames that simplify complex realities, guide public discourse, and shape collective expectations. They are contagious, evolving through social transmission and often gaining traction during periods of uncertainty or crisis.

In the realm of growth policy, (Cherif, et al., 2024) provide a compelling empirical account of how growth narratives have evolved within the International Monetary Fund (IMF). Using text analytics on over 4,600 IMF country reports from 1978 to 2019, they identify four dominant narratives: Economic Structure, Structural Reforms, Washington Consensus, and Washington Constellation. These narratives reflect shifting priorities—from sectoral composition and industrial policy to governance, liberalization, and a more eclectic set of growth drivers. Their findings reveal not only the rise and fall of specific ideas but also how institutional discourse adapts to global political and economic shifts.

The influence of these narratives is not merely academic. As (Blyth, 2002) argues in *Great Transformations*, ideas serve as “weapons” in policy debates, enabling actors to justify reforms, mobilize support, and redefine institutional arrangements. Similarly, (Hall, 1993) emphasizes the role of paradigms in policy change, suggesting that shifts in economic thinking—often catalyzed by crises—can lead to profound transformations in governance and policy frameworks.

In the context of international financial institutions, the propagation of narratives is particularly potent. IMF reports, while ostensibly technical, often reflect and reinforce dominant economic paradigms. They serve as vehicles for policy advice, shaping the discourse among national policymakers, analysts, and media. As such, the language and concepts embedded in these reports can influence domestic policy choices, especially in countries with limited institutional capacity or high external dependency.

This paper builds on these insights by examining how growth narratives have influenced IMF policy advice toward Balkan countries from 1991 to 2024. Through a statistical analysis of 113 keywords across approximately 1,000 reports, it seeks to uncover the dominant ideas shaping economic discourse in the region, and how these ideas have evolved in response to political, economic, and institutional changes.

2. Literature Review

The Narrative Turn in Economic Thought: the phrase refers to a significant shift in economic scholarship where narratives, stories, metaphors, and rhetorical structures are recognized as central to how economic ideas are formed, communicated, and adopted. This “narrative turn” challenges the traditional view of economics as a purely technical or data-driven discipline, emphasizing instead the role of language, framing, and storytelling in shaping economic behavior and policy.

Rober J. Shiller is widely credited with popularizing the idea that economic fluctuations are often driven by contagious narratives, much like epidemics (Shiller, 2019). His work argues that stories about markets, crises, and technologies can spread socially and influence macroeconomic outcomes, even when they lack empirical grounding (Morgan & Stapleford, 2023).

Deirdre McCloskey laid the groundwork for narrative analysis in economics by arguing that economic reasoning is inherently rhetorical. She proposed a “rhetorical tetrad”—facts, logic, stories, and metaphors—as the essential components of economic discourse. Her work critiques the overreliance on formal models and calls for greater attention to narrative coherence and persuasion. (McCloskey, 1990a), (McCloskey, 1990b)

The Narrative Policy Framework (NPF), developed by (Jones & McBeth, 2020), offers a

structured way to analyze how policy narratives influence decision-making. Recent systematic reviews show that NPF has become a robust tool for understanding how stories about heroes, villains, and victims shape public policy debates. It bridges positivist and interpretivist approaches, allowing for both quantitative and qualitative analysis of policy discourse (Kuenzler, et al., 2024)

(Ash, et al., 2023) introduced Relatio, a software tool that uses semantic role labeling to map relationships between entities in political and economic texts. Their work demonstrates how narratives can be quantitatively extracted and analyzed to reveal patterns in political discourse, such as partisan framing or emotional appeals.

(Morgan & Stapleford, 2023) argue that economics has undergone a "narrative turn" not just in practice but also in its historiography. They highlight how narratives serve functions like exploration, explanation, closure, and reopening in economic reasoning. Their work calls for a deeper understanding of how economists historically used narrative to make sense of complex phenomena.

3. Why the IMF country documents and their narrative is important?

IMF country documents such as Article IV Staff Reports, Staff Country Reports, Mission Concluding Statements, Letters of Intent, and policy papers—play a pivotal role in shaping economic policy and reform trajectories in Albania, Romania, Bulgaria, Serbia, Montenegro, Bosnia and Herzegovina, and North Macedonia. These countries share common characteristics: small and open economies, legacies of transition from centrally planned systems, and aspirations for EU integration. IMF documents considered for this paper are not neutral; they reflect prevailing economic paradigms and global policy priorities. The rise and fall of narratives such as the Washington Consensus in the 1990s or the Washington Constellation in the 2010s are mirrored in the language and emphasis of these reports. For Balkan countries, this means that shifts in IMF discourse often coincide with changes in domestic policy agendas, illustrating the contagion of ideas across borders. IMF country documents such as Article IV Staff Reports, Staff Country Reports, Mission Concluding Statements, Letters of Intent, and policy papers are central instruments of international economic governance.

For Balkan countries, these documents serve not only as technical assessments but also as vehicles for disseminating ideas and shaping policy narratives.

Article IV Staff Reports provide annual macroeconomic assessments and policy recommendations under the IMF's surveillance mandate. These reports distill complex economic analysis into accessible narratives, framing issues such as fiscal sustainability, structural reforms, and competitiveness. For Balkan economies, which often face structural vulnerabilities and integration challenges, these narratives influence domestic policy priorities and signal alignment with international standards.

Letters of Intent and Memoranda of Economic and Financial Policies formalize commitments under IMF-supported programs. They embed specific policy actions—such as privatization, liberalization, or governance reforms—within broader narratives of modernization and stability. During periods of transition or crisis, these documents become powerful tools for legitimizing reforms and securing external financing.

Mission Concluding Statements and Staff Country Reports communicate IMF views publicly, shaping expectations among investors, rating agencies, and multilateral partners. For Balkan countries seeking EU accession or foreign investment, IMF endorsement enhances credibility and reinforces narratives of reform and convergence.

Selected Issues Papers and policy notes provide in-depth analysis on structural challenges

such as labor market flexibility, financial sector resilience, and public investment efficiency. These documents not only inform policymakers but also frame debates around long-term development strategies, embedding concepts like “inclusive growth” or “institutional quality” into national discourse.

4. Background

In 2020, Cherif, Engher, and Hasanov published *Crouching Beliefs, Hidden Biases: The Rise and Fall of Growth Narratives*, analyzing IMF country reports from 1978–2019 using text analytics. They identified four dominant growth narratives:

- **Economic Structure:** Focused on sectoral composition and interlinkages—services, manufacturing, agriculture—and was dominant until the mid-1990s.
- **Structural Reforms:** Emphasized institutions, governance, transparency, and competition as drivers of growth.
- **Washington Consensus:** Advocated privatization and liberalization, peaking in the 1990s during post-socialist transitions before declining in the 2000s.
- **Washington Constellation:** A broad cluster of terms—productivity, tourism, infrastructure, skills, access to finance—rising since the late 1990s to become dominant by the 2010s.

The authors used a vocabulary of 113 growth-related terms, excluding broad concepts like “monetary policy” or “fiscal policy,” to capture key ingredients of growth narratives such as infrastructure, governance, and education. These 113 growth-related terms were the key words used in this research paper with regard to the IMF’s documents related to the Balkan countries for the period 1991–2024.

5. Methodology

We compiled a database of roughly 1,000 IMF-related documents produced between 1991 and 2024. These include periodic reports, academic papers, annual reviews, letters of intent, and policy recommendations, primarily authored by the IMF and, in some cases, by the governments of Albania, Romania, Bulgaria, Serbia, Montenegro, Bosnia and Herzegovina, and North Macedonia. The collection covers a broad range of topics such as economic policy, governance, structural reforms, and adjustment programs directed or recommended by the IMF to Balkan countries. These documents either address the region specifically or include it within broader discussions on emerging markets.

In order to analyze the text, we have used the same vocabulary that includes 113 terms pertaining growth and development theory.

The terms related to “The Economic Structure Narrative” are: services, industry, industrial, manufacturing, construction, agriculture, agricultural, industrialization, agroindustries, tradable

The terms related to “The Washington Consensus Narrative” are: privatization, privatize, liberalization, liberalize, free market, deregulation, trade openness, state intervention, state support, laissez faire.

The terms related to “The Structural Reform Narrative” are: institutions, structural reforms, governance, transparency, regulation, competition, competitiveness, property rights, rule of law, legal system, labor market reforms, labor market flexibility, product market reforms, quality of institutions, good institutions.

The terms related to “The Washington Constellation Narrative” are: infrastructure, public investment, productivity, innovation, technological, technology, skills, human capital,

business environment, doing business, access to finance, diversification, tourism, inequality, inclusive growth, research and development, venture capital, financial services, small and medium enterprises, digitalization, digital economy, information technology, patents, intellectual property, logistics, export market, export promotion, development bank, real estate, gdp per capita, growth policy, vision

The input vocabulary is used to calculate term frequencies within the collection of reports. The frequency of each term in the collection is determined by the ratio of the count of term i in all documents to the count of all terms in all documents. These frequencies are computed on an annual basis.

The frequency formula is:

$$f_p^i = \frac{\sum_{d \in D} t_{p,d}^i}{\sum_{k \in V} \sum_{d \in D} t_{p,d}^k} \text{ with } \sum_i f_p^i = 1$$

where: D is the collection of reports, V is the input vocabulary, $i \in V$, $t(i,p,d)$ is the count of occurrences of term i in document d for period p .

Prior to initiating text analytics, the initial step involves generating the text data. The reports undergo a transformation from PDF to TXT format. The standard text-cleaning process consists of the removal of punctuation, tables, figures, and stop words. Text analytics and word count were performed by using Python commands for every document.

6. Results

Excluding the term “services” from our analysis—since it is too generic and may relate to various contexts—the table below presents the frequency percentages of keywords associated with the four narratives. To avoid anomalies caused by unusually frequent mentions of a term in a single year, which might result from a significant but short-lived event, the percentage frequencies were calculated over cumulative two-year periods.

Narrative	1991-1992	1993-1994	1995-1996	1997-98	1999-2000	2001-02	2003-04	2005-06	2007-08
The Economic Structure Narrative	36.43%	34.75%	28.00%	38.63%	11.35%	15.57%	14.10%	13.25%	11.54%
The Washington Consensus Narrative	28.21%	17.54%	19.77%	17.23%	20.51%	22.82%	11.63%	12.19%	10.07%
The Structural Reform Narrative	14.67%	24.54%	21.05%	20.05%	41.17%	32.07%	39.76%	39.67%	40.04%
The Washington Constellation Narrative	8.43%	15.12%	12.32%	11.75%	17.49%	14.70%	20.01%	20.23%	25.70%

Narrative	2009-10	2011-12	2013-14	2015-16	2017-18	2019-20	2021-22	2023-24
The Economic Structure Narrative	11.30%	14.61%	13.90%	12.69%	8.93%	11.17%	12.84%	9.89%
The Washington Consensus Narrative	10.06%	7.98%	6.61%	5.80%	5.52%	4.81%	2.53%	1.88%
The Structural Reform Narrative	43.19%	41.58%	36.55%	39.19%	45.62%	34.50%	32.90%	29.22%
The Washington Constellation Narrative	19.20%	21.63%	26.79%	27.79%	26.98%	35.96%	37.28%	39.97%

Table 1. Narratives related to terms percentage frequency 1991-2024

First decade 1991 – 2001.

Washington Consensus Dominates Early Transition. Terms like privatization (1,984 occurrences), liberalization (967), privatize (102), and free market (25) are among the most frequent.

This reflects the strong influence of Washington Consensus ideas during the post-socialist transition, as Balkan countries moved toward market economies and privatized state-owned enterprises.

Economic Structure Still Prominent but Declining. High frequencies for services (1,670), agricultural (930), industry (794), and agriculture (598) indicate continued focus on sectoral composition. However, compared to Washington Consensus terms, these suggest a

Structural Reforms Emerging. Terms like education (1,130), institutions (1,107), structural reforms (389), governance (386), and competition (375) show early emphasis on institutional quality. This narrative gained traction as countries began aligning with EU standards and strengthening governance frameworks.

Broader concepts like business environment (29), doing business (14), and access to finance (0) were marginal, indicating that this eclectic narrative had not yet emerged as a dominant theme.



Figure 1. Period 1991-2011

Structural Reforms Become Dominant. Terms like institutions (2,886), structural reforms (1,565), transparency (1,562), governance (1,479), and competitiveness (1,848) show a clear shift toward institutional quality and regulatory frameworks.

Washington Consensus Still Strong but Declining. Privatization remains very high (3,257), along with liberalization (669) and privatize (160), indicating continued emphasis on market liberalization.

Economic Structure Narrative Weakens Further. While services (3,356) and sectoral terms like industry (715), agriculture (698), and agricultural (610) remain present, their relative importance is overshadowed by governance and reform-related terms. This suggests a transition away from sectoral analysis toward institutional and competitiveness narratives.

Washington Constellation Gains Traction. Terms such as infrastructure (1,407), business environment (547), doing business (207), tourism (378), and skills (273) show a noticeable rise. Broader concepts like innovation (240) and inequality (203) begin to appear, signaling the early formation of a more eclectic growth narrative.



Figure 2. Period 2002-2011

Period 2012–2024

Washington Constellation Becomes Dominant. Terms like infrastructure (2,135), public investment (1,160), tourism (968), business environment (433), doing business (211), skills (504), and innovation (211) show a strong rise. Emerging concepts such as digitalization (137), inclusive growth (98), and access to finance (46) confirm the consolidation of this eclectic narrative, which now emphasizes resilience, inclusivity, and modernization.

Structural Reforms Remain Important but Decline Slightly. Institutions (2,432), governance (1,758), transparency (1,264), and structural reforms (1,040) remain highly frequent, indicating continued focus on institutional quality. However, compared to the previous decade, their relative weight is lower, as attention shifts toward broader development goals and infrastructure.

Washington Consensus Marginalized. Privatization (1,051) and liberalization (217) still appear but at much lower frequencies than in earlier decades. This confirms the narrative's decline as Balkan economies complete major privatization programs and move beyond transition-era reforms.

Economic Structure Further Weakens. Sectoral terms like services (3,192), industry (604), agriculture (449), and manufacturing (502) persist but are overshadowed by governance and investment-related terms. The narrative of sectoral composition is now secondary to broader structural and constellation themes.



Figure 3. Period 2012-2024

7. Conclusions

The first decade (1991–2001) was characterized by Washington Consensus dominance, reflecting aggressive privatization and liberalization during transition. Economic Structure remained relevant but secondary, while Structural Reforms began to rise. The Washington Constellation narrative was still nascent, with minimal presence.

The second decade (2002–2011) marks a structural reform era, driven by EU integration and governance improvements. The Washington Consensus narrative persists but starts to decline, while the Washington Constellation begins to emerge. Economic Structure continues to lose relevance.

The third period (2012–2024) marks the ascendancy of the Washington Constellation narrative, reflecting global priorities such as infrastructure, inclusivity, and digital transformation. Structural Reforms remain relevant but less dominant, while Washington Consensus and Economic Structure narratives have largely faded.

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METHODS TO ADOPT CIRCULAR ECONOMY IN ALBANIA

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Abstract

To study the adoption of the circular economy (CE) in Albania, it is essential to understand that the process cannot be analyzed in isolation from people, businesses, technology, and innovation. Albania is currently in a transition phase toward the circular economy, guided by a policy framework drafted by the Organization for Economic Co-operation and Development (OECD) in collaboration with the Ministry of Environment. This framework identifies key steps required to move from a linear to a circular model of economic development. Within the broader context of EU integration and donor cooperation, several promising projects have been initiated in Albania to promote CE principles. The aim of this study is to assess Albania's readiness to adopt the circular economy, evaluating the level of public awareness, institutional preparedness, and the potential methods for incentivizing this transition.

Keywords: *Circular economy, incentive policy, adoption process.*

1. Introduction

The **circular economy (CE)** has emerged as a central paradigm in global discussions on sustainable development and environmental management. The CE model replaces the traditional **linear economic system**—characterized by extraction, production, consumption, and disposal—with a **regenerative system** designed to minimize waste and maximize resource efficiency (Geissdoerfer et al., 2017).

For **developing and transition economies** such as Albania, the adoption of CE principles presents both **opportunities and challenges**. On one hand, it promises economic diversification, innovation, and alignment with the European Union's **Green Deal** and **Circular Economy Action Plan**. On the other hand, limited infrastructure, weak institutional capacity, and low public awareness can hinder progress (European Commission, 2020).

This paper aims to assess the **current state of circular economy implementation in Albania**, focusing on public awareness, institutional readiness, and the socio-economic conditions that influence the adoption process. By doing so, it contributes to the understanding of how CE principles can be effectively integrated into **national development strategies**.

In the context of **EU candidate countries**, the adoption of CE principles is closely tied to **policy harmonization** with European environmental standards. The transition depends on **four main interrelated factors** that drive or enable it. These are often summarized as **policy, technology, economy, and society**, though different frameworks emphasize them in slightly different ways.

1. **Institutional and regulatory alignment**, relates to **EU Legislation & Strategy with** Strong regulatory frameworks (e.g. Circular Economy Action Plan, Waste Framework

Directive, Eco-design Directive) that set targets for recycling, reuse, and product lifespan. It also relates to **Public Procurement & Standards which means** Green Public Procurement and eco-labels help create markets for circular products and **Multi-level Governance that relates to** Coordination between EU institutions, member states, and local authorities ensures policy coherence.

2. **Technological and infrastructural readiness**, regarding **Design & Production**: Eco-design, modularity, and material innovation support durability, reparability, and recyclability, **Digital Tools**: Technologies such as IoT, AI, and blockchain enable product tracking, sharing platforms, and resource efficiency and **Industrial Symbiosis**: Waste or by-products from one sector become resources for another.
3. **Public awareness and education**, related to **Consumer Behavior**: Shift from linear consumption to sharing, repairing, and reusing. **Education & Skills**: Training in sustainable design, recycling, and repair practices. **Public Awareness**: Cultural acceptance of circular lifestyles and community-level engagement.
4. **Economic incentives and innovation systems** (Korhonen et al., 2018). **This is related to Business Models**: Transition from ownership to service-based models (leasing, product-as-a-service). **Investment & Finance**: Access to green financing, subsidies, and incentives for circular ventures. **Market Demand**: Consumer awareness and willingness to pay for sustainable goods influence adoption.

2. Literature Review

The circular economy has been extensively studied as a pathway toward **sustainable growth** and **resource efficiency**. Scholars such as Kirchherr et al. (2017) define CE as a system that seeks to maintain the value of products, materials, and resources in the economy for as long as possible, reducing the generation of waste.

The **OECD–Ministry of Tourism and Environment (2021)** guideline for Albania outlines steps toward integrating CE practices into national strategies. However, empirical research on Albania’s readiness and public perception of CE remains limited, making this study particularly relevant. Albania is committed to the Green Agenda for the Western Balkans (via the Sofia Declaration) and aligning with EU standards and climate goals.

A diagnostic was done to assess Albania’s current CE landscape: resource productivity, waste management, institutional capacity, consumption & production patterns, and environmental pressures. The roadmap identifies **35 policy recommendations** plus a monitoring framework to implement and track them.

After stakeholder consultations and multi-criteria analysis, three priority intervention areas were selected as likely to produce high impact in Albania:

Priority Area	Why It Matters in Albania
1. Economic instruments for sustainable consumption & production	To correct incentives, reduce waste, promote recycling, shift consumption upstream, and align with EU fiscal & environmental policies.
2. Circular business models for SMEs	SMEs are almost the entire business population. They can drive resource efficiency, innovation, green jobs if given support, financial and regulatory.
3. Plastics value-chain, especially marine litter	Plastic waste, low recycling, leakage into marine/other environments are big concerns. Closing the plastics loop is crucial.

Table 1. Priority intervention areas.

Some of the major obstacles that the Roadmap points out in Albania include:

- **Low resource productivity**, still high physical resource use relative to GDP.
- **Weak waste management infrastructure**, including low recycling rates, high landfilling, informal recycling sectors.
- **Limited financial instruments** or fiscal incentives aligned with circular economy goals.
- **Low awareness** among public, businesses, SMEs of circular economy concepts, benefits, and practices.
- **Policy and governance gaps**: need for stronger interinstitutional coordination, aligning sectoral policies, better monitoring and enforcement.
- **Plastics leakage**, unsustainable consumption of single-use plastics, lack of recycling infrastructure.

Recommended Policy Measures

The Roadmap proposes various concrete measures under each priority, for example:

Priority	Sample Measures
Economic instruments	Introduce/strengthen Extended Producer Responsibility (EPR) schemes (for packaging, e-waste, batteries) Implement fiscal reforms: landfill taxes, material taxes, household waste charges Use Green Public Procurement criteria more widely
Circular business models / SMEs	Provide financial and non-financial support (grants, training, advisory services) to SMEs adopting circular models Facilitate multi-stakeholder cooperation (platforms, value chain cooperation) Raise awareness & build capacity: training, outreach, administrative simplifications
Plastics / marine litter	Increase recycling & improve waste treatment, especially for plastic packaging Reduce single-use plastics (legislation, bans) and promote reuse alternatives Use eco-design, recycled content requirements, taxes/fees on virgin plastic input Awareness campaigns and education to prevent plastic litter, especially marine plastics

Table 2. Measures under priorities.

Institutional & Implementation Recommendations

- Develop **monitoring frameworks** with indicators to track progress in each priority area.
- Improve coordination across ministries (Tourism & Environment; Finance; Local Government etc.) and levels of government.
- Leverage international cooperation, EU funding, and donor support (e.g. projects with EU, GIZ, AFD etc.).
- Integrate circular economy goals into sectoral policies (tourism, agriculture, industry).

Strategic documents & legal frameworks (until 2025)

National Integrated Waste Management Strategy and National Action Plan 2020–2035 (NPIWM 2020–2035) — approved by Council of Ministers No. 418 on 27 May 2020. Aims to modernize waste management, making it integrated, according to the principles: waste hierarchy; “polluter pays”; extended producer responsibility (EPR). Aims to cover the entire territory and improve waste collection, recycling, treatment.

Supporting laws and decisions: basic laws such as the Law on Integrated Waste Management (modified — drafting of legislation remains a critical element).

Institutional framework for environmental protection, monitoring and accountability: includes the authorization of the NEA for supervision, inter-institutional cooperation, funding provisions and reporting.

Broader climate and environmental strategies, of which waste and circular economy policy is a part — for example, the country's reports to the international climate framework (through documents such as country communications on climate change).

New legal framework 2025: According to recent sources, a reform has been adopted that includes the reorganization of waste management — with the creation of AKEM as the central managing authority for the treatment infrastructure.

3. Methodology

This study employs a **qualitative and descriptive research design**, drawing on **secondary data** from governmental policy documents, OECD and EU reports, and academic literature. Where available, data from **surveys and public opinion studies** on environmental awareness in Albania are also considered.

Qarkonomia – Albanian Circular Economy Platform (2020) — “Study Report on Circular Economy and Environmental Issues – Albania 2020”

- This survey asked a representative sample of the general public about familiarity with concepts related to circular economy (recycling, green economy, linear economy, blue economy, biomimetics, etc.).
- Findings: Recycling had the highest awareness among respondents. Roughly 43% declared familiarity with the term “Green Economy.” Only about 20% knew the concept of “Take-Make-Use-Dispose” (the linear economy model), and awareness of more technical terms (e.g. “Blue Economy,” “Biomimetics”) was very low (e.g. only ~9% had heard of biomimetics).
- This suggests that while “recycling” (the simplest CE component) is relatively well-known, broader CE vocabulary / systemic ideas remain unfamiliar to many.

Consumers’ knowledge and decisions on circularity: Albanian, Polish, and Portuguese perspectives (2024) — cross-country survey including Albania

- This peer-reviewed article (published in 2024) surveyed 495 respondents across three countries (Albania, Poland, Portugal) about consumers’ knowledge and behaviour regarding circular practices.
- It provides comparative data on how Albanians view circular approaches (reuse, recycling, sustainable consumption) relative to other countries, highlighting both potentials and obstacles from a consumer standpoint.

Behavioral readiness for circular economy in Albania: a consumer perspective (2025) — regional study (North Albania)

- This recent study (2025) used a structured questionnaire among residents in northern Albania to assess consumer readiness to adopt circular economy practices (re-use, moderation, donation, resource-efficient consumption, etc.).
- Key findings: Socio-economic factors (education level, employment, income) strongly influence familiarity with CE and actual behaviour. People with higher education or employment status showed more awareness and were more likely to engage in circular behaviours.

- It also highlights significant structural and cultural barriers — even among those with awareness, actual adoption is constrained by limited infrastructure (recycling, waste collection), weak policy enforcement, and lack of supportive systems.

The analysis focuses on three dimensions of readiness:

1. Institutional and policy frameworks,

A Roadmap towards Circular Economy of Albania (2024)

- This roadmap — prepared by OECD — proposes a **comprehensive policy framework** for circular economy in Albania, aiming to integrate existing policies and guide future reforms.
- It identifies three priority areas: (1) using economic instruments to promote sustainable consumption & production, (2) supporting circular business models (especially among SMEs), (3) addressing key waste streams such as plastics (with emphasis on marine litter).
- The roadmap includes ~ 35 policy recommendations and proposes a monitoring framework — indicating the ambition to build a stable, long-term governance structure for circular economy.

Law No. 57/2025 on Integrated Waste Management (adopted October 2025) — new legal milestone

- This law updates Albania's legal framework for waste management, embedding **circular-economy principles** (waste as resource, waste hierarchy: prevention → reuse → recycling → recovery → disposal, “polluter pays”, extended producer responsibility, etc.).
- It defines roles and obligations for waste generators, holders, licensed operators, producers/importers (through EPR, see below), and clarifies waste streams, licensing, transport, final disposal or recovery, and waste shipments.
- The law also foresees a new national-level institutional body — a “national waste-management operator/agency” — to plan, build, and manage waste treatment infrastructure (moving beyond purely municipal-level waste management).
- It strengthens enforcement: illegal dumping, improper disposal, mixing recyclable waste destined for recovery, illegal exports/imports of waste — all penalized with sanctions, license revocations, fines, confiscations.

National Waste Management Plan (2020–2035) (NWMP) & National Strategy of Integrated Waste Management

- The NWMP 2020–2035 is Albania's main long-term strategic document for municipal, non-municipal and hazardous waste. It sets targets to transition from linear waste disposal toward recovery, recycling, reuse — thus aligned with circular economy goals.
- The earlier Strategy (and its subsequent updates) anchors Albania's waste management on key principles: waste hierarchy, “polluter pays”, extended producer responsibility, sustainable development, and using environmentally appropriate technologies.
- Through these, Albania seeks to improve accountability for waste, better performance of waste management services, and strategic, integrated planning — essential for circular economy in practice.

Domestic and international projects / programmes supporting CE transition

- GIZ (in cooperation with national authorities) runs a project “Circular Economy for Sustainable Urban Development in Albania” — aiming to align regulation with EU

norms; build institutional capacity (data, monitoring); implement Extended Producer Responsibility (EPR) for packaging and e-waste; support composting, recycling, circular business models, and green innovation.

- International-funded programmes: e.g. Agence Française de Développement (AFD) together with European Union (EU) launched a “Waste Infrastructure in Albania” programme (2023–2028) to upgrade waste management systems in selected regions, promoting recycling, reuse, and modern disposal — as part of Albania’s CE transition.
- Another initiative: the recent launch (Nov 2023) of a 3.5-year, €14.6 million project by EU & German Federal Ministry for Economic Cooperation and Development (BMZ), implemented by GIZ and the national Ministry, aiming to revise legal framework, introduce green business models including EPR, and support circular practices in 15 municipalities.

Integration with EU accession and alignment with EU environmental acquis

- As part of its EU-membership path, Albania needs to align with EU directives on waste, resource efficiency, pollution, sustainable consumption/production. The 2025 law and related reforms aim to ensure compliance with EU norms.
- The roadmap notes that CE transition — including economic instruments, business-model support, waste-stream regulation — supports not just environmental goals but broader economic resilience, job creation, resource security, and alignment with EU standards.

Institution / Actor	Main Role
Ministry of Environment (MoE)	The central government institution responsible for environmental policies, nature protection, waste management, environmental planning, and steering the transition toward a circular economy.
National Environment Agency (AKM)	State environmental agency that monitors environmental conditions, collects and manages waste data, inspects implementation, and oversees the enforcement of schemes such as Extended Producer Responsibility (EPR) according to the new legal framework.
National Waste Agency (AKEM)	Under a new 2025 law, this agency—established as a state-owned joint-stock operator—will serve as the managing authority for national waste treatment infrastructure.
Local Government (Municipalities & Local Units)	Responsible for waste collection services, local waste management plans, separate collection, tariff setting, and implementation at the local level in accordance with national legislation.
Other State Institutions (Ministry of Finance and Economy; Ministry of Infrastructure and Energy; etc.)	Collaborate on policies affecting the economy, budget, transport, and energy, influencing fiscal instruments, infrastructure, production, and consumption as part of the circular economy transition.
Private Sector, SMEs, Civil Society Organizations, International Donors/Supporters	Key actors in applying circular models through recycling, pilot projects, innovation, awareness-raising, and public–private cooperation.

Table 3: Institutional structure for Circular Economy in Albania.

2. Form of engagement: private businesses that are building “circular” models

AZ Group is perhaps the most consistent example in Albania of a business that works

according to circular logic. They develop a “zero-waste / circular” operation processing by-products (from the food industry, meat, fishing, etc.), which are not for human consumption, but are recycled for animal products, feed for livestock, or in special cases as biofuel. From their statements: AZ Group claims to have “carbon-negative” operations, and aims for technological / production waste to not exist any “waste” to be transformed into input for something else.

This shows that there are Albanian businesses that have understood the economic opportunity (not only “environmental”) in recycling and reuse creating value and sometimes even exporting / importing the processed products.

Why it matters: Examples like AZ Group demonstrate that the “circular economy” can be a business and can be profitable not just “political/environmental bluff”. This is important to encourage more investment and replication of such models. Business engagement and technological innovation, and replication of such models.

Startups, new ideas and incubations innovation & experimentation.

Recently, a “wave” of initiatives has started that aim to bring business models + innovation for recycling and using resources creatively:

- Lab of Tomorrow (LoT23 — Albania) is an incubation program / “ideas sprint” for SMEs and entrepreneurs who want to develop solutions for waste, recycling, re-use, etc. The first part focused on glass waste: ideas for recycling, reuse, returnable packaging and “closed-loop” systems.
- Some of the “venture teams” that emerged from LoT23 include: glass recycling businesses, companies proposing a “reuse” system (e.g. for wine/beer), art and design with recycled materials, and reuse in sectors such as HoReCa.
- The Digital Loop Accelerator (DLA) has also been launched the first venture-building studio in Albania dedicated to startups with circular economy models. DLA aims to build startups from scratch that have the “circular economy” as a foundation, not simply as an afterthought.

This shows that new businesses especially SMEs, startups, young entrepreneurs have become part of the transition towards circularity. There is room for creativity, experimentation, and the development of models that can be adapted to the Albanian reality.

3. Public awareness and socio-economic acceptance of CE principles.

How widespread is the understanding of the “circular economy” among citizens and businesses reality vs. theory

Despite efforts, knowledge and capacity to engage in the circular economy remains relatively low. Some data:

- A recent study reports that approximately 70% of the population in Albania “does not know” what the circular economy means. Only a few about 7% associate it with recycling or waste management.
- Another study (2020) found that 24% of the public and about 51% of businesses declared that they “have heard” of the circular economy but only 15% of the public and 44% of businesses had a correct understanding.
- In short: “preliminary” awareness (listening, awareness) is slowly growing, but the real understanding and readiness for change remains relatively narrow.

This indicates a significant gap between “knowledge of the concept” and “its acquisition as practice and behavior”

4. Findings and Discussion

4.1 Institutional and Policy Framework

Albania has made significant strides in aligning its **environmental policies** with EU standards. The collaboration between the **OECD** and the **Ministry of Environment** has produced a roadmap identifying key actions for transitioning from a **linear** to a **circular** economy. These include improving waste management systems, promoting green entrepreneurship, and integrating CE principles into regional development strategies (OECD, 2021).

However, the **implementation capacity** of public institutions remains limited. Fragmented policy coordination, insufficient data on material flows, and a lack of monitoring indicators slow the pace of reform. Establishing a **national CE monitoring framework** would enhance accountability and guide investment priorities.

Challenges & Gaps (as identified in policy analyses)

- According to IAM – Interreg Europe Circular Minds situational analysis, despite institutional recognition, there remain significant issues: low public awareness of CE, insufficient infrastructure (especially outside big cities), limited financing for circular initiatives, and weak enforcement or implementation capacity at municipal level.
- The newly drafted Extended Producer Responsibility (EPR) legislation — though part of the strategy — remains in process (as of 2024) and its full adoption and implementation is critical for circular-production upstream.
- National circular material-use indicators (e.g. circular material use rate) are still “not assessed” or absent; Albania is described as being in **initial stages** of CE transition.
- There is need for better inter-sectoral coordination, stronger institutional capacity, data, enforcement, and long-term commitment — especially to deploy CE beyond waste management (e.g. product design, resource-efficient production, green business models). The roadmap underlines that these reforms “need to be intensified.”

What this framework means in practice: where Albania stands now — and what remains to do

- Albania has now a **modernized legal backbone** (2025 waste-management law) for circular economy, with explicit CE principles and institutional redesign.
- There is an emerging **national strategic vision** (via NWMP 2020–2035, plus the 2024 OECD roadmap), which — if implemented — could steer the country toward circularity in waste, resource use, production, and consumption.
- Projects supported by EU/GIZ/AFD are already operational, building infrastructure (recycling, composting), piloting CE business models, and raising awareness — providing practical ground for circular transition.
- But the transition is still at **early stages**: major structural, institutional and social gaps remain (underdeveloped data & monitoring, low CE awareness, limited infrastructure coverage, need for investment and enforcement).

4.2 Business Engagement and Technological Innovation

The private sector plays a pivotal role in operationalizing the circular economy. In Albania, some **pilot projects** particularly in the fields of waste recycling, eco-tourism, and renewable energy demonstrate early adoption of CE principles. Nevertheless, **most businesses** continue to operate under a **linear production model**, prioritizing short-term profitability over resource efficiency.

A major barrier is **limited access to green financing** and insufficient incentives for

innovation. Encouraging **public–private partnerships** and introducing **tax reductions or subsidies** for circular business models could accelerate the transition (European Bank for Reconstruction and Development, 2022).

Challenges and where more effort is needed to extract more value

Despite progress, the road remains long:

- Many of the efforts are still at pilot / startup level it is not guaranteed that all will be replicated on a larger scale.
- Infrastructure for recycling, systematic collection, sorting and processing remains limited beyond initiatives such as Recycling Park or small plants: to cope with the real volume of waste, serious investment is required from the public + private sector.
- Need for more massive engagement of the private sector: many businesses are still in a “linear” model — produce → consume → dispose; incentives (economic, legal, social) are needed to move to “circular”.
- Public awareness & education many citizens are not used to recycling, waste selection, reuse, or do not see the immediate benefit without public interest, circular business models will remain niche.

Conclusion & Experience: What this ecosystem shows today and where it can take Albania

- Albania has already started to create a diverse ecosystem for the circular economy with a combination of traditional businesses that are being “reprogrammed” for recycling; with startups and innovative initiatives; with urban projects, international financing and institutional support.
- If this ecosystem is supported with the right policies, with investments in infrastructure and with awareness Albania has the potential to evolve towards a more sustainable economic model, reduce dependence on new natural resources, create “green” jobs, and more easily adapt to European environmental standards.

Raising awareness new efforts, achievements and initiatives

- In November 2025, the Reduce, Reuse, Recycle for a Greener Albania campaign was launched with the support of the European Union and Albanian institutions. The aim is to raise public awareness, motivate “business + citizens + state” to adopt circular practices.
- The latest project for urban waste management with international partners is including the construction of recycling plants, recycling and processing centers, as well as information and education campaigns to promote waste separation at source and awareness.
- At the local level, e.g. the composting center in Cërrik (opened 2025) is a concrete example that illustrates to citizens that recycling/composting is not abstract but with concrete benefits for the land, agriculture and the environment.
- The involvement of children and young people has also begun with educational activities, model recycling/reuse zones, parks that use recycled materials aiming to change the mentality of the new generations.

We can say that a movement has begun to take place with campaigns, projects, investments to inform and involve the public. If these initiatives are intensified and become systematic, mass awareness can be raised.

4.3 Public Awareness and Education

Public understanding of the circular economy in Albania remains **relatively low**. Awareness campaigns are sporadic and often limited to urban areas. Educational curricula

rarely integrate sustainability concepts in a systematic way. As the CE depends on **behavioral change** from recycling habits to sustainable consumption enhancing education and outreach is vital.

According to regional surveys (UNDP, 2023), only around one-third of Albanian respondents report being familiar with CE-related initiatives. Therefore, embedding CE education in schools and universities, alongside targeted awareness campaigns, would be an essential step toward **cultural acceptance** of circular practices.

4.4 Economic and Social Readiness

The transition to a CE implies not only environmental benefits but also **economic restructuring**. In the short term, it may involve costs associated with technological adaptation and infrastructure development. However, long-term benefits such as **job creation in green sectors**, **resource independence**, and **reduced environmental degradation** can outweigh these costs.

The readiness of Albanian society depends on both **economic capacity** and **social willingness** to adopt sustainable lifestyles. Strengthening **green entrepreneurship ecosystems** and **local innovation hubs** could help bridge this gap.

Social, economic and cultural challenges to the adoption of circular measures: Even when the concept is known they face obstacles:

- Most waste still ends up in landfills according to the latest data, about 76% of urban waste is deposited, while recycling is only ~18–19%.
- Source separation systems (plastic/paper/organic separation at home) are very rare only a few areas / municipalities have implemented such pilots. The lack of infrastructure for processed recycling separation plants, recycling, composting means that even when there is a desire, the practice stagnates.
- The waste culture for example: throwing away plastic packages, “single-use” packaging, lack of source separation, perception that “recycling” is someone else’s remains strong. Cultural change takes time, education and practical examples.

So the social and economic presence of circular practices is limited due to a mix of infrastructural, economic, and cultural barriers.+

5. Conclusions

In social and cultural terms, knowledge and acceptance of the circular economy are still at basic levels. Few people really understand the concept; much less see it as a concrete option. Even people who hear about “recycling / plastic recycling / waste” often do not have the physical means (infrastructure, collection, separation) to practice it. Acceptance must go with real possibilities infrastructure, convenience for citizens, supportive policies. Without them, awareness remains just “theory / good words”. For more institutional, political, economic and educational support is needed: campaigns that affect everyone (children, families, businesses, institutions), investments in recycling, waste separation, incentive schemes (for citizens & businesses), and transparency.

SWOT Matrix – Circular Economy in Albania

Strengths	Weaknesses
Increasing political commitment, reflected in the National Waste Management Strategy and major EU/German-funded programmes supporting the circular transition.	Low public awareness and limited behavioural uptake of waste separation and circular practices.
Growing number of innovative enterprises and startups piloting circular business models (recycling, reuse systems, digital return platforms).	Insufficient recycling and composting infrastructure, with fragmented and inconsistent source-separation systems.
Expanded youth engagement through environmental education, school campaigns, and community recycling/composting pilots.	Limited standardization and regulatory clarity for recycling, reuse, and circular operations, especially among SMEs.
Technological progress through existing recycling facilities for plastics, glass, metals, and e-waste, along with emerging composting capacity.	Inadequate and unstable financing mechanisms for circular innovations, new infrastructure, and startup support.
Potential for significant “green job” creation in recycling, resource recovery, and circular innovation sectors.	Persistent consumer preference for single-use products and low adoption of reuse culture.
Opportunities	Threats
Implementation of Extended Producer Responsibility (EPR) schemes for packaging, batteries, tyres, and textiles, providing sustained funding for recycling systems.	Slow or uneven implementation of policies and infrastructure projects may undermine public and private sector confidence.
Potential for public–private partnerships (PPPs) to develop and operate recycling and resource-recovery facilities.	Absence of fiscal incentives or subsidies may reduce adoption of circular practices among businesses and citizens.
Advances in technology and innovation, including alternative materials, upcycling solutions, and reusable-packaging logistics.	Inconsistent cultural uptake of circular practices, particularly in rural areas, may create behavioural gaps.
Opportunities for large-scale awareness and education programmes to embed circular behaviours nationally.	Increasing environmental pressures from waste accumulation and landfill saturation may hinder circular progress.
Growing export potential for recycled materials, upcycled products, and recycling technologies in regional markets.	Competition for limited public investment may shift funding away from circular economy initiatives toward other priority sectors.

Recommendations

To enhance Albania's readiness for CE adoption, the following policy recommendations are proposed:

1. **Strengthen institutional coordination** by establishing an inter-ministerial platform for CE implementation.
2. **Develop financial instruments** to support SMEs in adopting circular practices, including green loans and innovation grants.
3. **Integrate CE education** into formal and non-formal learning systems.
4. **Improve data collection** on waste streams, material flows, and recycling rates to inform evidence-based policymaking.
5. **Promote international cooperation** through EU-funded programs and knowledge exchange with neighboring countries.

Albania is at an early but promising stage in its transition toward a **circular economy**. The existence of strategic guidelines, donor-supported projects, and growing institutional awareness provides a solid foundation. However, **systemic barriers** including limited coordination, insufficient financing, and low public awareness continue to hinder progress. Adopting a comprehensive and inclusive approach that integrates **policy reform, education, innovation, and public engagement** is essential. The circular economy is not merely an environmental objective; it represents a **strategic pathway** for Albania's sustainable economic growth and alignment with European integration goals.

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ARTIFICIAL INTELLIGENCE IN THE JUSTICE SYSTEM: ETHICAL, LEGAL, AND JUDICIAL IMPLICATIONS IN ALBANIA AND THE WESTERN BALKANS

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Abstract

In the past decade, artificial intelligence (AI) has become a defining force in institutional and economic transformation, increasingly shaping the field of justice. Intelligent systems are being used for evidence analysis, judicial decision prediction, legal document management, and the optimization of legal services. This paper examines the impact of artificial intelligence on the interpretation of law, the functioning of judicial institutions, and the professional ethics of judges and lawyers. At its core, the analysis seeks to answer a fundamental question: How can the human essence of justice be preserved in an increasingly automated legal system? The answer requires a delicate balance between technological innovation and the preservation of the fundamental principles of the rule of law. In Albania, the ongoing process of digitalization in public administration and the judiciary—through platforms such as e-Albania and electronic case management systems—marks a first step toward digital governance. However, the actual use of artificial intelligence in judicial interpretation and decision-making remains at an early stage. Challenges such as algorithmic bias, the lack of ethical guidelines for data use, and weaknesses in digital infrastructure and professional training represent serious obstacles to the fair and accountable implementation of AI-based tools. Across the Western Balkans, similar initiatives are emerging in countries like Croatia, Serbia, and North Macedonia, where AI-assisted case management, legal aid systems, and judgment prediction algorithms are being tested. Although these innovations aim to enhance efficiency and transparency, they have sparked debate over the ethics of automated decisions, legal accountability for algorithmic errors, and the potential erosion of judicial independence. Legally, this study highlights the need for a clear normative framework governing the use of AI in the justice sector, aligned with the European Union's Artificial Intelligence Act (AI Act). Establishing national ethical and legal frameworks that define the boundaries of AI use in legal processes is essential to ensure accountability, transparency, and mandatory human oversight. On the judicial level, AI's impact is twofold: it facilitates legal research, precedent interpretation, and case management, while at the same time risking the replacement of human interpretative reasoning with statistical models that may overlook social, moral, and cultural contexts. This tension underscores the need for coexistence between judges and algorithms, where technology remains a supportive tool rather than a decision-maker.

Ultimately, the paper concludes that the digital transformation of justice is inevitable, but it must be guided by strong ethical and legal principles. For Albania and the Western Balkans, this means developing inclusive public policies, legal education on digital ethics, and regional cooperation in building a shared legal framework for AI in justice systems.

Keywords: *Artificial Intelligence (AI), Justice System, Ethical and Legal Implications, Rule of Law, Digital Transformation, Judicial Decision-Making, Western Balkans.*

1. Introduction

Over the past decade, artificial intelligence (AI) has emerged as one of the most transformative technologies of the modern era, exerting a direct impact on every sector of social, economic, and institutional life. In this context, the justice system is facing a new reality in which legal procedures, judicial administration, and the interpretation of law are increasingly intertwined with automation and intelligent algorithms. At the global level, the use of AI in justice systems has begun to change the way evidence is analyzed, court cases are managed, and legal arguments are prepared. This innovative approach aims to enhance efficiency, transparency, and access to justice by reducing bureaucracy and shortening case review times. However, alongside its significant potential, AI also introduces profound ethical, legal, and judicial challenges that touch upon the very foundations of the concept of human justice. In Albania, the process of digitalizing public administration and justice institutions is currently underway. Platforms such as “e-Albania” and electronic case management systems represent initial steps toward the modernization of the justice system. Nevertheless, the concrete use of artificial intelligence in legal analysis or judicial decision-making remains at an embryonic stage. This situation creates the need for an in-depth discussion on how technology can be integrated in a responsible, ethical, and sustainable manner within the justice system. The Western Balkans face the same reality. While European Union member states have already begun implementing the European Artificial Intelligence Act (AI Act)—a comprehensive legal framework aimed at ensuring the safe and ethical use of AI—countries in the region are still seeking pathways for adaptation and harmonization with European standards. In this regard, Albania and its neighboring countries have the opportunity to benefit from EU experiences in building a smart justice system that is simultaneously safeguarded against the risks of technological abuse. This introduction lays the groundwork for a study on the ethical, legal, and judicial impact of artificial intelligence on the justice system, with a particular focus on Albania and the Western Balkans. The primary objective is to understand how the principle of human justice and judicial independence can be preserved in an era in which technology is becoming an integral part of legal processes.

2. The role of artificial intelligence in the justice system

Artificial intelligence has begun to emerge as an essential instrument in the transformation of justice systems worldwide. It involves the use of algorithms capable of learning from data, predicting behaviors or decisions, and assisting legal professionals in their daily work processes. At its core, AI is no longer a theoretical concept but a practical tool that is reshaping the functioning of courts, law firms, and public administration institutions.

1. Practical Applications of AI in Justice

At the international level, AI applications in the justice sector are numerous and continuously evolving. Intelligent systems are used for:

- The analysis of evidence through the processing of digital data and judicial documents;
- The prediction of judicial decisions based on legal precedents and trends;
- The management of cases and legal documentation, enhancing efficiency and transparency;
- Virtual legal assistance, where AI-based applications provide preliminary legal advice to citizens or early-career legal professionals;
- Risk analysis in cases related to sentencing, parole, or economic and financial crimes.

In several countries, such as France, the Netherlands, and Estonia, automated AI systems are being tested in the preliminary management of administrative cases, yielding positive results in terms of speed and reduced workload for judges.

2. Benefits of Using AI in the Judicial System

Among the most notable benefits are:

- Increased efficiency in document processing and faster decision-making;
- Reduced costs associated with the administration of justice;
- Greater transparency for the public and easier access to judicial information;
- Analytical support for judges and lawyers through argumentation models based on jurisprudence;
- Reduction of human error in technical and administrative processes.

If applied responsibly, these developments can contribute to the creation of a faster, fairer, and more citizen-oriented justice system.

However, these benefits cannot be fully understood without also assessing the risks and ethical implications accompanying this process, which are examined in the following chapter.

3. Ethical and legal challenges of artificial intelligence in the justice system

The use of artificial intelligence in the justice system, in addition to its evident benefits in terms of efficiency and transparency, raises a range of complex issues related to ethics, legal liability, and the protection of fundamental human rights. These challenges require careful consideration in order to prevent justice from being transformed from a human-centered process into an automated mechanism lacking moral sensitivity.

1. Ethical Dilemmas

One of the most sensitive ethical issues concerns algorithmic bias. Artificial intelligence systems learn from the data provided to them; if such data contain racial, gender, or socio-economic biases, the resulting outputs will also be biased. In the judicial context, this may lead to unjust decisions, undermining the principle of equality before the law.

Another major dilemma lies in the lack of algorithmic transparency. Many AI systems operate as a “black box,” where decision-making processes remain unclear even to their developers. This creates a real risk of reduced accountability and diminished public trust. In a justice system where every decision must be reasoned and understandable, such opacity is fundamentally problematic.

The professional ethics of judges and lawyers are also facing a new challenge: how to preserve the human role in an increasingly automated process. The involvement of algorithms in evidence analysis or sentencing recommendations may weaken the perception of judicial independence if clear limits on the use of AI in legal proceedings are not established.

2. Legal Liability

From a legal perspective, a fundamental question arises: who bears responsibility for an erroneous decision made by an AI system? In the absence of clear regulations, there is a risk that liability will be dispersed among developers, users, and institutions, creating legal uncertainty. This is why the European Union has adopted the European Artificial Intelligence Act (AI Act), the first law in the world to regulate the use of AI based on risk levels.

The AI Act provides for:

- the prohibition of AI uses that infringe upon fundamental human rights;
- mandatory human oversight in high-impact processes, such as the justice system;
- obligations of transparency and documentation for decisions made by intelligent systems.

In Albania and the countries of the Western Balkans, where such regulation is still lacking, there is an urgent need to develop national legal frameworks harmonized with EU standards.

These frameworks should clearly define:

- the role of technology in judicial processes;
- the obligation of human control over decisions;
- the protection of personal data and professional secrecy;
- as well as the prohibition of any AI use that may exert political influence or discriminate against individuals.

3. Impact on Human Rights

At its core, any technological intervention in the justice system must be grounded in respect for human dignity, privacy, and impartial justice. If algorithms are used without ethical standards, they risk becoming instruments that reinforce existing inequalities rather than eliminate them.

This requires that any decision to integrate AI into the justice system be accompanied by public consultations, institutional oversight, and professional training for judges, prosecutors, and lawyers.

4. The albanian and balkan context of artificial intelligence integration into the justice system

The process of digitalization of public administration and justice institutions in Albania is ongoing, yet it remains at an early stage with regard to the integration of artificial intelligence. State initiatives such as the “e-Albania” platform, the Integrated Case Management System (ICMS), and projects for smart courts represent important steps toward a more transparent and efficient justice system. However, these developments are still limited in terms of the use of intelligent algorithms for legal analysis or judicial assistance.

1. The Current Situation in Albania

Within the Albanian judicial system, the use of artificial intelligence remains largely experimental and is primarily focused on administrative functions, such as case file management and the publication of court decisions. There is currently no national strategy for artificial intelligence in justice, which makes it difficult to establish unified standards for its application.

The main challenges encountered include:

- the lack of legislation governing the supervision of intelligent systems;
- the shortage of experts trained at the intersection of technology and justice;
- legal uncertainty regarding liability for automated decisions;
- and weaknesses in digital infrastructure, particularly in district courts.

To address these issues, an inter-institutional approach is required, involving the Ministry of Justice, the Bar Association, the School of Magistrates, and academic institutions, with the aim of drafting clear ethical and legal rules for the use of AI in the judicial system. The establishment of a National Commission for Artificial Intelligence Ethics in Justice would be a necessary step toward institutional oversight and the assurance of transparency.

2. Experience of Western Balkan Countries

Across the region, several similar initiatives have begun to take shape:

- Croatia has launched pilot projects for the use of AI in the analysis of court files and in forecasting court workloads;
- Serbia has integrated an experimental platform for the automated allocation of cases among courts, aimed at preventing human interference and increasing transparency;
- North Macedonia has developed a digital system for evidence management and for supporting judges in identifying similar judicial decisions.

Nevertheless, no Western Balkan country has yet succeeded in implementing a fully developed AI-driven smart justice system. The main reasons include:

- the absence of legal frameworks harmonized with EU standards;

- uncertainty regarding the protection of personal data;
- a lack of public trust in technology;
- and the risk of political influence over the use of judicial data.

For this reason, regional cooperation becomes essential. A Regional Council for Artificial Intelligence in Justice, involving legal and technology experts from Western Balkan countries, could establish a common ethical and legal framework and ensure gradual harmonization with the European Artificial Intelligence Act (AI Act).

3. The Role of Academic Institutions and Civil Society

Academic institutions, universities, and civil society organizations play an indispensable role in this process. They can contribute to:

- the development of interdisciplinary studies on digital justice;
- the education of young legal professionals in the ethics of artificial intelligence;
- the organization of scientific forums and training programs for justice professionals;
- and the promotion of public debate on the impact of technology on justice.

Organizations such as “Alternativa Studentore” have significant potential to build bridges of cooperation between young legal professionals, technology experts, and public institutions, thereby contributing to the formation of a new generation of professionals prepared for the era of artificial intelligence.

5. Conclusions

The digital transformation of the justice system, driven by artificial intelligence (AI), represents one of the greatest challenges and opportunities for legal systems in the twenty-first century. While technology offers increased efficiency, transparency, and broader access to justice, it also requires a renewed ethical and legal framework to ensure that judicial decision-making remains profoundly human and just.

Key Conclusions

1. Artificial intelligence is reshaping the functioning of justice systems—from case file management to the prediction of judicial decisions. While this enhances productivity, it also poses the risk of diminishing human control over legal processes.
2. The judicial systems of Western Balkan countries, including Albania, are at an early stage of digitalization. A comprehensive strategy for the use of artificial intelligence in justice has not yet been developed, creating risks of institutional fragmentation and a lack of transparency.
3. The most significant risks remain ethical and legal in nature. The use of algorithms that are not understandable to users (so-called “black boxes”) may lead to unjust, discriminatory, or incomprehensible decisions for the parties involved.
4. Public trust in the justice system is closely linked to transparency. If citizens do not understand how an intelligent system arrives at a decision, confidence in justice and the rule of law may be undermined.
5. The involvement of civil society and universities is essential to ensuring ethical debate, interdisciplinary research, and the preparation of new generations of legal professionals and computer scientists with legal and moral awareness.

Public Policy Recommendations

1. Drafting a National Strategy for Artificial Intelligence in the Justice System
 - a. The strategy should define short- and long-term objectives for AI integration, aligned with standards set out in the European Artificial Intelligence Act.
2. Establishment of a National Commission for Artificial Intelligence Ethics in Justice
 - a. This body should include representatives from the Ministry of Justice, the Bar Association, the School of Magistrates, universities, and civil society organizations.

The Commission would monitor, regulate, and provide guidance on the ethical use of AI within the judicial system.

3. Training and Professional Development for Legal Professionals and Judges
 - a. The introduction of dedicated modules on digital ethics and artificial intelligence in university curricula and within the School of Magistrates.
4. Development of Digital Infrastructure
 - a. Investment in secure data management systems, inter - institutional collaboration platforms, and unified standards for privacy and data protection.
5. Regional Cooperation within the Western Balkans
 - a. The creation of a Regional Council for Artificial Intelligence in Justice to support the harmonization of practices, the exchange of experiences, and the development of shared legal standards.
6. Active Involvement of Civil Society and Youth Organizations
 - a. Organizations such as *Alternativa Studentore* can play a key role in raising public awareness, promoting civic education, and developing projects that link innovation with legal ethics.

Final Remarks

The digital transformation of the justice system is no longer a distant prospect but an inevitable reality. However, the manner in which it evolves will determine whether artificial intelligence serves as a safeguard for justice or a risk to the rule of law. Albania and the Western Balkan countries have a unique opportunity to develop a justice model that combines technological innovation with human values, placing human judgment rather than algorithms at the center of decision-making.

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IS ALBANIA INCREASING ITS PHYSICAL CAPITAL, OR THE TIME HAS COME TO RE-FORM A NEW PHYSICAL CAPITAL IN THE FACE OF POPULATION OUTFLOW?

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Abstract

Per capita income continues to rise in an apparently good manner, reflecting the rhythms of the Albanian economy. However, we are dealing with the problem of the most active population abandoning the nation. Public authorities' options for raising pay seem to be signals that support putting the economy on the path of modern development. In the postmodern era, robotics and artificial intelligence are becoming more and more prevalent, which basically connects the need to develop a generation of workers capable of handling these issues. In the meantime, the issue of Albanian human capital leaving the country persists. Can this be examined using the Solow model on the "golden rule" level of capital, or is growth in Albania considered an endogenous factor? Is Albania headed in the correct direction to bridge the economic gap with developed nations, or is it being mismanaged due to dysfunctional established institutions? Its generation-to-generation capital is declining rather than growing, or does physical capital also need to be restructured? There are few opportunities for the introduction of technology due to the rise in production in the services sector. The analysis of productivity-related elements and their impact on production factors and gross total output is the paper's primary topic. One of the challenges in closing this gap is the path of economic growth through productivity.

Keywords: *Technology; Physical working capital; Factors of production.*

1. Introduction

Economic growth is usually positively influenced by the accumulation of physical capital, especially in capital-poor countries where returns to investment are higher. Although increases in total factor productivity (TFP) are often the main driver of growth accelerations in these situations, capital accumulation can account for a significant amount of them (Koopman & Wacker, 2023). Improvements in TFP are the main driver of growth accelerations, but without strong trends in physical capital investment, sustained economic growth is impossible. Growth episodes that lack strong capital accumulation tend to stagnate (Ishqaf et al., 2024). Strong institutions and human capital development increase the efficiency of physical capital in stimulating growth. Increases in physical capital may not result in increased output and may even have the opposite effect in countries with sub-optimal institutions (Hall et al., 2010; Joshua, 2016). Physical capital has different effects in different sectors (such as manufacturing and agriculture) and geographical areas. For example, compared to total factor productivity, physical capital accounts for a larger share of growth in sub-Saharan Africa and some developing countries, while in industrialized countries, the relationship is more equal or even in favor of TFP (Garzarelli & Limam, 2019).

Like other developing countries, Albania is going through an extremely difficult economic situation where it is faced with the fact of whether it should increase investments in conditions when its human capital continues to be lost in the form of emigration or economic conditions do not allow for further growth in productivity (Naqellari & Mici, 2020). Like any other nation, every people and country is faced with three main factors of its growth. These are human capital, natural resources in the form of surface area, location, mineral reserves underground and surface above ground. The third is the wealth that past generations leave to this country. This wealth is in the form of completed constructions, underground and above ground assets that they have left us and the space on this planet that we have. Of course, the previous generation has also left us its ability and technology and experience to produce material goods, a legacy that is obtained during the qualifications, work process and skills of individuals and processes that are carried out during the transitional period of generations. Albania is almost the last in the region along with Kosovo, Macedonia and Bosnia and Herzegovina for the level of productivity and the path to minimize or reduce the gap with European or OECD countries requires an ambitious strategy and objectives.

2. Literature Review

Understanding physical capital is essential for resource allocation. Economic productivity and efficiency can be significantly increased through the effective allocation and use of physical capital (Fukuyama et al., 2018). For example, the use of sophisticated machinery in production can result in lower costs and more output.

Modern irrigation systems can also improve resource management and crop yields in agriculture (Bombaj et al., 2022). Moreover, one of the main forces behind economic expansion is physical capital. Investment in machinery, technology, and infrastructure not only increases output, but also creates the basis for future expansion. The Industrial Revolution and other historical economic changes highlight the transformative potential of tangible assets (Mathew, 2011). This pattern is also preserved in the current digital revolution, when physical infrastructure and technology are at the forefront of economic growth. Last but not least, effective policymaking requires an awareness of physical capital. Organizations and governments need to determine which sectors can benefit most from investments in tangible capital. This requires a thorough understanding of how these resources interact with other economic variables and how to use them to further strategic goals. In conclusion, anyone working in corporate strategy, policy formulation, or economic planning needs a thorough understanding of physical capital. Human capital and physical capital are often confused as economic concepts. Although both are important factors of production, the main difference between the two groups can be summarized as follows. Any tangible object used in the production process is considered physical capital. In addition, the object must have been produced by humans.

Workers may be physically present at a production site and fulfill the first requirement of physical capital, but they are not considered to be man-made and are therefore classified differently. Workers or laborers engaged in the production process, such as those who operate machinery and other tangible assets, are specifically referred to as human capital (Eckaus, 1961).

Several models can be used to explain how physical capital functions in economic systems. The production function is a well-known model that shows how inputs—such as labor and tangible capital are related to output. For example, the Cobb-Douglas production function is often used to examine the contributions of different levels of labor and capital

to economic output and production efficiency (Arrow et al., 1961). The importance of physical capital as a component that increases labor productivity is emphasized in this model. Assuming that all other variables remain the same, an increase in physical capital—such as the purchase of sophisticated machinery—usually leads to increased levels of output. This relationship emphasizes how important it is to make investments in tangible capital to promote economic expansion and competitiveness. The capital accumulation model, which emphasizes how investments in tangible capital support economic growth over time, is another important model. This model asserts that economies with regular investments in physical capital build stronger productive capacity and experience long-term growth. This is especially true in rapidly developing economies, where significant investments in technology and infrastructure have driven economic change (Nikolaos & Tsaliki, 2021). These models offer important new perspectives on how physical capital functions in an economy.

They help corporate leaders and economists understand how physical capital interacts with other economic factors and how it can be used to achieve strategic goals. Stakeholders can make well-informed judgments about policymaking, resource allocation, and investment by examining these models, aiming to maximize the benefits of physical capital. This leads to our research question in this paper, which is whether it is time for Albania to form new physical capital in the face of population outflow or not.

3. Methodology

This paper follows a combined approach between theoretical and empirical. The theoretical part relies on economic literature by following exogenous and endogenous growth models. The empirical part of the work aims at analyzing statistical data to provide careful information on their theoretical application in the Albanian economy and the effects of the factors that have influenced the Albanian economy in order to see the scope and speed with which the Albanian economy is growing and in this way to determine the directions that must be followed for the Albanian economy to grow in accordance with the strategy of closing the gap we have with EU countries, to remove our emigration towards EU countries and to increase productivity at certain levels towards the EU.

Our data sources are secondary, obtained from INSTAT, the Bank of Albania, the Ministry of Finance and EuroStat. The data cover a period from 2010 to 2024 and cover indicators such as real GDP, investments, consumption, fiscal policies and the performance of the labor force and population during this period.

The analysis was carried out through the deductive method, so we start from GDP to draw connections and induction analysis to reach the conclusions that the theories offer and to provide explanations of how the theories perform in this area. The limitations of the paper are related to the fact that we are unable to determine in detail the level of detail and consequently there are inaccuracies that may affect the result. The methodology followed provides a basic and reasoned assessment of why economic growth should be carried out at high rates, so that current phenomena such as the departure of the workforce, population, are discouraged and low wages in relation to the countries of the region and Europe are comparable within a period of time. For this, we must suggest what should be done.

4. Study design

4.1 Solow theory or model (Exogenous model)

In the long run, the rate of economic growth, as measured by the rate of growth of output

per person, depends on the rate of growth of total factor productivity (TFP), which in turn is determined by the rate of technological progress.

The neoclassical growth theory of Solow (1956) and Swan (1956) assumes that the rate of technological progress is determined by a scientific process that is separate and independent of economic forces.

This theory starts from the fact that the steady state is achieved when the marginal consumption per worker of effective capital is according to the formula

$MPK - \Delta m = n + g$ where

MPK represents the marginal cost of consumption by an effective worker.

Δm - depreciation of capital

n - population growth rate and

g - the growth rate of technological progress

This equation shows that under conditions where the rate of population growth and technological progress equal the additional marginal rate of capital minus depreciation per worker, then any increase in the net capital stock that equals the increase does not give or increase the standard of living. Any increase in investment brings greater depreciation of capital by zeroing the effect, this criterion is called the golden rule of the steady state. So it is a condition that shows that without technological progress we cannot have a stable and continuous increase in living standards. To understand it more simply we cannot improve or increase income per capital as long as $n + g > 0$. So in other words if the entire additional investment equals the depreciation effect of $n + g = 0$. This means that any additional population requires additional capital to maintain the same standard. And when the effect of technology does not return this equation more than zero then we have a decrease in the standard, and vice versa. When the economy reaches this stage we are in a situation where any additional investment does not bring about a standard increase. So $MPK = \Delta m$. This is called when the level of capital reaches the golden rule of capital. To measure the effect of technology we get it by calculating $g = (MPK - \Delta m) - n$

4.2 Endogenous growth model

Endogenous growth theory challenges this neoclassical view by proposing channels through which the rate of technological progress, and hence the long-run rate of economic growth, can be influenced by economic factors. It starts from the observation that technological progress occurs through innovations, in the form of new products, processes, and markets, many of which are the result of economic activity. Because firms learn from experience how to produce more efficiently, a higher rate of economic activity can increase the rate of process innovation by giving firms more production experience. Also, because many innovations come from research and development expenditures undertaken by profit-seeking firms, economic policies regarding trade, competition, education, taxes, and intellectual property can affect the rate of innovation by affecting the private costs and benefits of conducting research and development.

While the first model refers to technology as an exogenous factor, this model considers technology as an endogenous factor and the simplest formula of this model is:

$$Y = AK$$

Where Y is the total aggregate output

A - is the technology constant and

K - is capital

According to this model, this model exhibits increasing returns to scale, unlike the Solow model. The endogenous growth theory was first developed due to shortcomings and dissatisfaction with the idea that exogenous factors determined long-term economic

growth. In particular, the theory was developed to reject neoclassical exogenous growth models, as they made predictions about economic growth without taking into account technological change. The endogenous growth theory challenges such an idea by giving importance to the role of technological advances. Since long-term economic growth is derived from the rate of growth of economic output per person, it will depend on productivity levels. On the other hand, productivity will depend on the progress of technological change, which relies on innovation and human capital, these factors are considered internal to an economy, without external factors. This theory prioritizes innovation and research and development and supports long-term growth

Supporters of this theory have responded with modifications to the theory that make it consistent with the evidence of critics. For example, Mankiw et al., (1995), Barro and Sala-i-Martin (1992) showed, using data from the second half of the 20th century, that most countries appear to be converging towards roughly similar long-term growth rates, whereas endogenous growth theory seems to imply that, because many countries have different policies and institutions, they should have different long-term growth rates.

Howitt's (2000) Schumpeterian model, which incorporates the force of technology transfer, whereby R&D productivity in one country is increased by innovations in other countries, implies that all countries that perform R&D at a positive level should converge on parallel long-term growth paths.

The key to this convergence result is the laggard advantage, that is, the further a country lags behind the technological frontier, the greater the average size of innovations, because the greater the gap between the frontier ideas embodied in the country's innovations and the ideas embodied in the old technologies that the innovations replace. This increase in the size of innovations continues to increase the growth rate of the lagging country until the gap separating it from the frontier finally stabilizes. In Schumpeterian theory, total output is again created by a continuum of intermediate products, this time according to (Howitt, 2000)

$$Y = L^{1-\alpha} \int_0^1 A(i)^{1-\alpha} x(i)^\alpha di$$

Where there is now a fixed measure of product variety, normalized to units, and each intermediate product i has a unique productivity parameter $A(i)$. Each sector is monopolized and produces its intermediate product at a constant marginal cost per unit.

The monopolist in sector i faces a demand curve given by the marginal product

The monopolist in sector i faces a demand curve given by the marginal product: $A(i)L/x(i)(1-\alpha)$ of that intermediate input in the final sector. Equating marginal revenue (this marginal product times) with marginal unit cost gives the intermediate output that maximizes the monopolist's profit:

$$X(i) = \frac{2}{\alpha^{1-\alpha}} LA(i)$$

By substituting each $X(i)$ into the production function, we obtain the aggregate production function

$$Y = \theta AL$$

$$\text{Where } \theta = \frac{2}{\alpha^{1-\alpha}}$$

$$A = \int_0^1 A(i) di$$

Where A - is the parametric of average productivity.

Assuming an innovation with a constant rate $\gamma > 1$ for each " i ". According to Schumpeterian theory for each unit of time as short as possible and with a probability is μ the value of

the increase is of $A(i)$

The probability of the flow μ of an innovation in each sector is proportional to the current flow of productivity-adjusted R&D expenditures:

$$E(g) = \mu(\gamma - 1)$$

Where $\mu = \lambda R/A$

Where R is the expenditure required by the final product for research and development in relation to A which takes into account the force of the complexity of growth. This is because technological advancement becomes more complex and that society must still increase expenditure on research and development to maintain the same growth rate. “ g ” is the growth rate of the average final product A .

From this $g = (\gamma - 1) \lambda R/A$. Substituting $n = R/Y$ which represents the ratio of research and development expenditures to GDP we will have $g = (\gamma - 1) \lambda \theta L n$.

Thus, the innovation-based theory implies that the way to grow rapidly is not to save a large part of production, but to devote a large part of production to research and development. The theory is clear about how research and development activities are affected by various policies, who benefits from technological progress, who loses, how gains and losses depend on social arrangements, and how such arrangements affect society's willingness and ability to create and cope with technological change, the ultimate source of economic growth.

However, Howitt and Aghion (1998) describe a number of channels through which competition can actually boost economic growth. One such channel is provided by the work of Aghion et al., (2001), who show that, although an increase in the intensity of competition will tend to reduce the absolute level of profits made by a successful innovator, it will nevertheless tend to reduce the profits of an unsuccessful innovator even more.

In this endogenous growth variant of Schumpeterian theory, more intense competition may have a positive effect on the rate of innovation, because firms will want to escape the competition they would face if they were to lose any technological advantage they have over their rivals. Much more work needs to be done before we can claim to have a credible explanation for why economic growth is faster in some countries and over some time periods than in others. But the fact that a large part of the cross-country variation in growth rates is attributable to differences in productivity growth rather than differences in rates of capital accumulation suggests that endogenous growth theory, which aims to provide an economic explanation of these differences in productivity growth, will continue to attract the attention of economists for years to come.

Productivity is related to production efficiency, but they are not the same. Productivity is the amount of output in relation to input. It is usually expressed as a ratio of what is produced (goods or services) to the resources used in production (labor hours, materials, or capital). Efficiency is related to the way resources are used in the production of goods and services. Its goal is to minimize waste and maximize the output of goods and services with a given level of inputs. Efficiency also includes not only quantity, but also quality and optimal use of resources. A process can be productive but not efficient. The most successful operations strive to be both productive and efficient, especially as a company expands.

5. Main findings

5.1 Evaluation of the Albanian economy through the Solow model (Exogenous model)

To understand how its measurement works, we use INSTAT data for the period 2010-2024,

a 15-year period to understand whether Albania has invested in the right direction by accelerating growth or we are in the phase of inefficient spending. Through the Solow model, we get an external response on how the Albanian economy has increased its productivity. Long-term productivity according to Solow in Albania is measured through data that were extracted for the GDP growth rate, the additional physical capital rate and the labor force growth rate. For the 15-year period from 2010 to 2024, the data were processed and brought these results.

Years	GDP growth	The effect from GROWTH of capital DK	Growth Effect of strength of work DL	Effect of Factor technology as an exogenous factor
2010	2.97%	-6.55%	0.00%	9.52%
2011	2.46%	10.05%	0.24%	-7.83%
2012	0.98%	-6.57%	-4.33%	11.89%
2013	1.71%	-1.48%	-5.64%	8.83%
2014	2.24%	-0.18%	3.21%	-0.79%
2015	2.23%	2.26%	4.27%	-4.30%
2016	3.91%	2.89%	4.16%	-3.13%
2017	3.28%	4.83%	1.50%	-3.04%
2018	3.67%	3.48%	1.35%	-1.16%
2019	2.06%	-0.86%	1.87%	1.05%
2020	-3.31%	-0.82%	-1.57%	-0.93%
2021	8.97%	19.48%	0.24%	-10.75%
2022	4.83%	3.47%	3.31%	-1.95%
2023	3.94%	8.85%	-12.43%	7.52%
2024	3.96%	8.14%	0.82%	-4.99%
Average	2.93%	3.13%	-0.20%	0.00%

Source: (INSTAT; produced by the authors)

- The effect of physical capital is yielding results from 2021, with its increases determining economic growth, while the labor and technology factors represent the main decline, contributing little or negatively to economic productivity.
- Referring to the period considered in the study, it results that for the period 2010-2024, the effect of technology has no impact on the economy, as a result of which the entire effect came from the increase in net capital.
- The fact that economic growth has come as a result of the increase in net capital shows that the standard of living in Albania related to productivity has not changed because the increase in income per capita (purchasing power) has not changed, because all the surplus has gone into investments in capital growth and not in increasing the standard of living. This fact results from these results.

Having clarified this as a reasoning according to the Solow model, we also have the other approach that considers this situation with the endogenous model.

5.2 Estimation according to the endogenous model

The essential factor for economic growth, following the above results, namely technological progress, is exogenous to the model. Supporters of the endogenous growth theory define productivity growth as the key factor of success. According to these authors, countries have adopted technologies previously developed by more advanced economies (the assimilation view) and "...the source of growth in some economies was their ability to extract relevant technological knowledge from industrial economies and to use it productively within the domestic economy..." (Pack, 1994). They accept that high rates of investment in physical and human capital are necessary to achieve high economic growth. These processes require research and study, learning and innovation to master new modern technologies and practices. The economy thus increases its stock of knowledge and efficiency. Implicitly, they suggest that technological progress exists and plays a crucial role in the economic growth of non-profit countries.

First, we prove that high savings rates can play an important role in the "miracle growth" in underdeveloped countries in the short and medium term, but in the long term, TFP (total factor productivity) is the decisive factor of growth. In the transitional phase, high savings rates cause a high rate of output growth. This effect of the high savings rate will disappear in the long run if the economy is not very elastic. If the economy is very elastic and the savings rate is high enough, the growth rate will be decreasing, but always higher than the growth rate predicted in the GDP, regardless of how effective the economy is in enabling the use of new technologies.

Second, the benefit of skill in absorbing and using technology plays an important role in the growth of TFP in underdeveloped countries in the long run. This model of growth based purely on learning is limited by the rate of growth of the labor force. If labor is constant in the long run, then growth cannot be sustained. In this sense, the absorption and application of technology is "insufficient" for growth in the long run. To sustain growth, other forms of accelerating TFP are needed, such as investment in human capital to loosen labor constraints, new technology.

We characterize four possible growth paths that depend on saving and the elasticity between capital and labor. If the elasticity between capital and labor is less than 1. If the structure of the economy is not "elastic" it is not easy to switch from a technology that requires a lot of labor to technologies that require more capital and vice versa, then saving plays a crucial role in economic growth. There are three possible scenarios.

- If the savings rate is too low, the economy will collapse in the "long run"
- If the saving rate is higher than a critical level but lower than an optimal level, the economy can maintain its positive growth in the long run, but lower than its potential level. So even if the economy possesses high efficiency of absorption (qualification) and diffusion of this knowledge, it cannot fully enjoy them in the long run. In addition, in this case it is observed that the gap between the poor and the rich economy can widen if the saving rate of the poor is not higher than that of the rich.
- If the saving rate is high enough, the economy "asymptotically converges to its balanced growth path, which does not depend on saving but on the efficiency index. If elasticity > 1 , the economy either converges to its path of continuous growth or its growth rate converges downwards to a rate that is higher than the potential rate and does not depend on the efficiency index."

We build a production model where we endogenously factor in the absorption factor (qualification, learning) to answer the above questions. The production function is

presented in the following equation.

$$Y_t = \{\alpha + (1-\alpha)(K_t^\beta L_t)^r\}^{1/r} K_t^r$$

Where Y_t -is the total gross domestic product in year t

β - The effectiveness of knowledge accumulation through learning by doing and diffusion is given by a parameter that we call the PTF coefficient. We assume that this process follows the law of the declining curve, i.e. $0 < \beta < 1$: The higher β , the more effective the knowledge accumulation, and then the faster the technological level improves. The magnitude of β depends on the concentration and linkages of industries in the economy, the effectiveness of on-the-job training, etc.

α – the share of the contribution to GDP of the capital factor to the labor factor. The max value =1. For the Albanian case, we stay at the value 0.25. This refers to practice. Perhaps for us it can be even lower.

r - elasticity of substitution of the capital factor for labor and its value ranges between ($-\infty < r < 1$)

$r = \frac{\varepsilon - 1}{\varepsilon}$ where ε is the elasticity of substitution between K and L s.

L_t is the labor factor which increases at a rate n

The higher r , the higher the flexibility to switch from a labor-intensive technology to a more capital-intensive technology and vice versa.

Knowledge is accumulated through learning by becoming skilled and practicing it. This works through investment by each firm. Specifically, an increase in a firm's capital requires the firm to accumulate new knowledge about the use, location, and organization of work. As a result, this increases the firm's total knowledge.

Accumulated knowledge can be internalized within the firm and then externalized throughout the economy through the spillover effect to increase the total stock of knowledge of the economy as a whole.

In the following position we show that the production function in the long run will converge to the equilibrium growth path.

We assume a condition:

$$\{ > \alpha \text{ we can write this as } -1 + \frac{(1+n)^{\frac{1}{1-\beta}} - 1 + \rho}{s} \}^r (1+n)^{\frac{1}{1-\beta}} \rho > \alpha s^{\frac{1}{r}}$$

This condition represents $(1+n)^{1/(1-\beta)-1}$ the effect of the labor factor with the technological effect.

ρ represents the annual depreciation in % of existing assets.

There exists a K^* which represents the condition that growth is balanced, to which K_t converges only if the above condition exists. s - the saving rate. This special case has the consequence

$$K^* = K_s(1+g)^t \text{ where } 1+g = \text{ and } K_s \text{ is a steady state of the capital stock. } (1+n)^{\frac{1}{1-\beta}}$$

We denote the growth $g_t =$ the rate of capital growth $\frac{K_t}{K_{t-1}}$

And with $y_t =$ the growth rate of the total product in period t and $t-1$ $g_t^y = \frac{Y_t}{Y_{t-1}}$

Then as t goes to infinity, i.e. $t \rightarrow \infty$ $g_t \rightarrow g$ and $g_t^y \rightarrow g^y$

$$\text{And } g = -1 + \frac{1}{(1+n)^{\frac{1}{1-\beta}}}$$

ρ represents the annual depreciation in % of existing assets.

This result implies that in the steady state, the rate of output growth is neutral to saving, while it is positively related to the coefficient β of total factor productivity: The rate of output growth coincides with the rate of labor growth, which means that output per capita is constant. It is worth noting that if $n = 0$, then in the long run growth will stop, no matter how high the coefficient β is. Moreover, if we take into account the improvement of human capital and replace raw labor with effective labor, then n can always be positive. In other words, growth based on learning by doing and investment in education to improve human capital can be sustained in the long run.

If we consider two countries which are identical in everything except the saving rate and s and the parameter β . So we have two economies with s and s' and β and β' with the conditions that $\beta < \beta'$ and $s > s'$

This means that in the transitional phase, saving has a greater effect and we have $g_y > g_{y'}$. In the long run, we have $g_y \rightarrow g$ and $g_{y'} \rightarrow g'$ where $g < g'$ while $\beta < \beta'$. So there is a point where this transition occurs where both economies are equal and this element of education and knowledge takes precedence over the saving rate. Because in the long run, the saving rate has no effect on growth.

If saving is not high enough, the economy can maintain its growth rate, yet it operates below its potential level.

We have three cases. $r < 0$

1. When saving is below the depreciation of the capital stock and in this case the economy will collapse $s < \rho/\alpha(1/r)$
2. when economic growth ($s > \rho/\alpha(1/r)$) is greater than savings and this is above the depreciation of the existing stock, there is a possibility for sustainable growth but the economy is operating below its economic potential. It does not depend on the knowledge factor β . In other words, if saving is not high enough, the economy in the long run is limited by the education effect and the spillover effects.
3. If savings are above economic growth then

$(1+n)^{\frac{1}{1-\beta}} - 1 + \rho < \alpha s(1/r)$ then we have growth towards a steady growth when

$r > 0$. In this case $\alpha s(1/r) - \rho < g = -1$ and does not depend on beta. $(1+n)^{\frac{1}{1-\beta}}$

In the conclusions, it is concluded that with savings and elasticity above zero, that is, positive, there is no effect of knowledge on productivity growth and this is valid only if

$r < 0$. So $\frac{\varepsilon-1}{\varepsilon} < 0$

The model also shows us that in the transitional phase, saving always plays an important role in the growth process. This effect of a high saving rate will disappear in the long run if the economy is not very elastic, i.e., $r < 0$. If the economy is very elastic (i.e., $r > 0$) and the saving rate is high enough, the growth rate will be declining, but always increasing.

Let's refer to the Albanian data for the period 2010-2024

No.	GDP	Final consumption	Gross saving rate q	Gross fixed capital formation = F=I	Net saving rate
2010	1,256,235.27	1,103,226.45	12.18%	379,064.26	-17.99%
2011	1,308,997.91	1,161,767.60	11.25%	414,825.97	-20.44%
2012	1,324,877.37	1,179,562.02	10.97%	379,220.72	-17.65%
2013	1,352,246.84	1,202,893.56	11.04%	376,018.53	-16.76%
2014	1,402,496.11	1,270,377.23	9.42%	372,081.15	-17.11%
2015	1,444,801.96	1,290,603.13	10.67%	376,819.39	-15.41%
2016	1,488,303.35	1,337,397.81	10.14%	381,403.72	-15.49%
2017	1,579,055.79	1,375,771.26	12.87%	414,654.82	-13.39%
2018	1,660,820.40	1,433,964.83	13.66%	430,477.71	-12.26%
2019	1,712,036.76	1,510,399.13	11.78%	421,243.99	-12.83%
2020	1,655,984.74	1,460,923.48	11.78%	417,268.05	-13.42%
2021	1,866,671.69	1,580,175.40	15.35%	508,015.71	-11.87%
2022	2,149,741.30	1,795,066.82	16.50%	552,372.01	-9.20%
2023	2,364,276.12	1,940,492.98	17.92%	574,200.27	-6.36%
2024	2,517,819.72	2,062,935.36	18.07%	613,221.19	-6.29%
	Average savings rate		12.91%		-13.76%

Source: (INSTAT; produced by the authors)

To calculate the annual depreciation, we initially assume a depreciation rate of 3.5%, which is characteristic of the American economy, and we set it for the year 2010. For the other years, we proceed as follows. For the year 2010

$$q_1 = \frac{F_{2009}}{KT} = 3.5\% \Rightarrow KT_{2009} = \frac{3393730.72}{KT} = 11,249,449.14$$

$KT_{2010} = KT_{2009}(1 - q_{2009}) + I_{2010}$ and then Calculate q_{2010} and so on as in the table

below. $\frac{F_{2010}}{KT_{2010}}$

year	F=I - annual increase in physical capital	Depreciation	Total capital KT
2009	393,730.72	3.50%	11,249,449.14
2010	367,940.20	3.50%	11,223,658.62
2011	404,927.17	3.60%	11,235,757.74
2012	378,305.87	3.37%	11,209,136.44
2013	372,723.84	3.33%	11,203,554.41
2014	372,049.41	3.32%	11,202,879.98
2015	380,466.82	3.39%	11,211,297.39
2016	391,444.13	3.49%	11,222,274.70
2017	410,338.46	3.65%	11,241,169.03

2018	424,629.62	3.77%	11,255,460.19
2019	420,975.49	3.74%	11,251,806.06
2020	417,531.53	3.71%	11,248,362.10
2021	498,876.10	4.40%	11,329,706.67
2022	516,184.55	4.55%	11,347,015.12
2023	561,873.00	4.93%	11,392,703.57
2024	607,589.90	5.31%	11,438,420.47
	Average	3.87%	

Source: (INSTAT; produced by the authors)

As it turns out, even in Albania this indicator is 0.37% higher than in the US. So we accept an average annual depreciation of 3.87% of physical capital.

5.3 Elasticity ε which shows the ratio of capital exchange to labor for the Albanian economy

The use of the Cobb-Douglas production function implicitly describes a process with an elasticity of factor substitution equal to one. This study first hypothesizes that the production function takes a more general form, which includes the Cobb-Douglas function as a special case. Then, based on the availability of data, the specification of the production function of the Albanian economy for the years 2010-2024 is estimated.

Let's start from the equation $s\alpha r^{\frac{1}{r}} + 1 - \rho + g = 0$ for the Albanian economy the factor $g=0$ we can derive r

$$s\alpha r^{\frac{1}{r}} = \rho \Rightarrow (1/r)\ln\alpha = \ln(\rho) \Rightarrow r = \ln\alpha / \ln(\rho) = \ln 0.25 / \ln(0.0387/0.1291) = -1.3863 / -1.20397 = 1.15 > 1 \text{ so it is elastic}$$

From this we derive ε

$$r = \frac{\varepsilon - 1}{\varepsilon} = 1.15 \Rightarrow \varepsilon = \frac{1}{1 - 1.15} = -6.67$$

This proves that the Albanian economy is quite elastic $r > 0$ and the saving rate is not high enough, and the growth rate will be decreasing, but always higher than the growth rate predicted under the conditions of the golden rule, regardless of how efficient the economy is in educating or training it by applying, perfecting or spreading its knowledge. So its growth will continue and technological progress will come for a while and will soon fall with a downward curve until it reaches zero. This is if the growth of the labor force does not occur. The critical level is at the value 0.1291.

What is important in this case is the fact that this addition to physical capital has not brought about an increase in productivity, and this has a practical explanation, if we refer to the fact that this addition to physical capital is materialized in additions to housing construction, but which are not used to increase the stock of physical capital, without substance, the addition of infrastructural capital at abnormal prices, which take up a good part of the resources, reflecting an amount of capital that is not justified.

6. Conclusion

According to both types of theories, exogenous and endogenous, the Albanian economy performs in different ways. According to the exogenous theory and the Solow theory, Albanian economic growth is based only on the saving factor and not on the factor of technological development, research and development. It is not affected by the labor force factor, the latter in our effect for the 15-year period has a neutral or negative effect of 0.2% on the economic effect on GDP. According to this theory, it results that the standard of living, that is, what connects income from employment with their productivity, is zero.

So the standard of living is the same in 2010 as well as in 2024. If we refer to income per capita, the increase refers to inflation and population decline. If we refer to the endogenous theory, Albania is walking on the path of sustainable growth with a downward curve. The Albanian economy appears quite elastic in the use of production factors. This high coefficient is labeled r in the paper. When $r > 0$ and saving is not very high, there is a unique sustainable growth path for these economies. In this case, the beneficiaries of new technologies are right when they claim that learning and diffusion play an important role in growth in Albania. Also, the growth model based purely on learning by doing is limited by the rate of labor growth. If labor is constant in the long run, then growth cannot be sustainable. In this sense, learning by doing is insufficient for long-term growth.

Work can be called effective work to include the effectiveness of human capital accumulation, and this coefficient n is calculated for the rate of growth of human capital, which can be positive in the long run. Equivalently, human capital would help the economy stay on its path of sustainable growth. Based on this, we can conclude that the increase in the standard of living continues to increase but below its potential because the saving rate is lower than the saving rate of rich countries. This means that the gap with rich countries cannot be reduced. This seems quite clear that net saving is smaller than the increase in capital. Albania still uses the mechanism of using foreign capital to increase its potential. it represents a way to close the gap with rich countries and higher saving rates. It also represents a risk a risk related to the repayment of debts (foreign capital). Finally, it should be emphasized that the increase in capital, without effectiveness and without increasing the standard of living, will inevitably lead to further population exodus.

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ESG AS A BRIDGE BETWEEN FIXED GROSS CAPITAL FORMATION AND ECONOMIC DEVELOPMENT IN ALBANIA: AN EMPIRICAL ANALYSIS

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Abstract

This study aims to analyze the role of ESG (Environmental, Social, Governance) factors in determining domestic investments and their impact on the economic development of Albania. Using annual data for the period 2015–2023 and building two regression models, the focus is placed on governance effectiveness, control of corruption, and the environmental dimension through the EPI index. The results show that there is a measurable relationship between ESG indicators and investments, with governance emerging as the most influential factor. In addition to the statistical analysis, a survey was conducted with Albanian businesses to provide the market's perspective on ESG perceptions. This combination of methods contributes to the literature on the ESG–economy nexus and suggests that improving ESG standards, particularly in terms of transparency and governance, can serve as a driver for investment growth and sustainable economic development.

Keywords: *ESG, Fixed Gross capital Formation, Economic development, Investment, Governance.*

1. Introduction

Sustainability has become a central theme in global economic development, and the ESG framework covering Environmental, Social, and Governance factors has emerged as a practical tool to understand how countries, companies, and institutions manage their impact. Beyond being an ethical standard, ESG is increasingly recognized as a factor that directly influences investment decisions, financial stability, and long-term competitiveness. In Albania, ESG is especially relevant for two main reasons. First, aligning with European Union standards in governance, transparency, and environmental policies is essential for economic integration and credibility. Second, investors, both domestic and international, are increasingly sensitive to institutional quality, transparency, and environmental performance, making ESG a key factor in attracting investment. Domestic investments (Gross Fixed Capital Formation – GFCF) are an important indicator of this long-term growth potential. Despite its potential, Albania faces significant challenges, including corruption and weak institutions, which remain major obstacles to investment. At the same time, progress in environmental management and green policy awareness shows that there are opportunities for improvement.

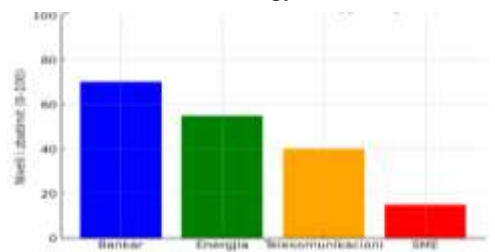
This study aims to explore how ESG factors influence domestic investments in Albania and, ultimately, economic development. By analyzing governance, environmental performance, and social considerations, the research seeks to provide insights that can inform policy and encourage sustainable economic growth.

Is there a relationship between ESG factors and domestic investments in Albania, and how does this relationship affect the country's economic development? This study addresses these issues:

- Assess the impact of key indicators such as EPI, Government Effectiveness, and Control of Corruption.
- Identify which factors have the strongest influence on domestic investments.
- Complement quantitative analysis with qualitative insights from a survey of Albanian businesses.
- Provide practical recommendations to strengthen the link between ESG and sustainable growth.

1.1 ESG in Albania

The concept of ESG (Environmental, Social, Governance) in Albania is still at an early stage of development, but is gaining increasing importance, mainly under the influence of the European integration process, pressure from international institutions and the demands of foreign investors. Unlike EU countries, ESG reporting is still fragmented, focused on a few specific sectors and uneven across the economy. Environmental dimension: Albania faces major challenges, such as dependence on hydropower plants, poor waste management and urban pollution, but also has opportunities, especially in renewable energy (photovoltaic and wind farms) supported by the EU, EBRD and the World Bank. Social dimension: Social practices are limited and mainly focused on the banking and telecommunications sectors, with major challenges for SMEs, gender inequality, youth migration and job security. Governance dimension: Corporate governance remains weak in most enterprises, except for a few companies with foreign capital. Transparency and reporting are not standardized, although the Bank of Albania and the Securities and Exchange Commission play an important regulatory role. Institutions and international influence: European integration and the requirements of international financial institutions have driven progress, making ESG a necessary condition for project financing, especially in strategic sectors such as renewable energy, tourism and infrastructure.



Graph 1.1.- Level of ESG adoption in Albania by sector Souce: OECD, World Bank

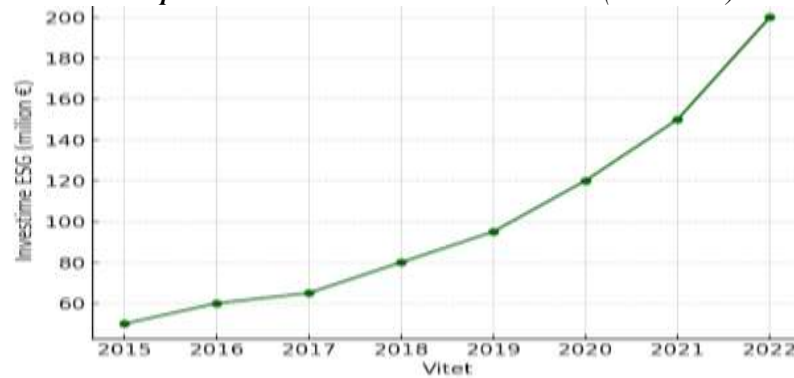
Sectoral breakdown: The banking sector leads in ESG implementation (~70%), energy ranks second (~55%), while SMEs have the lowest participation (~15%), indicating fragmentation and the need for the spread of unified standards.

Investment trends: ESG investments have increased from €50–65 million (2015–2017) to €200 million in 2022, indicating a growing investor interest in sustainable projects and a potential positive impact on GFCF growth and long-term economic development.

ESG in Albania remains in its youth, but pressure from the EU and international investors is gradually transforming it into a key element for economic development and investment

attraction.

Graph 1.2 ESG investment trends in Albania (2015-2022)



Source: OECD, World Bank

2. Methodology

This study adopts a mixed-methods approach, combining quantitative and qualitative analysis to examine the impact of ESG factors on domestic investments in Albania between 2014 and 2024. The quantitative component uses linear regression (OLS) models to test the relationship between ESG indicators and Gross Fixed Capital Formation (GFCF), while the qualitative component complements this with a survey of Albanian businesses to capture their perceptions of ESG's influence on investment decisions.

The study relies primarily on secondary data from reputable international sources:

World Bank (WDI): GDP growth, inflation, FDI net inflows, and GFCF (% of GDP).

Worldwide Governance Indicators (WGI): Governance measures, including Government Effectiveness and Control of Corruption.

Environmental Performance Index (EPI): Environmental dimension (2018–2024), extended with estimated data for earlier years to maintain model consistency.

The list of variables included in the study are:

Dependent Variable: GFCF (% of GDP) representing domestic investments.

Independent Variables:

1. Environmental Performance Index (EPI)
2. Government Effectiveness (Model 1)
3. Control of Corruption (Model 2)

Control Variables: GDP growth (%), inflation (%), and FDI net inflows (% of GDP).

Two separate regression models were constructed to assess the influence of governance and environmental factors on investments:

$$GFCT_t = \beta_0 + \beta_1 GDP_{growth_t} + \beta_2 Inflation + \beta_3 GovernmentEffectiveness + \beta_4 EPI + \epsilon_t$$

$$GFCT_t = \beta_0 + \beta_1 GDP_{growth_t} + \beta_2 Inflation + \beta_3 ControlOfCorruption + \beta_4 EPI + \epsilon_t$$

These models allow testing the impact of two governance dimensions government effectiveness and corruption control, together with macroeconomic variables and environmental performance. On the other hand we complement the study at micro level based on a qualitative survey was conducted with 10 Albanian businesses. It focused on their perceptions of transparency, governance effectiveness, and the impact of environmental standards on business costs, providing additional insight into how ESG

factors influence practical investment decisions.

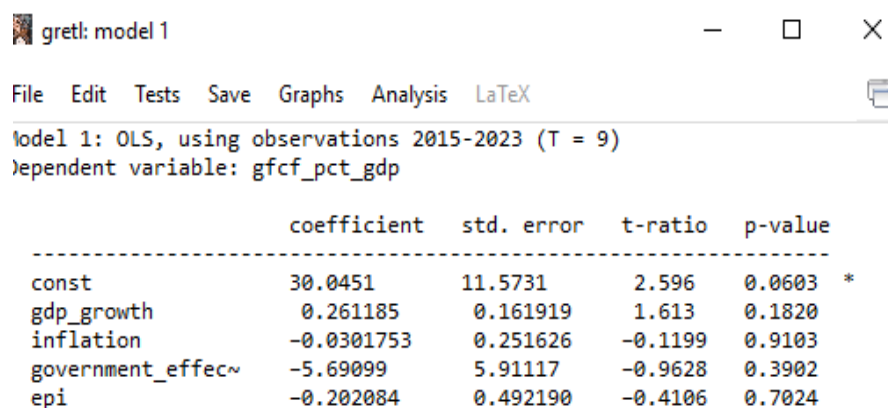
3. Results and Discussion

Using OLS regression models, the study examines how economic growth, inflation, government effectiveness, control of corruption, and the Environmental Performance Index (EPI) influence Gross Fixed Capital Formation (GFCF) as a measure of domestic investment in Albania for the period 2015–2023.

The results show that the model including Government Effectiveness and EPI has $R^2 = 0.54$ which means that the model explains 54% of the variation in domestic investments, indicating that the selected variables have a significant impact. The Durbin–Watson statistic (2.49) confirms the absence of autocorrelation, suggesting a stable model.

GDP growth has a positive coefficient (0.26) which shows a strong positive effect on GFCF, confirming that higher economic growth encourages domestic investment. Government effectiveness is associated with investment, highlighting the importance of strong institutions and governance in creating a favorable investment climate. EPI, although not statistically significant, its inclusion is essential because it shows efforts to introduce the environmental dimension into economic decision-making. Its slightly negative coefficient may be related to the initial cost that businesses have to adapt to environmental standards, but in the long run this is seen as an investment towards sustainable development.

Figure 3.1: OLS Model



	coefficient	std. error	t-ratio	p-value
const	30.0451	11.5731	2.596	0.0603 *
gdp_growth	0.261185	0.161919	1.613	0.1820
inflation	-0.0301753	0.251626	-0.1199	0.9103
government_effec~	-5.69099	5.91117	-0.9628	0.3902
eipi	-0.202084	0.492190	-0.4106	0.7024

Source:Elaborated from authors

In conclusion, the empirical analysis indicates that economic growth, effective governance, and environmental performance are positively linked to domestic investments in Albania. These findings suggest that improving ESG indicators can enhance the investment climate and contribute to the country's economic development, even over a relatively short period.

Figure 3.2: OLS Model 2

File Edit Tests Save Graphs Analysis LaTeX 				
Model 1: OLS, using observations 2015-2023 (T = 9)				
Dependent variable: gfcf_pct_gdp				
	coefficient	std. error	t-ratio	p-value
const	24.0121	6.49768	3.695	0.0209 **
gdp_growth	0.201689	0.105347	1.915	0.1281
inflation	0.177389	0.303715	0.5841	0.5905
control_of_corru~	-10.5690	7.21108	-1.466	0.2166
eipi	-0.193697	0.362653	-0.5341	0.6216

Source: Elaborated from authors

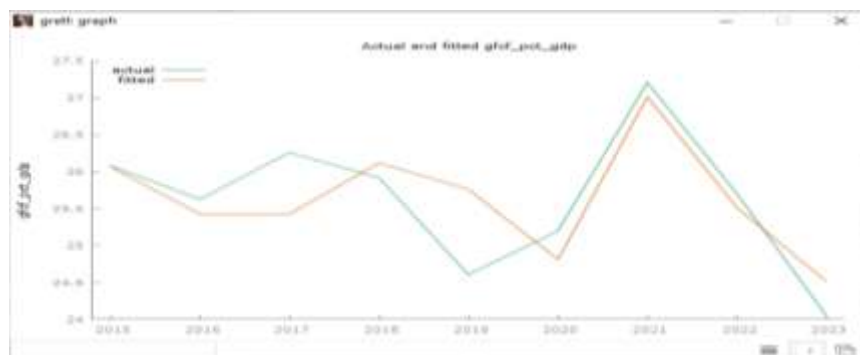
The second analysis model demonstrates a better performance compared to the first model. $R^2 = 0.63$ explains 63% of the changes in domestic investment (GFCF as % of GDP), a higher percentage than the model that included only Government Effectiveness. This indicates that the selected variables have a significant impact and that the model has good explanatory power. The Durbin–Watson value = 2.06 indicates a lack of autocorrelation, increasing the reliability of the analysis.

The results show that economic growth (GDP growth) has a positive effect on domestic investment, like the first model, whenever GDP increases, investment also increases, confirming the role of the economy as an engine of capital accumulation. The model also includes the control of corruption as a key indicator of good governance. The results highlight the importance of transparency and institutional strengthening to create a more attractive environment for investors.

Visual analysis through the Actual vs Fitted graph shows good agreement between the real and predicted values, increasing the reliability of the model. The distribution of residuals is stable and does not show serious deviations, indicating the stability and robustness of the model in general. Comparing the two models, we see that both confirm the main idea of this study: ESG factors are related to investments in Albania. However, there are some significant differences:

- The first model highlights the importance of government effectiveness, i.e. its capacity to implement policies and services that create stability for investors.
- The second model strongly emphasizes the role of corruption control, suggesting that transparency and credibility of institutions are even more crucial for promoting investments.

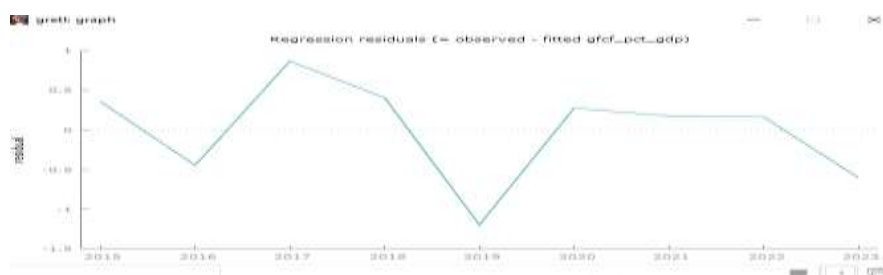
A common element is that both models include the EPI (Environmental Performance Index), which, although not very strong statistically, remains theoretically important. Its inclusion signals that in the future, environmental performance will have an even greater weight on investments, being in line with global trends and European Union requirements.

Graph 3.1.: Actual and Fitted GFCF Graph

Source:Elaborated from authors

In conclusion, the use of the two models was necessary to better understand which governance factors have the greatest impact on investments. Both models showed positive associations between ESG and GFCF, but the second model, with Control of Corruption, appeared stronger and more convincing.

This supports the conclusion that improving governance and transparency, combined with environmental policies, creates the most favorable terrain for increased investment and sustainable economic development in Albania.

Grafiku 3.2: Residual plot GFCF Graph

Source: Elaborated from authors

The results of a survey realized among Albanian businesses regarding their perceptions and practices related to ESG (Environmental, Social, Governance) factors in investment decisions, aimed to complement econometric analysis with practical insights from economic actors. The survey targeted mainly governance and environmental factors, examining perceptions of institutional transparency, corruption impact, governance effectiveness, and environmental policy effects on investment costs and decisions.

Out of 10 businesses surveyed, 40% were micro, 30% small, 20% medium, and 10% large, reflecting Albania's economic structure dominated by micro and small enterprises. Sectors included trade (30%), services (30%), manufacturing, and construction.

Only 30% of businesses monitor energy consumption or waste; 70% do not engage in such monitoring.

Investments in green technologies are minimal, indicating low integration of environmental dimensions in business strategies.

No business reported receiving financial support for green projects, highlighting lack of access to ESG-dedicated funding 36.

Regarding ti social practices, 60% of businesses offer regular training to employees, showing moderate engagement in human capital development.

Contributions to community activities are low, indicating that the social dimension of ESG is often viewed as optional.

Gender equality and diversity are rated moderately (3–4 out of 5), suggesting awareness but lack of structured policies

If we refer to governance practices 50% of businesses have a code of ethics; the other half operate without formal anti-corruption structures.

Financial transparency is rated on average 3 out of 5, indicating room for improvement.

Nearly all businesses recognize governance as very important for attracting investments, reflecting high awareness of its strategic role.

Regarding to *Perceptions on ESG and Investment*, 70% believe ESG practices increase the likelihood of attracting investments; 10% disagree, while 80% would be willing to invest more in ESG if there were government fiscal or financial support, underscoring the importance of public policy incentives.

From the overall sample, 60% feel pressure from international markets to meet ESG standards, especially exporters, followed by 20% that do not feel any pressure, and 20% feel partial pressure.

This suggests integration into global supply chains makes ESG compliance a competitiveness factor 39. Businesses supports that governance should focus primarily on: Environment (50%); Governance (30%); Social dimension (20%)

Main challenges identified include lack of information and awareness, high implementation costs, insufficient institutional support, and unclear regulatory frameworks. This shows a gap between recognition of ESG importance and practical implementation due to various barriers.

The survey concludes that although Albanian businesses recognize ESG's importance, actual implementation remains limited due to financial and informational barriers. The survey provides a deeper understanding of the gap between awareness and practice and highlights the need for education, financial incentives, and clear policies to foster ESG adoption.

4. Conclusions

Positive link between ESG and investment – ESG factors (Environmental, Social, Governance) positively influence Domestic Investment (GFCF) in Albania. Improving governance, reducing corruption and developing environmental policies increase investment.

Stronger governance dimension – Corruption control has a greater impact (63% explanatory power) than governance effectiveness (54%) on the investment climate, indicating that corruption is a major obstacle.

Importance of the environmental dimension – Although the statistical impact is lower, environmental performance and alignment with EU standards are important for a long-term perspective and sustainable investments.

Awareness and business practices – Albanian businesses consider ESG important, but implementation is limited due to lack of information, high costs and insufficient

institutional support. The value of ESG for economic development – ESG is not just a formal international standard, but a practical tool for sustainable development and capital attraction. Strengthening governance and transparency – Stronger fight against corruption and increased public accountability to improve the business climate and investor confidence. Standardizing ESG reporting – Adopting EU practices for sustainability reporting to ensure transparency and credibility for international investors. Fiscal and financial support for businesses – Tax breaks or grant schemes for enterprises investing in green technologies and socially responsible practices. Focus on Small and Medium Enterprises – Specific support for this category, which constitutes the majority of the Albanian economy, but has fewer resources for ESG implementation. Inclusion of social factors – Fair treatment of employees, gender equality and job security as part of ESG policies. Raising awareness – Organizing campaigns, trainings and workshops to help businesses move from awareness to practical implementation of ESG.

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FINANCIAL GOVERNANCE IN EU ACCESSION: TRANSPARENCY AND ACCOUNTABILITY REFORMS IN ALBANIA AND MONTENEGRO

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Abstract

This paper examines how Albania and Montenegro have implemented European Union (EU) requirements on financial transparency and accountability under Chapter 5 (Public Procurement) and Chapter 32 (Financial Control) of the acquis. Using a comparative case study design, the analysis evaluates reforms across four governance pillars: anti-corruption enforcement, budget transparency, audit effectiveness, and procurement openness. The study draws on multiple sources, including EU Progress Reports (2015–2024), OECD/SIGMA assessments, GRECO compliance reviews, Transparency International indices, and national audit documents.

Updated indicators show modest yet notable progress. In 2024, Albania's Corruption Perceptions Index (CPI) rose to 42 points (from 37 in 2023), ranking 80th globally, while Montenegro remained stable at 46 points (65th place). Albania's Open Budget Survey (2023) oversight score reached 67/100, marking "adequate" transparency, though public engagement remains limited. Montenegro continues to demonstrate stronger institutional continuity, with its State Audit Institution implementing approximately 78% of audit recommendations, compared to 63% in Albania. Procurement reforms show similar contrasts: Albania's expanded e-procurement coverage improved access, but non-competitive tenders remain high, whereas Montenegro's slower reforms yielded steadier compliance results.

The findings confirm that while both countries have achieved legal alignment with EU norms, implementation remains uneven. Montenegro's stability and incremental reform culture contrast with Albania's reform dynamism but weaker enforcement. EU conditionality has been crucial in shaping reforms but proves insufficient without strong domestic political will and institutional independence. The study argues that credible progress in financial governance depends on three interacting conditions: sustained political commitment, empowered oversight institutions, and active societal participation. By comparing two Western Balkan candidates with shared legacies but divergent trajectories, this paper contributes to enlargement scholarship by illustrating how EU conditionality interacts with domestic governance capacity. It highlights that the effectiveness of accession reforms must be measured not only by legislative transposition but also by the credibility and sustainability of institutional practice.

Keywords: *accountability, anti-corruption, audit institutions, EU accession, transparency*
JEL classification: *F15, H83, D73*

1. Introduction

Financial transparency and accountability serve as essential pillars of good governance and represent a key benchmark within the EU enlargement process. Candidate countries are

required not only to transpose EU legislation but also to demonstrate that these rules are applied effectively and sustainably in practice. This requirement is particularly significant under Chapter 5 (Public Procurement) and Chapter 32 (Financial Control), which together represent the fiscal backbone of EU conditionality by regulating how public resources are allocated, monitored, and safeguarded.

Albania and Montenegro offer a meaningful comparative framework for analysing reform performance in this domain. Both Western Balkan candidates share similar post-socialist legacies and longstanding commitments to EU integration and still their trajectories are different in important ways. Montenegro started accession negotiations in 2012 and has opened all negotiation chapters, while Albania formally began negotiations only in 2022. These different timelines, combined with variations in institutional maturity, administrative capacity, and stability of political leadership, create a natural contrast for understanding how EU conditionality interacts with domestic governance structures.

The main question in this paper is: *How effectively have Albania and Montenegro translated EU requirements on financial transparency and accountability into institutional practice, and what explains their different reform outcomes?* To answer this question, the study draws on three analytical lenses: Europeanization theory, the external incentives model of EU conditionality, and institutional capacity. Through this framework, the paper assesses not only formal compliance but also the credibility, enforcement, and sustainability of reforms.

The remainder of the paper builds on these foundations to examine how EU conditionality shapes financial governance outcomes. It first outlines the theoretical context guiding the analysis, followed by the methodological approach and assessment framework. The key of the paper is to evaluate developments across four governance pillars, anti-corruption enforcement, budget transparency, audit effectiveness, and procurement openness, to assess both progress and persistent obstacles. The paper concludes by discussing broader implications for EU enlargement and proposing targeted policy recommendations for Albania, Montenegro, and the EU.

2. Literature Review

EU enlargement is not simply a legal harmonization exercise; it requires the transformation of public institutions to meet European standards of transparency, accountability, and good governance. Chapters 5 (Public Procurement) and 32 (Financial Control) of the *acquis* represent this transformation by regulating how public resources are planned, allocated, monitored, and protected.

There are three complementary theoretical perspectives that help understanding how reforms develop in candidate countries: Europeanization, conditionality, and institutional theory.

Europeanization explains how EU rules and norms reshape domestic governance. It involves more than the transposition of directives; it indicates changes in administrative routines, bureaucratic culture, and political incentives (Börzel & Risse, 2012). In the Western Balkans, Europeanization has often been uneven. Scholars distinguish between “shallow” Europeanization, where reforms remain largely formal, and “deep” Europeanization, where institutional behaviour and governance practices genuinely change (Schimmelfennig & Sedelmeier, 2005). This distinction is central for analysing Albania and Montenegro, where legislative alignment is advanced, but implementation differs significantly.

Conditionality represents the EU’s main instrument for driving reforms. Through the

external incentives model, progress is rewarded with tangible benefits, opening negotiation chapters, financial assistance, or positive monitoring, while stagnation leads to delays and increased evaluation (Schimmelfennig & Sedelmeier, 2004). The effectiveness of conditionality depends on three factors: the clarity of EU requirements, the credibility of accession prospects, and the willingness of domestic actors to comply (Sasse, 2008; Vachudova, 2005). Empirical research shows that conditionality tends to be more effective in areas with measurable benchmarks, such as e-procurement or budget reporting, and less effective where reforms require deeper political change, such as judicial independence or high-level anti-corruption.

Institutional theory highlights the domestic constraints shaping reform outcomes. Weak state capacity, politicized administrations, and limited bureaucratic continuity often slow down effective implementation in Western Balkan states. Mungiu-Pippidi (2020) warns of “façade institutions”, structures that formally comply with EU rules but lack the independence or resources required to function credibly. This insight is particularly relevant for Albania, where ambitious reforms such as SPAK coexist with challenges in enforcement and sustainability. Montenegro, by contrast, exhibits more institutional continuity, even though the concerns about political influence still persist.

The broader literature on EU governance in the Western Balkans reinforces these dynamics. Grabbe (2006) emphasizes the EU’s use of control and benchmarking mechanisms, note that external incentives alone cannot compensate for weak domestic institutions or fragmented political will. Other scholars stress the importance of administrative professionalism and societal oversight for sustaining long-term reforms.

Building on these theoretical insights, this study uses four governance pillars, anti-corruption enforcement, budget transparency, audit effectiveness, and procurement openness, to operationalize the concepts of transparency, accountability, and institutional credibility. These pillars reflect the substantive requirements of Chapters 5 and 32 and provide a structured basis for comparing how Albania and Montenegro translate EU norms into practice. By integrating Europeanization theory, conditionality dynamics, and institutional capacity, the analysis offers a comprehensive framework for assessing reform depth beyond formal alignment.

3. Methodology

This paper applies a comparative case study methodology to examine how Albania and Montenegro have implemented EU acquis requirements under Chapter 5 (Public Procurement) and Chapter 32 (Financial Control). The two countries were selected according to a “most similar systems” logic: both share post-socialist governance legacies, EU candidate status, and exposure to EU conditionality, still they differ in negotiation timelines and institutional maturity. These similarities and contrasts make the cases analytically suitable for assessing how domestic capacity and political will influence reform outcomes.

Analytical Framework

The analysis is structured around four governance pillars that operationalize financial transparency and accountability:

- Anti-Corruption Enforcement - indictments, conviction rates, GRECO compliance, and public trust indicators.
- Budget Transparency - Open Budget Index (OBI) scores, institutional practices, and public participation mechanisms.

- Audit Effectiveness - institutional independence, resource adequacy, and implementation of audit recommendations.
- Procurement Openness - competitive tendering rates, non-competitive procedures, and e-procurement system functionality.

These pillars reflect three main dimensions: legal alignment with the acquis, institutional capacity, and practical implementation.

Data Sources and Triangulation

To ensure credibility and reduce reporting bias, the study triangulates information from multiple sources:

- International assessments: EU Progress Reports (2015–2024), OECD/SIGMA monitoring, GRECO compliance reviews, Transparency International indices.
- National documentation: Audit reports from Albania’s KLSH and Montenegro’s DRI, national procurement and budget transparency portals, parliamentary oversight information, and civil society monitoring reports.
- Practitioner insight: Contextual understanding informed by the author’s professional experience in public financial management (without using confidential or non-public data).

Triangulation across these sources enhances reliability by capturing both external evaluations and nationally reported performance data.

Indicators and Methods

The study employs a mixed-methods approach combining qualitative and quantitative tools:

Qualitative content analysis of EU, OECD, and national reports to identify reform trends, bottlenecks, and institutional dynamics.

Quantitative benchmarking using time-series indicators (2015–2024), including:

- Corruption Perceptions Index (CPI)
- Open Budget Index (OBI)
- Audit recommendation implementation rates
- Competitive procurement shares

Descriptive statistics and longitudinal comparisons are used to illustrate trends rather than establish causal relationships, given the limitations of available data and the institutional focus of the study.

Scope and Limitations

The research covers two countries, four governance pillars, and nearly a decade of reforms, requiring a balance between length and depth. The analysis does not claim causal precision but identifies patterns supported by theory and evidence. Differences in national data quality and reporting practices were reduced through triangulation with international benchmarks. While country-specific context is important, the aim is to assess how EU conditionality interacts with domestic institutional capacity to shape financial governance outcomes.

By combining comparative design with thematic analysis across the four pillars, this methodology provides a strong framework for evaluating the credibility and sustainability of reforms in the context of EU accession.

4. Results

This section gives the analytical framework through four thematic pillars: anti-corruption output, budget transparency, audit effectiveness, and procurement openness. These pillars were selected because they represent the most operational and politically sensitive components of Chapters 5 and 32 and are widely recognized as key benchmarks for evaluating financial governance in the EU accession process. Each area links directly to the three analytical dimensions outlined above, legal alignment, institutional capacity, and practical implementation, offering cross-sectional and time-series data to evaluate progress.

Each of them uses two layers of analysis: evaluating both institutional indicators (e.g., legal alignment, public access, independence) and performance metrics (e.g., CPI scores, budget openness trends, implementation rates, competitive procurement levels). In both Albania and Montenegro these pillars are evaluated and compared using both cross-sectional data and time-series trends, in line with EU benchmarks and expectations under Chapters 5 and 32 of the acquis. By comparing how these four governance areas have evolved in Albania and Montenegro, the chapter explains deeper reform dynamics, including the role of political will, institutional maturity, and the effectiveness of EU conditionality as a driver of change.

Anti-Corruption Enforcement

Anti-corruption enforcement is a central component of financial governance and a key benchmark under both Chapters 5 and 32. It reflects how effectively a country detects, investigates, and sanctions abuses of public resources. Strong enforcement requires not only legal frameworks but also institutional independence, prosecutorial capacity, and public trust.

Table 1 below provides a comparative overview of anti-corruption institutional indicators for Albania and Montenegro, including high-level indictments, conviction rates, GRECO compliance, and public trust. The data highlight Albania's dynamic prosecutorial activity through SPAK 45 high-level indictments in 2023, compared to 37 in Montenegro, but also point to weaker enforcement outcomes.

Table 1. Comparative Anti-Corruption Enforcement Indicators (2023–2024)

Indicator	Albania	Montenegro	EU/Best Practice
High-Level Indictments	45	37	Sustained efforts expected
Successful Prosecution Rate	~25%	~35%	>50% for credibility
GRECO Compliance	Moderate	High	Full or substantial
Public Trust in Prosecutors	Low–Moderate	Moderate	High and consistent
Legal Framework Strength	Strong	Moderate–Strong	Fully enforced
Institutional Autonomy	Medium–High	Medium	High and depoliticized

Source: Author's elaboration based on: GRECO, national judicial statistics, HIDAACI/APC data, EC Progress Reports

Albania's conviction rate remains low at 24–26%, indicating limited judicial follow-through and evidentiary slowdowns. In contrast, Montenegro achieves a prosecution

success rate of around 35%, reflecting more consistent case handling despite initiating fewer proceedings.

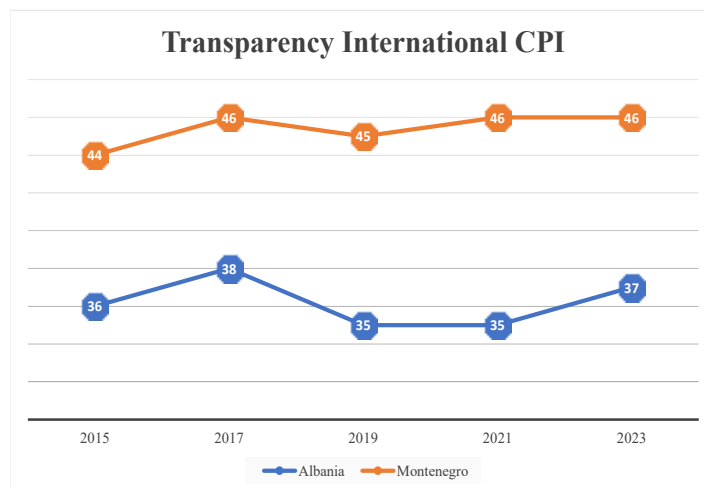


Figure 1

Source: Author's elaboration based on Transparency International

CPI trajectory shows gradual improvement in both countries. Albania increased from 36 points in 2015 to 42 points in 2024, marking its highest score to date. Montenegro, although starting from a higher baseline (around 45 points in 2015), has remained relatively stable, scoring 46 points in 2023. This stability suggests steadier institutional performance, even if progress has plateaued.

Taken together, these findings indicate that Albania demonstrates stronger reform momentum, driven by SPAK's operational intensity, while Montenegro delivers more consistent enforcement quality and higher institutional credibility, despite pursuing fewer high-level cases.

Budget Transparency

Budget transparency is an important dimension of public financial governance and reflects how openly governments disclose fiscal plans, execution data, and oversight findings. Under Chapter 32, transparency is essential for ensuring accountability, enabling parliamentary resolution, and allowing citizens to understand how public funds are managed. Effective transparency requires both comprehensive publication of budget documents and meaningful opportunities for public engagement.

Table 2 below presents the comparative institutional indicators of budget transparency for Albania and Montenegro. It includes the availability of key budget documents (executive budget proposal, year-end report, audit report), the timeliness and accessibility of online budget portals, citizen-friendly materials, and formal mechanisms for public consultation. The table highlights that Albania has higher scores on document publication and online accessibility, whereas Montenegro performs better on internal consistency and parliamentary oversight routines.

Table 2. Institutional Indicators of Budget Transparency (2023)

Indicator	Albania	Montenegro	EU/Best Practice
Open Budget Index Score	37/100	48/100	≥60
Frequency of Budget Updates	Irregular	Quarterly	Quarterly or Monthly
Citizen Budget Publication	Infrequent	Annual	Regular & user-friendly
Data Format & Accessibility	PDF, limited Excel	PDF & machine-readable	Open formats
Participation in Budget Planning	Limited	Moderate	Formal consultation channels
Public Awareness Campaigns	Minimal	Some efforts	Regular and inclusive
Online Budget Platform	Fragmented	Centralized portal	Central, easy-to-use access

Source: Author's elaboration based on: GRECO, national judicial statistics, HIDAACI/APC data, EC Reports

Albania made notable progress, with its Open Budget Index (OBI) score rising from 38 in 2015 to 55 in 2019, before stabilizing at 57 in 2023. Yet reforms have lacked continuity, and citizen-oriented budget publications remain limited. Montenegro's OBI score has remained stable (44–48) with quarterly reporting and a centralized budget portal, but innovation and public participation are weak. The contrast suggests Albania has pursued rapid, donor-driven reforms, while Montenegro relies on slower but steadier institutional routines.

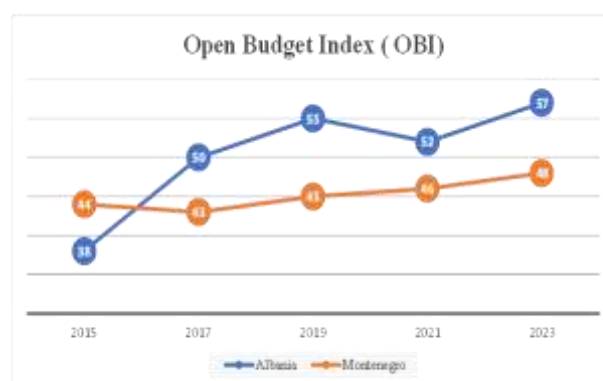


Figure 2
Source: Author's elaboration based on: OBI Rankings

Audit Effectiveness

Audit effectiveness is essential for credible financial governance and is a core requirement under Chapter 32. It reflects the capacity of supreme audit institutions to independently assess how public funds are managed, issue recommendations, and ensure that governments take corrective action. Effective audit systems depend on institutional independence, adequate staffing and resources, and strong follow-up by parliaments and line ministries.

Table 3. Institutional Indicators of Audit Effectiveness (2023–2024)

Indicator	Albania	Montenegro	EU/Best Practice
Institutional Independence	Moderate	High	High
Annual Budget	€2.8 million	€5.2 million	Sufficient for mandate
Staffing Levels (Auditors)	50	90	Adequate for full audit scope
Audit Recommendations Implemented (%)	63%	78%	≥80%
Parliamentary Hearings Frequency	Occasional	Regular	Regular
Public Engagement (reports, summaries)	Limited	Consistent	Transparent

Source: Author's elaboration based on annual audit reports, parliamentary records, institutional data, and EC/SIGMA

The numerical indicators reinforce these institutional differences. Montenegro's DRI reports an implementation rate of approximately 78% for audit recommendations, supported by structured follow-up processes and stronger cooperation with parliamentary committees.

Albania's KLSH, while formally independent, records a lower implementation rate of around 63%, partly due to limited enforcement mechanisms, capacity constraints, and inconsistent parliamentary engagement with audit findings.

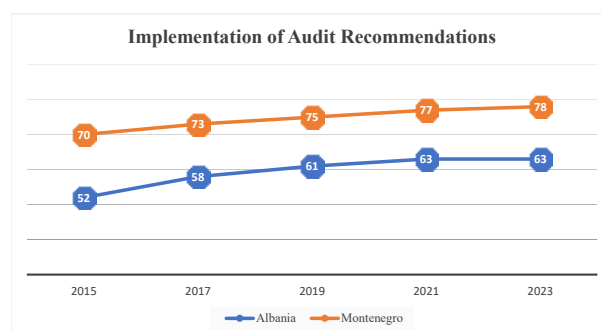


Figure 3

Source: Author's elaboration based on national supreme audit institutions' annual reports

The figure shows that Montenegro maintains a consistently high implementation trajectory, with only mild fluctuations over time. Albania, by contrast, shows irregular progress, with notable improvements in certain years but declines in others, reflecting broader issues of administrative turnover and variable political commitment to audit follow-up.

Taken together, these findings indicate that Montenegro's audit system displays stronger institutional stability and follow-through, while Albania's progress remains uneven due to

capacity constraints and weaker enforcement of audit recommendations.

Procurement Openness

Public procurement remains highly vulnerable to corruption risks. Albania has formally aligned its system with EU standards and expanded e-procurement tools, but competitive tendering remains limited and non-transparent practices persist. Montenegro's procurement reforms have been more gradual yet yield relatively stronger results in reducing non-competitive procedures. Both countries struggle to ensure consistent enforcement of rules, but Montenegro's steadier institutional performance gives it an advantage in credibility.

Table 4 below presents the comparative institutional and structural indicators of procurement openness for Albania and Montenegro. The table shows that Albania has made substantial legal and technological progress, while Montenegro demonstrates stronger operational consistency and lower levels of non-competitive contracting.

Table 4 Procurement System Openness (2023)

Indicator	Albania	Montenegro	EU/Best Practice
Competitive Tendering (%)	68%	85%	≥80%
Single-Bid Contracts (%)	~45%	~25%	<20%
Use of Negotiated Procedures	High	Moderate	<10%
Average Tender Period (days)	~15	~20	≥30
E-Procurement Integration	Partial	Fully integrated	Fully integrated
Contract Execution Data	Rarely	Partially	Yes
Complaints Resolved (%)	~35%	~60%	≥70%
Civil Society Access	Limited	Strong	Open Access
Procurement Officer Training	Sporadic	Institutionalized	Required

Source: Author's elaboration based on EU Progress Reports, APP and Monte Tender, SIGMA assessments, and Open Contracting Partnership data

The numerical indicators further highlight these contrasts. Albania has significantly expanded the use of e-procurement platforms, covering over 95% of procedures, but still exhibits a high proportion of non-competitive tenders, around 30–35% depending on the year. SIGMA assessments consistently note concerns regarding limited competition, short deadlines, and incomplete publication of contract implementation data. Montenegro's procurement system, while slower to digitalize, achieves a higher share of competitive procedures (around 75–80%), and shows fewer abrupt fluctuations in tendering patterns.

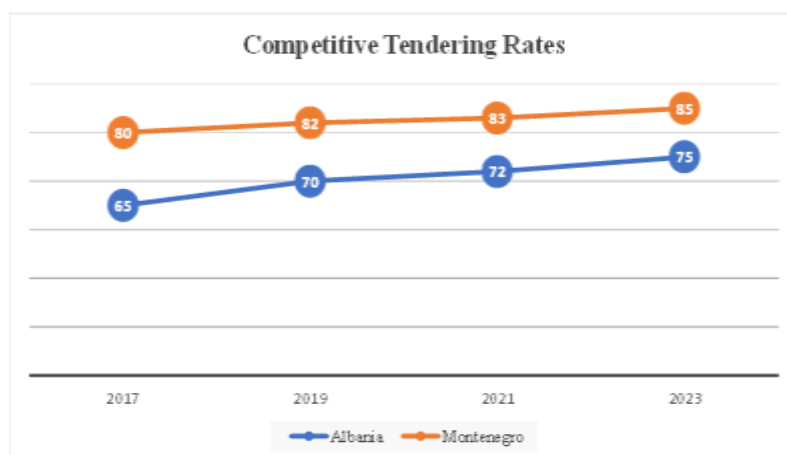


Figure 4

Source: Author's elaboration based on APP, MonteTender, EC Chapter 5 Progress Reports, and SIGMA/

The figure shows that Albania's competitive tendering rate varies significantly, rising in reform years and declining during electoral cycles changes. Montenegro, by contrast, maintains a more stable upward trend, reflecting steadier enforcement practices and more consistent application of procurement rules.

Taken together, these findings suggest that Albania's procurement reforms demonstrate strong modernization and legal alignment but remain undermined by persistent non-competitive practices, whereas Montenegro delivers steadier and more credible operational results, even with slower reform momentum.

Comparative Synthesis Albania vs. Montenegro

This section brings together evidence from all four governance areas in order to compare how Albania and Montenegro have developed institutionally and how far along they are in their reform processes. The analysis considers both institutional capacity and performance outcomes, including implementation rates, transparency trends, and institutional credibility, with reference to Chapters 5 and 32 of the EU acquis.

Across all pillars, numerical indicators reinforce this divergence. Albania leads in areas such as e-procurement coverage (95%), publication of budget documents, and prosecutorial activity (45 high-level indictments in 2023). However, implementation and enforcement are uneven, as shown by lower conviction rates (~25%), moderate audit recommendation implementation (~63%), and high shares of non-competitive tenders (30–35%). Montenegro, in contrast, performs more consistently across all enforcement metrics. It maintains higher GRECO compliance (~70%), stronger audit follow-up (~78% implementation rate), and more stable competitive tendering rates (75–80%). Its OBI scores remain modest but stable (44–48/100), reflecting institutional continuity even if reform momentum is slower.

Table 5 Summary Comparison Across Pillars (2023)

Indicator	Albania	Montenegro
Anti-Corruption Output	High prosecutorial activity (SPAK), but low conviction rate; CPI volatile	Moderate GRECO alignment; stable CPI; stronger institutional trust
Budget Transparency	Strong OBI improvements; low civic participation; fragmented platforms	Modest OBI growth; regular updates; centrali access
Audit Effectiveness	Growing activity; 63% implementation rate; weak parliamentary hearings	High implementation (76%); strong SAI independence and resources
Procurement Openness	Formal improvement in tenders; high single-bid rate; weak contract oversight	Competitive tenders >80%; stronger e-procurement and oversight

Source: Author's elaboration based on EC Progress Reports, SIGMA/OECD, Transparency International, IBP, APP, and national audit institutions (2023)

Taken together, the synthesis shows that Albania excels in reform intensity but struggles with consistent enforcement, whereas Montenegro advances more gradually but delivers more credible and stable institutional outcomes. This pattern supports the broader conclusion that EU conditionality produces the strongest long-term results when domestic institutions combine political will, administrative capacity, and independence from political influence.

Discussion

The comparative findings underscore that legal alignment alone is not sufficient to secure credible reforms in financial governance. While both Albania and Montenegro have adopted EU-compliant laws in public procurement and financial control, the outcomes diverge because of differences in institutional capacity, political will, and societal oversight.

First, institutional maturity plays a decisive role. Montenegro's longer engagement with the accession process has allowed for greater institutional consolidation, particularly in its audit and procurement systems. This supports institutional theory, which highlights the importance of continuity and organizational culture. Albania, by contrast, has introduced ambitious reforms such as SPAK, but limited enforcement capacity and political interference have constrained results. The gap between "laws on the books" and implementation reflects the problem of "façade institutions."

Second, the findings illustrate the conditionality dilemma. EU pressure has been effective in areas with measurable benchmarks, such as procurement portals and budget reporting, where reforms are externally verifiable. However, conditionality is less effective in domains requiring deeper cultural and political change, such as judicial independence or audit follow-up. This aligns with the "external incentives model," which argues that conditionality works best when rewards are credible and compliance costs are low. In Albania, credibility of rewards has been undermined by delays in accession negotiations, reducing reform momentum.

Third, domestic political will and societal engagement are decisive. In Montenegro,

reforms have been steadier because institutions are less fragmented and political elites have shown a degree of continuity in supporting EU-related reforms, even if selectively. Albania has seen stronger bursts of reform but remains vulnerable to politicization and shifts in political consensus. Civil society engagement and public trust are also uneven, shaping whether reforms gain legitimacy or remain technical exercises.

These findings carry three broader lessons for enlargement policy.

- Conditionality must go beyond technical compliance and prioritize enforcement, independence, and credibility of institutions.
- Political will is the critical variable: EU pressure is necessary but cannot substitute for domestic commitment.
- Societal oversight matters: without trust and citizen engagement, transparency and accountability reforms risk becoming symbolic.

In short, the Albania–Montenegro comparison shows that enlargement is not simply a process of adopting the *acquis*. It is a test of whether domestic institutions can internalize EU norms and sustain them against political pressures. For the EU, this implies that future support should place greater emphasis on strengthening institutional autonomy and building societal demand for transparency, not just monitoring legal harmonization.

5. Conclusions

This paper has examined how Albania and Montenegro have implemented EU *acquis* requirements on financial transparency and accountability. The comparative analysis across four governance pillars shows that while Albania demonstrates ambitious reform initiatives, Montenegro delivers more consistent institutional outcomes. The divergence highlights a core lesson: EU conditionality can trigger reforms, but sustainable results depend on domestic political will, institutional maturity, and societal oversight.

Policy Implications for Albania

- Prioritize enforcement and continuity of reforms, particularly in anti-corruption and audit follow-up, to convert formal progress into credible outcomes.
- Strengthen institutional independence of audit and oversight bodies by reducing political interference in appointments and operations.
- Enhance public engagement in budget transparency through citizen-friendly reporting and structured consultations.

Policy Implications for Montenegro

- Maintain reform momentum to avoid stagnation and address risks of selective enforcement in anti-corruption.
- Upgrade procurement and budget transparency by adopting open data standards and enhancing civic participation.
- Invest in institutional resilience to ensure reforms remain effective amid political transitions.

Policy Implications for the EU

- Move beyond formal benchmarks by focusing on enforcement credibility and real-world institutional impact in monitoring frameworks.
- Provide targeted support for strengthening audit institutions, procurement oversight, and civil society watchdogs.
- Ensure that accession incentives remain credible and timely, avoiding delays that weaken reform momentum in candidate states.

In conclusion, the Albania–Montenegro comparison demonstrates that enlargement success

cannot be measured only by legislative transposition. It requires deep institutionalization of transparency and accountability norms, supported by political commitment and public trust. For the EU, the key challenge is to design conditionality that rewards not just laws on paper but reforms that truly take root in practice.

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SMART BUDGETING FOR SMART GOVERNANCE: LEVERAGING FINANCIAL DATA SYSTEMS FOR GENDER EQUALITY IN ALBANIA

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Abstract

Budgets are considered worldwide as one of the most important instruments to achieve sustainable development goals. On the other hand, budgets are recognized as key indicators of the government's commitment to addressing priorities and challenges through public policies, by planning, allocating and monitoring their public resources. Therefore, budgets are considered as a fundamental tool for managing sensitive issues such as gender inequality, poverty and economic injustice.

This paper analyzes Albania's experience in a "smart governance" context, where accountability, transparency, efficiency and inclusiveness can be achieved through public financial systems. It examines the integration of gender equality objectives into government's digital systems, by emphasizing the transformative digital reform, as a crucial pillar of the public financial management. Through this reform, Gender Responsive Budgeting evolved from a policy commitment into a practical and operational element of governance.

This study adopts a qualitative case study approach, using primary and secondary data. It concludes that Albania's experience demonstrates how digital financial systems can be used in order to promote and track gender equality objectives, by getting close to a "smart governance model".

Keywords: *Gender Responsive Budgeting, public financial systems, digital transformation, smart governance.*

JEL classification: J16, H50, O33, O38

1. Introduction

Budgets are considered as one of the most important instruments in order to obtain and achieve sustainable development goals. But they are recognized even as key indicators of the government's commitment, in order to address challenges and priorities through their public policies. This includes budget process such as planning, allocating and monitoring of their public resources and funds. Therefore, budgets can be considered as a tool for managing and addressing sensitive issues such as gender inequality, poverty and economic injustice.

The Government of Albania has made national and international efforts to advancing gender equality, fighting domestic violence and empowering women in different socio-economic dimensions (Arqimandriti, 2020). Therefore, Albania has developed an advanced legal and institutional framework related to Gender Responsive Budgeting. This framework reflects not only the government's commitment to address gender equality, but even the aspirations of this country towards EU integration, principles and requirements as well.

The first important efforts were established through the National Strategy on Gender Equality (2011-2015), integrating the principle of gender mainstreaming in all sectors and in National Strategy for Development and Integration (Arqimandriti, 2020). This strategy was followed by the other two National Strategy for Gender Equality of 2016-2020 and of 2021-2030, which were in accordance with the objectives of the government for gender equality, the national legal framework and international obligations following EU policies. Albania has established one of the most advanced institutional and legal frameworks related to Gender Responsive Budgeting in Western Balkans, by reflecting the government's commitment to addressing challenging issues such as: public financial management reform, digital transformation, gender equality, inclusiveness and sustainable development goals.

Therefore, Albania can be considered a relevant policy case, consolidating GRB framework, adopting GRB concepts in the management of the budget system and integrating them into governance financial systems. Through this transformative digital reform, as a crucial pillar of the public financial management, GRB evolved from a policy commitment into a practical and operational element of governance. Studying this country through a case study approach, can help to understand better and have a comprehensive vision of the digitalization (specifically public financial management systems) and an inclusive governance.

This study adopts a qualitative case study approach, concluding that Albania's experience demonstrates how digital financial systems can be used in order institutionalize GRB, promote and track gender equality objectives, by getting close to a "smart governance model".

2. Literature Review

2.1 Smart Governance- a backbone for accountability, efficiency and inclusiveness

The definition of smart governance comes from a broader smart and digital government literature, focusing on the use of ITC-Information Technology and Communication, and participatory platforms aiming to foster accountability, transparency and inclusiveness.

According to (Meijer & Bolívar, 2016) smart governance should not be considered only technology, but even creating new human collaboration through technology for more open governance processes. Their research goes further by emphasizing three dimensions: digital tools, governance arrangements and performance or outcomes.

Smart governance as a fundamental backbone of smart cities is linked to citizen engagement and to data driven policy making, promising added value in efficiency, accountability and service quality (Oprea (Bîrlă) & Kaur, 2025)

Different researches highlight that digital tool should be associated with inclusive processes and public goals. Meijer & Bolívar (2016) and Oprea and Kaur (2025) emphasized that the smart governance is considered as a "people-oriented" when they are used to a broad participation and supporting equality-oriented policies.

Digital public financial systems incorporated with a governance perspective, tend to be create efficient processes, participatory and accountable budgeting. Integrating these systems with other public digital platforms, enables a more transparent and people-oriented fiscal governance (Moretti et al., 2024)

2.2 Gender Responsive Budgeting-a tool for achieving gender equality

According to (Stotsky, 2006), gender budgeting is related to the process of examination systematically budget programs and policies impacting women. The first country incorporating gender budgeting into its budget process was Australia, ensuring and

developing the definition of a “women’s budget” by addressing gender inequalities between women and men. Gender budgeting is just good budgeting—taking into account positive externalities that come from enhancing women’s opportunities for education, health services, and employment (Stotsky, 2006). GRB is not about dividing equally budgets or separating budgets for women. Where the needs of men and women are different, allocations of public resources should be different (Sodani & Sharma, 2008).

Base on the purpose, gender budgeting can be defined as the Integration of a clear gender perspective within the overall context of the budgetary process, through the use of specific processes and analytical instruments, with a point to promoting gender-responsive policies (Downes et al., 2016).

GRB can’t be comprehended as simply a budget or simply as a one-time activity that is completed, but is an ongoing process that needs to be implemented at all levels and phases of process (UN WOMEN, 2019). It aims to mainstream gender analysis within government policies and frameworks, by promoting and fostering accountability, commitment and influence of governments to gender equality (Sharp & Broomhill, 2002).

2.3 Legal and Institutional Framework of GRB in Albania

Albania has established one of the most advanced legal and institutional frameworks related to GRB in Western Balkans. The development of GRB during the last years, reflects the government’s commitment to addressing challenging issues such as: public financial management reform, digital transformation, gender equality, inclusiveness, sustainable development goals and alignment with EU requirements. Albania has included the gender concepts and perspectives on all the public financial management process, instead of adopting a law specifically for GRB.

In Albania, the beginning of the program budgeting’ process was institutionalized by the **New Organic Budget Law nr.9936, dated 26.06.2008**. According to this law, Medium-Term Budget began to be used and compiled on program levels (specified by goals, objectives and activities in terms of three years).

Therefore, they serve as a tool for planning and management (Xhani, 2016). This law laid the foundations for the introduction of a performance-oriented budget planning process by all budgetary institutions (Arqimandriti, 2020).

Albania adopted the **Law nr.99701**, another important commitment by ensuring the framework basis for equality between women and men in different sectors such as political and socio-economic life. According to this law, gender equality is a legal obligation, and all public institutions should to take into considerations gender perspectives through their policies. This law was followed by the **Law nr.10221, date 04.02.2010 “On protection from discrimination”**.

The Decision of Council of Ministers nr.465 “On Gender Mainstreaming in the Medium-term Budget Program”² was approved in 2012. According to this decision, starting from 2013 all ministries should be part of the gender budgeting process and defining the appropriate gender indicators for each program (objectives and outputs), for which gender mainstreaming in budgeting will be implemented. To advise all ministries to determine the budget programs is assigned The Ministry of Labor, Social Affairs and Equal Opportunities. This was considered the first milestone of gender mainstreaming in the budgeting system, and the first legal basis for the introduction of gender budgeting in Albania in the document **Medium-Term Budget Program**” (Arqimandriti, 2020). **The instruction nr. 213** was adopted to support and facilitate the integration GRB on 2013.

The amendment of the “Organic Budget Law” in 2016⁴ aimed to present “gender equality principle” as one of the most important principles of budget planning, both at central and

local government institutions. This step had the objective to respect gender equality, where men and women enjoy equal opportunities and access to rights and benefits of the same nature. This commitment positioned Albania as the only non-EU country to institutionalize gender budgeting likewise, Austria, Belgium and Spain (Arqimandriti, 2020).

The instruction nr.7 “On standard procedures for the preparation of the Medium-Term Budget Program” was adopted in 2018, with the objective to define and provide the methodology for program-based and performance-based budgeting. Based on this directive, the head of the central government unit secure that the medium-term budget program document respects the principle of gender equality. Each budget program should have at least one policy objective that addresses or promotes gender equality, followed by the ANNEX 55.

The “Standard budget preparation guidelines” nr.9, was adopted by the Ministry of Finance in 2018, aiming to reinforce measures for the achievement of gender equality through managing public expenditures and making them mandatory.

The National Strategies for Gender Equality 2016-2020 & 2021-2030, are in accordance with the objectives of the Government for gender equality, the national legal framework and international obligations following EU policies. From the evaluation of the implementation, the strategy for **2016-2020** has been implemented to the extent of 80%, emphasizing achievements related to women's empowerment, gender equality and the reduction of gender-based violence and domestic violence (Ministry of Health and Social Protection of Albania, 2021).

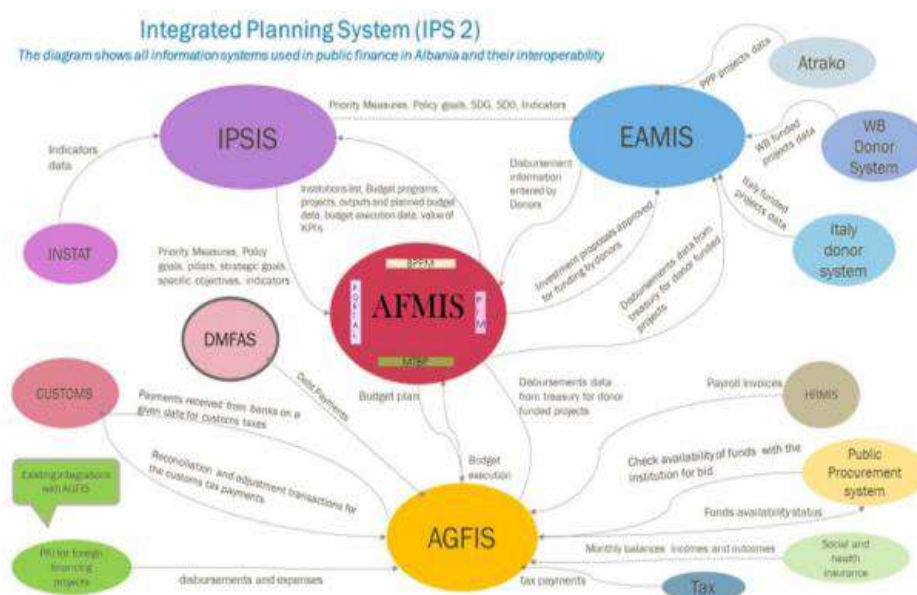
The strategy for **2021-2030** is connected with the **National Strategy for Development and Integration**, reflecting the connection with the achievement of the Sustainable Development Goals (Ministry of Health and Social Protection of Albania, 2021).

2.4 Leveraging digital financial systems for Gender Equality in Albania

The year 2005 marks the period when Albania introduced the IPS-Integrated Planning System, considered as a framework of policy planning, budgeting and monitoring. IPS has the objective to ensure coherence, effectiveness and harmonization of the overall circle from strategic planning, public finance management till policy monitoring (Arqimandriti, 2020). The coherence and the harmonization should include the NSDI-National Strategy for Development and Integration, long-term sector strategies and the MTBP – Medium Term Budget Program (Arqimandriti, 2020).

Based on the National study on policy coordination processes in Albania, efforts are made to create and foster a more effective and inclusive system through an Integrated Strategic Planning System (IPSIS), reflecting country's development strategy, priorities and the approach to define and approve the medium-term budget planning framework (ReSPA, 2021). Despite the challenges, **IPSIS** is considered as a digital platform intending to integrate strategic planning documents, key indicators, financial data and monitoring reports, representing this way a transformative platform toward digital governance (ReSPA, 2023).

Albania's transformation toward digital systems—such as IPSIS, AFMIS and other digital platforms—is part of a broader movement toward a **modern smart governance**, aiming to foster accountability, transparency, efficiency and inclusiveness through financial systems.



Source: PEMPAL presentation from the Business Process Department of the Treasury (MoFE)

The Albanian Financial Management Information System - AFMIS is an integrated Public Financial Management system, which is considered as an expansion of the existing Albanian Government Financial Information System -AGFIS, but with additional functions supporting Medium Term Budget Planning -MTBP, Public Investment Management -PIM, Budget Monitoring and the integration of other relevant topics(Jaupi, 2021). AFMIS is defined as a powerful tool for line ministries and central institutions because it has very important functions: MTBP drafting and due to the synergy with IPSIS (Jaupi, 2021). Through AFMIS, line ministries can set their policy objectives, outputs, performance indicators, and costs corresponding to their medium-term budget programs, enabling this way as a link between objectives and resource allocation.

AFMIS has within modules that allow line ministries to tag programs and outputs with gender objectives. In this manner, can be achieved traceability of expenditures related to gender and an evaluation of performance towards gender indicators. According to (Arqimandriti, 2020), gender objectives and indicators have been incorporated into budget program structures, where AFMIS has enabled monitoring within the Medium-Term Budget Program cycle.

With this approach related to GRB, gender equality stays as a strategic priority at the IPS and finally goes incorporated into financial plans through AFMIS.

As mentioned by Xhani (2016), the MTBP of 2013-2015 had been identified only 9 budget programs containing (fully or partially) gender budgeting issues as part of their budget requests. Nowadays, on the MTBP 2025–2027, there are 76 budget programs integrating gender issues (Ministry of Finance, 2024).

This integration into AFMIS has transformed GRB from a policy commitment into an operational, data-driven instrument and AFMIS as a technical backbone for a smart and inclusive budgeting.

3. Methodology

This study applies a qualitative case study design that is focused on giving an overview of the Gender Responsive Budgeting framework in Albania and giving an overview of the integration of GRB in Digital Public Financial Systems, as an approach for fostering effectiveness, accountability, transparency, and inclusion.

According to Polzer et al. (2023) using a qualitative approach based on the institutional efforts and governance commitments, can be understood better through an analysis based on interpretation rather than a quantitative approach. The case study design of the Albanian context as “a smart governance”, offers an overview “in depth”, assessment and transformation of gender mainstreaming tools through digital governance systems. Studying this country through a case study approach, can help to understand better and have a comparative vision of the digitalization (specifically public financial management systems) and an inclusive governance.

3.1 Analytical approach and data sources

The study relies on both primary and secondary documentary sources. Documents were selected for their relevance to GRB, digital Public Financial Management achievements, and institutional efforts and commitments.

Primary sources include:

- National framework and other regulatory acts
- Government strategies
- Technical documents and presentations on AFMIS, IPS and AGFIS functionalities from the Ministry responsible for Finance
- Official guidance, directives and reports for GRB implementation

Secondary sources include:

- Academic literature on GRB, PFM digital transformation and governance reforms

4. Conclusions

Albania has demonstrated progress in advancing gender responsive budgeting through digital public financial management. This notable progress includes the consolidating GRB framework, adopting GRB concepts in the management of the budget system and integrating them into governance financial systems.

Albania's experience illustrates how digital financial systems can be used in order to institutionalize GRB, promote and track gender equality objectives, by getting close to a “smart governance model”. Through the transformative digital reform, GRB evolved from a policy commitment into a practical and operational element of governance.

By incorporating GRB into the Albanian Financial Management Information System (AFMIS) and striving to align it with large strategic planning instruments such as IPSIS, the Albanian government has created a more transparent, accountable, coherent, inclusive and performance-oriented framework within the budget processes from planning to execution.

This reform and transformation are a step toward smart governance, where digital systems are used to support and strengthen accountability, transparency and inclusiveness in the

decision-making processes.

Recommendations

- To strengthen the interaction between strategic planning and budgeting systems, in order to enhance the alignment of policies, priorities, financial allocations and monitoring processes.
- To ensure institutional capacity by providing training and directions for line ministries on gender analysis and key performance indicators.
- To strengthen and expand the interaction of gender disaggregated data even in public local institutions-municipalities, data needed for reliable decision-making processes.
- To increase transparency and civic involvement-participation by accessing gender data and gender budget allocations to ensure accountability.

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THE ROLE OF ARTIFICIAL INTELLIGENCE IN ENHANCING FINANCIAL INSTITUTIONS PERFORMANCE: AN EMPIRICAL ANALYSIS OF PROFITABILITY, EFFICIENCY, AND STABILITY

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Abstract

This article examines the impact of artificial intelligence (AI) on the financial performance of finance institutions, analyzing how these technologies improve financial analysis and risk management processes. Technologies such as machine learning, big data analytics, the implementation of support robots, data analysis and algorithms for financial market prediction are used to analyze financial trends and offer data-driven recommendations based on big data and predictive models.

The article uses an empirical methodology to investigate how the use of AI has influenced the financial performance of financial institutions in terms of profitability, efficiency and financial stability. It also compares two large, profitable institutions: the Bank of America and the Deutsch Bank, by comparing their Return on Equity (ROE) and Return of Assets (ROA) before and after the implementation of AI. Additionally, it analyzes revenue and expenses to determine the effectiveness of AI's impact.

The study's findings suggest that AI has contributed to improving operational efficiency and increasing decision-making accuracy, bringing significant benefits to financial institutions as well as the broader financial economy. These advancements also support the profitability objectives of these institutions. In conclusion, the article suggests that AI can be a powerful tool for enhancing financial performance, emphasizing the importance of investing in advanced technologies to support growth, competition and stability in the financial sector with the goal of maximizing their profits.

Keywords: *AI, finance, banking, technology.*

1. Introduction

In the last decade, Artificial Intelligence (AI) has brought a revolution in the financial sector, offering powerful tools that can improve efficiency and create competitive advantages for financial institutions. Banks and major financial institutions have started to embrace advanced AI algorithms for portfolio optimization, transaction processing and improving customer service. With the rapid developments in technology, AI has not only helped in improving daily operations but has the potential to transform the traditional banking business model.

In this context, many large banks worldwide are assessing the effects of AI on their financial performance by observing the impact it has on improving key financial indicators. One of the most used metrics to measure this effect is return on invested capital (ROA). Furthermore, the analysis of revenues and expenses before and after the implementation of the AI helps to evaluate how AI impacts the reduction of operational expenses and the increase of revenues.

This study aims to analyze the impact of AI implementation on financial performance by taking as examples two banking institutions from two superpower countries, which were among the first to implement artificial intelligence, examining comparisons of AI, valuable conclusions are drawn about the role of AI in improving financial efficiency and achieving

strategic objectives for these banks, but not only and the impact of Artificial Intelligence in financem how does it effect it?

2. Literature Review

Joubert's& Louw, S.(2019). "Artificial Intelligence in Finance :Opportunities and challenges." This study explores the opportunities and challenges AI offers to the financial sector including machine learning and big data analytics. It discusses how these technologies help financial institutions create more accurate models and optimize risk management. Choudhury P., & Hossain, L. (2018). "Artificial Intelligence and Machine Learning in Financial Services." This article analyzes the use of AI and machine learning to develop algorithms that assist in analyzing financial data and optimizing decision-making in financial institutions.

Ng, A., & Teo, H. (2017):" AI in Financial Analytics: Enhancing Forecasting Accuracy." This article examines AI applications to improve the accuracy of financial forecasts, using deep machine learning algorithms and big analysis to predict market movement and revenues. Britt, K., & Meyers, J. (2020). "The role of Artificial Intelligence in Risk Management in Financial Institutions." This study highlights the use of AI to improve risk management, particularly through predictive analytics and real time monitoring of financial markets. It discusses how AI can help reduce human errors and enhance the efficiency of financial processes.

Brynjolfsson, E., & McAfee, A.(2017). "The second machine Age : Work, Progress and Prosperity in a Time of Brilliant Technologies." This book analyzes the impact of advanced technologies, including AI, on increasing efficiency and financial performance in companies. The authors provide an overview of how AI can change economic sectors, including finance. Kshetri, N. (2021). The role of Artificial Intelligence in Financial Performance." This study focuses on specific applications of AI iin the financial sector, evaluating how AI has improved financial performance by contributing to the growth of profitability and efficiency.

Li, L., & Zhang, H. (2019). "The Impact of Artificial Intelligence on Financial Performance: Case study." This study uses an empirical approach to assess the impact of AI on the financial performance of several financial institutions, analyzing changes in the profitability and operational efficiency after AI implementation.

3. Methodology

This study aims to analyze the impact of implementing Artificial Intelligence (AI) on the financial performance and risk management of financial institutions using two financial institutions from two superpower countries as examples. The performance and risk management practices of Deutsche Bank and Bank of America have been compared before and after the implementations of AI.

To identify changes in ROE (Return on Egiuty), ROA (Return on Assets), and the effects on risk strategies, as well as changes in revenues and expenses, to assess AI's efficiency.

The study focuses on the USA's Bank ang Germany's Bank, two financial institutions from the world's economic superpower, covering the period before 2016 and after 2016 when both banks implemented AI at the same time, analyzing the change the change in ROE, ROA, as well as the revenues and expenses over the years. The study also explores how AI has impacted finance and risk management.

In an increasingly interconnected and dynamic world, Artificial Intelligence (AI) has begun to play a key role in transforming how industries and economy's function. The

financial sector, with its rapid advancements in technology and innovation, is one of the most prominent beneficiaries of this transformative shift. The use of AI in finance has become a powerful tool for enhancing financial analysis optimizing risk management and improving the financial performance of institutions.

4. Results

Bank of America, (BoFA), is one the largest and oldest banks in the United States, With a history dating back to 1904. Bank of America has been a pioneer in the use of technologies to improve customer experience and operational efficiency. In recent years, the bank has significantly invested in artificial intelligence (AI) to enhance its services, risk management and optimize processes. A well-known example is its digitals assistant, Erica, which uses it to help customers manage accounts and make financial decisions.

Bank of America has intensively implemented artificial intelligence (AI) in its banking services, with one of the most prominent innovations being the virtual assistant, Erica. Since its launch in 2018, Erica has become a key part of Bank of America's digital customer experience, helping millions of users manage their accounts and providing financial advice. Erica has passed over 2 billion interactions, highlighting its significant role in customer service with 42 million clients. Additionally, the bank has made substantial investments in AI to improve operational efficiency and offer more personalized experience for customers.

Besides "Erica," Bank of America has used other artificial intelligence technologies to enhance its operations and services. One example is PRIAM (Predictive Intelligence Analytics Machine), a system that helps analysts identify potential investors for IPOs using historical data and market analysts. Another implementation is Robotic Process Automation (RPA), which uses AI algorithms to automate operational tasks, including credit processing, International payment operations and anti-money laundering monitoring. AI is used to analyze financial data, assists in credit risk assessment and predict customer behavior. Machine learning algorithms analyze customer behavior patterns, aiding in the provision of credit over the last three years. AI troubleshooting issues and managing finances. AI algorithms detect potential fraud patterns and predict financial trends to support strategies decision-making. AI has been used to automate routine processes such as data collection, data processing and security checks, helps to reduce costs and increase efficiency.

The investments in this technology show Bank of America's commitment to using AI to enhance effectiveness and provide personalized and secure services for its clients Founded on August 1, 1957, Bundesbank was established after world war 11 when Germany sought to build a stable monetary system to avoid the inflation and destabilization the country had experienced in the past. As part of the evolution of the financial sector, Deutsch Bank has begun using advanced technologies, including artificial intelligence, to improve operational efficiency and risk management.

Deutsch Bank has applied several artificial intelligence (AI) technologies to optimize its operations and improve customer services. One of the key innovations in the "Black Forest" model, which is used to combat financial crimes. By examining factors such as transaction amount, currency types and geographical location, "Black Forest" helps identify and investigate suspicious transactions in real-time.

Another significant project is the "Next Best Offer" tool in wealth management. This AI-powered recommendation engine analyzes customers portfolios to suggest investment products that align with their preferences and risk profiles. Considering market trends and

regulatory compliance, this tool ensures that financial advice is personalized and compliant with industry standards.

Customers service chatbot: Deutsch Bank has developed a chatbot named “Debbie,” which uses AI to provide automated services to clients. This chatbots assists customers in completing simple transitions, obtaining information about their accounts and offering help with common inquiries. It has been used at Deutsch Bank to automate and improve internal processes, including credit evaluation, risk management and data analysis. Deutsch Bank has used AI to create advanced data and identify suspicious activities that may indicate potential fraud. Deutsch Bank has used AI to analyze and predict market movements and assist in investment decision-making. This allows the bank to offer more personalized services to its clients by optimizing investments strategies and minimizing risk. (Bank of Deutsch)

(ROE and ROA)

ROE- (Return on Equity), a measure of a company profitability that calculates the net income as a percentage of shareholders equity. It shows how effectively the management is using the company’s assets to generate profits.

ROA- (Return on Assets), a financial ratio that shows the percentage of profit a company generates relative to its total assets. It indicates how efficient the company is in using its assets to create revenue.

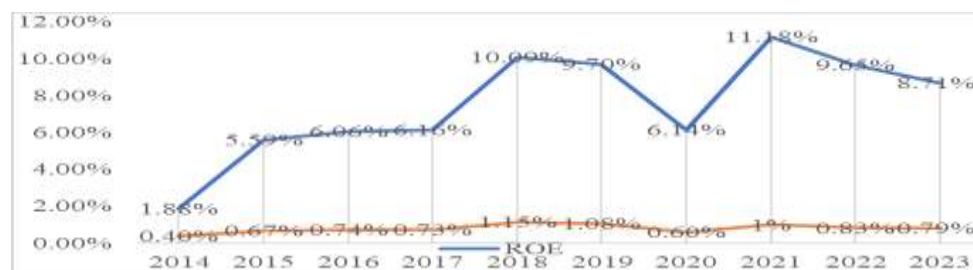


Figure 1: Bank of America, ROE and ROA. Source: Bank of America

On graphics: after implementing AI in 2016, the bank showed a clear upward trend in financial performance, with increases in ROE and ROA. This suggests that AI has contributed to improved operational efficiency and risk management, helping the bank achieve a sustainable level of profitability in the long term.

Before the implementation of AI (2014-2015): ROE increased significantly from 1.88% in 2014 to 5.59% in 2015, showing an improvement in return on equity, while ROE also rose from 0.4% to 0.67%. This period indicates a stabilization of the bank’s financial performance, possibly due to internal reforms and overall economic growth.

Year of AI implementation (2016): In 2016, after the introduction of AI, ROE and ROA continued to improve, reaching 6.06% and 0.74%, respectively. This suggests a potential positive initial impact of AI, which could have contributed to the optimization of operations and increased efficiency.

After implementing AI (2017-2023): In 2017, ROE remained relatively high at 6.16% while ROA experienced a slight decline to 0.73%. This signals a stabilization in performance after a period of growth. In 2022, there was a significant improvement with

ROE at 9.65% and ROA at 0.83%, indicating that the bank has reached a high level of return on equity and assets.

This improvement is linked to the increased use of AI for risk management and real-time data analysis, as it was only factor controlled by the bank's internal policies overseen by the administrators and executive board. It is the risk that needed to be taken to achieve maximum profit.

Return on equity (ROE) for Bank of America (BAC) shares is 8.63% as of Friday, February 21, 2025. This is an increase of 7.11% compared to its 12-month average of 8.06%. The average ROE for the last 5 years is 8.91%. (Bank of America)

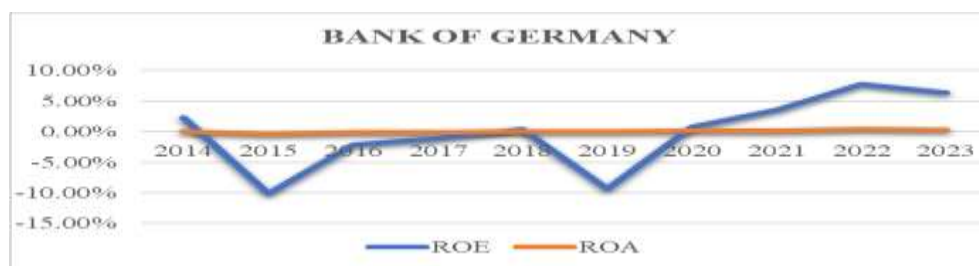


Figure 2 : Bank of Germany ROA and ROE. Source: Deutsch Bank

The implementation of AI has had a slow and gradual impact during the 2016-2020 period. After the challenging financial period (2015-2016), AI technologies began to show noticeable results in 2020 and 2022, when the bank achieved better financial performance. The significant increase in ROE and ROA in 2022 can be before and after the implementation of Artificial Intelligence, their increase in values indicates that new elements implemented in these banks positively impacted their finances. It is clear from the data that the figures show growth, which demonstrates that AI has effectively and better risk management, both of which have been greatly supported by the use of AI.

As we observe from the comparison of ROE and ROA before and after the implementation of Artificial Intelligence impacted their finances. It is clear from the data that the figures show growth, which demonstrates that AI has effectively influenced both banks, which are very large institutions.

Although the return an asset and return on equity leave room for further analysis of the impact of Artificial Intelligence of AI on revenue and expanses has also been examined, especially since 2015-2024, including the COVID-2019 pandemic, AI has been main new factor implemented in their structure.



Figure 3: Bank of America- expense/revenue ratio Source: Bank of America

2014-2017: The expense-to-revenue ratio decreased from 61.03% to 57.14% during the period from 2014 to 2017. This reduction can be linked to Bank of America's efforts to optimize operational costs and increase efficiency.

2018-2020: The ratio increased to 58.75% in 2018 and 61.67% in 2020. This increase may be attributed to the impact of the COVID-19 pandemic, which forced banks to make significant investments in digital infrastructure and health protection systems, thereby raising operational expenses.

2021: The rise in the ratio to 62.73% in 2021 indicates that the bank faced significant challenges in controlling operational costs, possibly due to ongoing investments in AI and digital transformation. This may have required high spending on new digital infrastructure, staff training and the development of new AI systems for advanced data analysis and risk management.

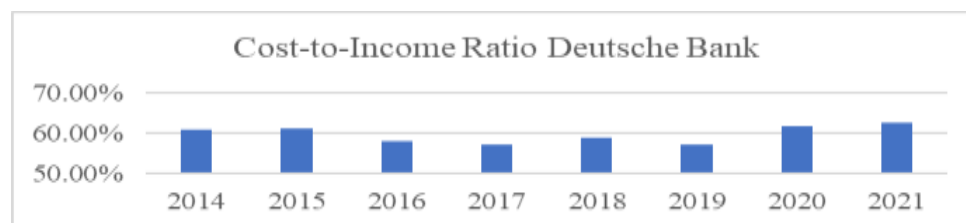


Figure 4: The costs-to-income Ratio for Deutsch Bank. Source: Bank of Germany

In 2014 and 2015, the cost-to-income ratio for Deutsch Bank was around 61%. This period reflected the bank's ongoing challenges in cost management and transformation following the aftermath of the global financial crisis. The use of Artificial Intelligence (AI) was still in its early stages. In the years 2016-2019m the cost-to-income ratio for Deutsch Bank continued to improve, dropping from 58.14% to 57.15%.

This period marked an effort to improve operational efficiency and reduce costs, as part of a new strategy that includes the use of innovative technologies. In 2020 and 2021, the costs-to-income ratio increased to 61.67% and 62.73%, respectively, mainly due to the impact of the COVID-19 pandemic, which increased expenses for securing operations and supporting digital services. The use of AI intensified to improve online services offering faster and more secure services to customers, as well as automating many of the bank's internal operations. Nevertheless, the increase in operational expenses due to the global crisis and significant investments in technology and infrastructure caused the bank to have a higher cost-to-income ratio during this period.

Advantages

Improvement of operational efficiency: AI automates routine processes and repetitive tasks, reducing the need for manual intervention and saving time and resources.

Accuracy and better forecasting: AI models can analyze large amounts of data in real-time and provide accurate predictions for market trends.

Risk management: AI can identify and predict risks better than traditional methods by detecting potential patterns that indicate risks, such as fraud. This helps institutions avoid losses and maintain financial stability.

Customer adaptation and improvement of their experience: AI can analyze customer behavior and provide personalized services in real-time.

Optimization of investment portfolios: AI can assist in analyzing and optimizing investment portfolios to achieve better returns with reduced risk.

Speed in transaction processing: AI accelerates transaction processing and reduces errors, contributing to a more stable and secure financial system.

Disadvantages

High implementation costs: Implementing AI requires significant initial investments in infrastructure, technology and staff training. These upfront costs can negatively impact financial performance, especially for smaller institutions.

Risk of errors and losses: AI can make mistakes when there is a lack of accurate data or due to incorrect parameters in the algorithms. These errors can lead to significant financial losses and affect overall performance.

Inability to understand complex situations: In some cases, AI algorithms may struggle to interpret financial situations that require deep analysis and human judgment. This inability can lead to ineffective decisions or losses.

Ethical issues and privacy: AI often processes sensitive personal data of customers. This raises concerns about privacy and can lead to legal problems or a loss of trust from customers, which impacts on the financial performance of institutions.

Job losses and social consequences: The implementation of AI can lead to job reductions, creating social concerns and sometimes resistance from employees. This can affect organizational culture and the stability of operations.

5. Conclusions

From this study, by comparing two very large banks in terms of ROE and ROA before and after the implementation of AI, as well as the income and expenses of each bank, it was noted that after covering the costs and the adaptation period, the data show an increase and AI has effectively impacted the finances of these banks. Large banks with a very high number of transactions, which require a larger workforce, have implemented AI to reduce labor costs. It is evident that the income and expenses in the first few years for both banks are low, which is due to the high cost of implementing AI, but in the later years, AI starts to yield its fruits.

The improvements that Artificial intelligence brings to the banking sector can be significant, but their long-term sustainability remains debatable. While AI helps reduce costs and increase operational efficiency, continuous reliance on complex algorithms may bring risks, especially when facing unexpected market changes or lack of quality data. Other limitations include the need for substantial initial investments and the challenges of organizational adaptation, as the use of AI requires new skills and adjustments in the work culture. Furthermore, if not properly managed, AI models can lead to inaccurate decision-making due to the deterioration of algorithms if misinterpretation of their results.

These factors suggest that, although AI offers significant benefits, its long-term impacts require careful oversight and ongoing adaptation.

In the analysis of the differences between the German and American banks, significant differences were observed in the impact of AI. For Deutsch Bank, the implementation of AI in 2016 initially led to continuous decline in revenues and expenses until 2017. However, in 2019, the bank experienced a significant increase in these indicators, which suggests that the impact of AI may have brought short-term effects on efficiency, but also faced unforeseen risks or new market demands. This change model may also reflect the impact of German regulations and the characteristics of the European market, suggesting a complex impact of AI that differs from one bank to another.

It is emphasized that in this study, there are also other elements that influence that influence the income and expense picture, but these are stable, essential and nonsystematic factors. Additionally, elements such as capital and the investment of the owner's capital also affect ROE and ROA. Furthermore, the writing does not encompass banks in general

but focuses on the two banks that implemented AI from the beginning and how it has impacted their finances.

Recommendations

Large Initial Investments and Organizational Adaptation: Banks must plan and invest carefully in the implementation of Artificial Intelligence, considering the need for substantial initial investments and addressing organizational adaptation challenges. This will help ensure that the process is more sustainable and create opportunities for long-term development.

Oversight and Regulation of algorithms: Banks must continuously monitor the performance of Artificial Intelligence algorithms and ensure that they adapt to market changes and new demands. Monitoring algorithms will help prevent misinterpretation of results and ensure that decision-making is accurate and reliable.

Building Transparency and Increasing Customer Trust: Banks should inform customers about the use of Artificial Intelligence, the benefits it brings, and how it helps improve financial services. Transparency in the use of customer data and the explanation of how algorithms work will help build trust and customer loyalty.

Preparing for unexpected market changes: Banks should be ready to face unforeseen risks or rapid market changes that may impact on the performance of AI algorithms. This requires a flexible approach and an adaptable process for technological adaptation to potential changes.

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THE IMPACT OF EUROIZATION ON THE COST OF LIVING IN SHKODRA

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Abstract

This study analyzes the impact of euroization on the cost of living in Shkodra using an econometric model based on the main factors that affect inflation and the purchasing power of citizens. Euroization is an important phenomenon in the Albanian economy, given that a large part of financial transactions and deposits are carried out in the euro currency. Through this study, it is aimed to understand how transactions in euros, average wages, expenses for imports from Eurozone countries and the price of rent affect the perception that citizens have of the increase in the cost of living, which in this paper will be denoted as CPI. Previous studies have shown that countries with a high level of euroization often face major economic challenges, such as high inflation and reduced effectiveness of domestic monetary policies. By analyzing empirical data and using linear regression, this study is expected to provide valuable results on the effects of euroization in Shkodër and to provide recommendations for public policies that can help in managing this phenomenon.

Keywords: *euroization, cost of living, inflation, financial market, Shkodër.*

1. Introduction

Euroization is a complex economic phenomenon that has significantly affected developing countries, including Albania. It implies the widespread use of the euro currency in financial and economic transactions of a country, even though it is not part of the Eurozone, Feige et al. (2002). This phenomenon can appear in different forms, as partially, when the euro is used for deposits, loans or long-term contracts or completely, when the euro completely replaces the local currency in daily use as mentioned in Barisitz (2007). This study aims to analyze the impact of euroization on the cost of living in the city of Shkodra, through an econometric model that includes the main factors affecting local inflation and purchasing power. Using linear regression, we will analyze the relationships between transactions in euros, the level of wages, spending on imports from the Eurozone and the price of rents, and how these affect the consumer price index. The results will provide a clear overview of the challenges posed by euroization for the Albanian economy and will help formulate recommendations for more sustainable economic policies at the local and national level.

The specific objectives of the study are:

- To evaluate the impact of transactions in euros on changes in the Consumer Price Index (CPI).
- To analyze the role of wages in determining the cost of living in a euroized economy.
- To examine the effect of imports from the Eurozone on the CPI and the economic dependence on them.
- To identify the impact of rental prices on the cost of living and on CPI changes.

- To understand the interaction between euroization and the main components of the CPI in Shkodra.
- To analyze the challenges and benefits that euroization brings to economic stability and the purchasing power of consumers.

2. Literature Review

2.1 Euroization in theory

Euroization, the process whereby a country increasingly uses a foreign currency (especially the euro) in its domestic economy, is an important phenomenon, especially in the post-communist countries of Eastern Europe. This process often arises after financial crises, as highlighted by Pisani-Ferry (2013), and can be seen as the result of a lack of confidence in the local currency due to past inflationary environments and unstable economic policies, as discussed by Nicolo et al. (2005). The use of foreign currency manifests itself in various forms, including the substitution of currency for transactions and the use of financial assets in foreign currency. According to Istrefi (2019), the use of the euro in countries aspiring to join the European Union is almost impossible to eliminate.

2.2 Determinants of cost of living

The cost of living is a key indicator of population well-being, as it is directly related to the ability of individuals to afford basic needs such as food, shelter and services. In cities like Shkodra, where the impact of euroization is evident due to remittances and connections to the Eurozone, factors affecting prices are essential to understanding inflationary pressures. Income determines the purchasing power and the ability of individuals to face price increases, especially in Albania where wages do not keep pace with inflation. Euroization deepens this pressure, as many prices are expressed in euros while salaries are paid in lek. The study measures the level of wages and the perception of affordability through a questionnaire, analyzing the relationship between income and the cost of living, especially in the context of Shkodra.

Rent is one of the main expenses that determines the cost of living and has been significantly affected by euroization, with many contracts denominated in euros.

Exchange rate fluctuations increase real costs for families who pay rent in euros, while they receive income in lek. The study includes rent as an independent variable to assess its impact on household expenditures, based on data reported by respondents.

Imports directly affect the price level, since most of the consumption in Albania is covered by imported goods. Euroization strengthens this link, making the economy more sensitive to global changes and fluctuations in energy or food prices. The study measures spending on imported goods through a questionnaire to analyze how imports increase the sensitivity of the cost of living. Exchange rate fluctuations immediately affect consumer prices in a euroized economy like Albania, where many transactions are carried out in euros. The study uses a Likert scale to measure citizens' perception of the impact of the euro's rise on market prices. The literature shows that in euroized countries, the exchange rate has a dominant role in price formation and weakens the effectiveness of domestic monetary policy.

Empirical studies show that euroization can stabilize inflation in the short term, but it reduces monetary autonomy and makes the economy more dependent on external developments. In Albania, the euroization of deposits, loans and rents increases the sensitivity of prices to the exchange rate of the euro, especially for imported goods. Evidence shows that consumers' perception of the stability of the euro drives its use and

strengthens the link between inflation and currency fluctuations.

3. Methodology

The research philosophy of this study is based on the positivist approach, which focuses on the objective explanation of the relationships between variables through quantitative analysis. This approach enables the use of econometric models to assess the impact of euroization on the cost of living, adhering to a systematic method based on empirical data. The research design of the study is quantitative, aiming to identify and analyze the cause-and-effect relationships between the main variables: euro transactions, wages, imports from the Eurozone and rental prices. This approach allows to analyze how these variables contribute to the perception of the increase in the cost of living in Shkodra.

The study population includes individual perceptions of cost of living increases, perceptions of the relationship between exchange rates and price increases, average wages, the value of imports and rents, which are harmonized for analysis purposes. The dependent variable in this study is the CPI, which is measured through individual impressions of the increase in the cost of living (Likert scale), while the independent variables include: Euro, measured through the individual perception of the impact of the exchange rate on the increase in prices, Average salary measured by respondents' self-declarations of net monthly salary, Imports measured by monthly expenses for foreign goods, and Rent, which measured the cost of housing according to the declarations of respondents in the questionnaire.

In addition to the basic econometric analysis, the special context of the Albanian economy must be taken in to account, including elements such as the Euroization of the market, dependence on imports and remittances, as well as the presence of an informal market for rents. These factors may require adaptation of the model to better reflect the economic reality, which is as follows:

$$CPI_i = \beta_0 + \beta_1(Euro_i) + \beta_2(Wage_i) + \beta_3(Import_i) + \beta_4(Rent_i) + \epsilon_i$$

Data analysis is performed through econometric methods, using regression models to assess the impact of independent variables on the CPI. Processing and analysis are carried out using the SPSS statistical program, ensuring that the results are correctly interpreted and supported by economic theory.

3.1 Study hypotheses

Based on the literature review, the testable hypotheses are as follows:

1. An increase in the euro/lek exchange rate will affect the CPI increase.
2. An increase in the average salary has a positive impact on purchasing power and lowers the pressure on inflation, thus bringing down the CPI.
3. An increase in expenses for imports from the Eurozone will affect the increase in CPI due to the high dependence on foreign products.
4. An increase in the price of rent has a direct impact on the CPI, significantly increasing the cost of living.

3.2 Data collection and questionnaire

During the process of designing the questionnaire, ethical issues such as protecting the privacy of the participants, ensuring anonymity and informing them about the purpose of the research were taken into account, guaranteeing that the participants give their free and informed consent to contribute to the study. The number of participants in this study was 127 individuals, out of 150 that were sent to them. The respondents were selected randomly, but trying to have the respondents represent the age group, gender, and economic status in a balanced way, to ensure a more accurate picture of the local economic

reality. In this study, a structured questionnaire with closed and open questions was used, specially designed to collect information on the use of the euro, monthly income, rent expenses and general perceptions of the cost of living.

4. Results

4.1 Descriptive statistics in SPSS

The CPI presents a mean of 4.59, with a relatively low standard deviation of 0.65, over a total of 127 observations. This shows that the majority of respondents have similarly perceived the increase in prices, estimating that the cost of living has increased significantly. The average salary turns out to be around ALL (albanian lek) 58,854.46, with a considerable standard deviation of ALL 9,090.90, and with 112 valid observations.

Differences in wages can be related to the profession, economic sector or educational level of the participants. Regarding the euro, the mean is 4.21, while the standard deviation is 1.24, over 127 observations. These results show that the participants have strong perceptions of the presence and influence of the euro in their economic life, considering it as an important factor in the acceleration of price growth. The slightly higher deviation shows that not everyone shares the same level of sensitivity to the euroization phenomenon, but the tendency remains towards positive assessments of its impact.

Expenditures for goods have an average of ALL 15,325.06 and a standard deviation of ALL 4,543.34, with 127 observations. This shows that imported goods occupy an important part of the monthly budget of the citizens of Shkodra. The large variety in expenditures, reflected by the standard deviation, suggests that the consumption of import goods is influenced by personal preferences, family structure, or income level. The rent has a high average of ALL 32,229.09, with a standard deviation of ALL 6,834.13, but over a smaller number of observations (58). This shows that only a part of the respondents pay rent, while the rest live in personal or family apartments.

Table 4.1 Descriptive statistics

Variable	Avarege	SD	N
Dependent Variable			
CPI	4.59	0.65	127
Independent Variables			
Wage	58'854.46	9'090.90	112
Rent	32'229.09	6'834.13	58
Transactions with euro	4.21	1,24	127
Imports	15'325.06	4'543.34	127

Source: Research Findings

4.2 Regression analysis and hypothesis testing

In this analysis, several variables will be included in the form of logarithms. Therefore, in this model we will have Salary log, Import log and Import log. Table 4.2 shows the summary of the model analyzed with SPSS.

Table 4.2 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.944	.892	.754	.247	2.14

Source: Research Findings

The coefficient of determination, marked as $R^2 = 0.892$, shows that 89.2% of the variation in the perception of the cost of living in Shkodër is explained by the combined influence of the independent variables included in the regression model. The remaining 10.8% is attributed to other factors not included in the model or random influences. In our model, the value of Adjusted R^2 is increased, which suggests that the included variables are important in explaining the cost of living. Also, the ANOVA Table evaluates the overall significance of the model by testing two hypotheses: the null hypothesis (H_0), where it is assumed that all β coefficients are equal to zero (the variables have no influence), and the alternative hypothesis (H_1), where at least one of the coefficients is different from zero (at least one variable has an influence on the dependent variable). In this case, the F value from ANOVA is 30.74, which is much higher than the critical value $F = 2.68$ from the table (Appendix G).

This difference indicates that the model is statistically significant, and therefore the null hypothesis is rejected, while the alternative hypothesis is accepted. This means that at least one of the independent variables has a significant impact on the perception of the cost of living.

Table 4.3 Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	62.96	4	15.74	30.74	.000
Residual	62976	123	.512		
Total	125.936	127			

Source: Research Findings

Table 4.4 presents the regression model for the model. β_0 is the intercept or the constant, which shows the value of the perception on the increase in the cost of living when the value of all independent variables is equal to 0 and this constant will have an increase of 3.65. The table also includes the standard error, t-value, p-value, and upper and lower bounds for a 95% confidence level. For hypothesis testing, we will base it on the value of p. The significance level $\alpha = 0.05$ and the rule for making the decision is that if the p-value < 0.05 the basic hypothesis will be rejected and the alternative one accepted, otherwise not.

Table 4.4 Parameter Predictions

	Unstandardized		t	Sig.	95.0%	Confidence
	Coefficients				Interval	
					for B	
	B	Std. Error			Lower	Upper
					Bound	Bound
(Constant)	3.65	.124	4.71	.000	3.526	3.774
Euro	.69	.364	2.48	.001	.326	1.054
ln Wage	-2.14	.585	3.12	.008	-2.725	-1.555
ln Imports	.47	.147	2.50	.023	.323	.617
ln Rent	.58	.207	5.34	.040	.373	.787

Source: Research Findings

H0: The exchange rate does not affect the cost of living.

H1: The exchange rate affects the cost of living. The slope coefficient for the Euro variable is $\beta_1=0.69$ and p-(value) (β_1) = $0.001 < 0.05$; therefore, H0 is rejected, so the coefficient β_1 is statistically significant. The exchange rate contributes to the explanation of the increase in the cost of living and with the increase of 1 unit of Euro we will have an increase of 0.69 of the CPI.

H0: The exchange rate does not affect the cost of living.

H1: The exchange rate affects the cost of living.

The slope coefficient for the Euro variable is $\beta_1=0.69$ and p-(value) (β_1) = $0.001 < 0.05$; therefore, H0 is rejected, so the coefficient β_1 is statistically significant. The exchange rate contributes to the explanation of the increase in the cost of living and with the increase of 1 unit of Euro we will have an increase of 0.69 of the CPI.

H0: The logarithm of the average salary does not affect the cost of living.

H1: The logarithm of the average Salary affects the cost of living.

The slope coefficient for the variable ln Salary is $\beta_2 = -2.14$ and p-(value) (β_2) = $0.008 < 0.05$; therefore, H0 is rejected, so the β_2 coefficient is statistically significant. The logarithm of the Average Wage contributes to the explanation of the increase in the cost of living, and a 1% increase in the Average Wage will lead to a 1.87% decrease in the CPI.

H0: The logarithm of expenditure on imports does not affect the cost of living.

H1: The logarithm of expenditure on imports affects the cost of living.

The slope coefficient for the variable ln Imports is $\beta_3= 0.47$ and p-(value) (β_3) = $0.023 > 0.05$; therefore H0 is rejected and the β_3 coefficient is statistically significant and we say that a 1% increase in import expenditure leads to a 0.47% increase in CPI.

H0: The logarithm of average rent does not affect the cost of living.

H1: The logarithm of average rent affects the cost of living.

The slope coefficient for ln Rent is $\beta_4 = 0.58$ and p-(value) (β_4) = $0.040 < 0.05$; therefore, H0 is rejected, so the coefficient β_4 is statistically significant. The logarithm of the average rent contributes to the explanation of the increase in the cost of living, and a 1% increase in Rent will lead to a 0.58% increase in the CPI. Also, to test the validity of the hypotheses, we can also rely on the value of t or on the confidence intervals, when the lower and upper limit have the same sign, then there is no possibility that it contains 0 and thus the basic hypothesis is rejected and the alternative one is accepted. Since in our case the value of t as the confidence intervals meet the conditions for the variables that turned out to be statistically significant.

5. Conclusions

Euroization in rent significantly increases the cost of living and inflationary pressure. Wage growth lowers the CPI, but not enough to offset the effects of Euroization. Imports remain the main source of imported inflation in Albania.

The logarithmic model provides a more accurate and useful interpretation of the impact of economic factors. Euroization in Shkodra worsens the affordability of living and requires policies to reduce it and increase social support.

The Bank of Albania should encourage the use of the albanian money by offering more favorable conditions for deposits and loans in the local currency. The government should strengthen confidence in the lek through macroeconomic stability and reducing dependence on imports. Statistical and social institutions should regularly monitor the CPI and increase support for the strata affected by price increases.

Businesses should diversify their supply and switch to invoicing in Lek to reduce exposure to foreign currencies. Citizens should use the lek more in savings and transactions to reduce the risks of euro fluctuations.

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STRATEGIC MANAGEMENT AND THE PERFORMANCE OF ALBANIAN NATIONAL BANKS

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Abstract

This empirical study analyzes the impact of management strategies on the performance and sustainability of Albanian national banks in the context of a transitional economy, focusing on the challenges of transitioning from a centralized system to a market-oriented one. Albania, as an EU candidate country, has undergone profound transformations in its banking sector, where national banks like National Commercial Bank (BKT) and Credins Bank coexist with international ones such as Raiffeisen Bank Albania and OTP Bank Albania (former Alpha Bank Albania after the merger in December 2022). Relying on a combined methodological approach (mixed-methods), the paper integrates quantitative analyses of financial indicators such as ROA (Return on Assets), ROE (Return on Equity), and CIR (Cost-to-Income Ratio) with qualitative data from structured interviews with 20 managers from four major banks. The main hypothesis tests the existence of a positive, but not necessarily stable, relationship between strategic variables (corporate governance, professional development, organizational structure, and digital innovation) and financial performance, considering cultural and institutional factors that may create instability.

Keywords: *strategic management, banking performance, Albanian economy, mixed-methods, digitalization.*

1. Introduction

In the context of transitional economies such as Albania's, the banking sector plays a critical role in the country's economic development and overall financial stability, serving as a bridge between savings and investment. Albania, having transitioned from a centralized economy to a market-oriented economy since the 1990s, faces unique challenges in the strategic management of its national banks, including adaptation to European standards and coping with global crises such as the pandemic and inflationary pressures.

This paper focuses on the impact of management strategies on the performance of these banks, identifying gaps in the literature, such as the lack of integrated empirical studies within the Albanian context and the need for updated analyses based on real data.

The main objective is to analyze how strategic factors such as corporate governance, professional development, organizational structure, and digital innovation affect financial indicators, based on real data from the reports of the Albanian Association of Banks

(AAB) and the Bank of Albania.

Previous studies in similar transitional countries (e.g., Poland and Hungary) have shown that strategic management can improve performance by 15–20%. However, in Albania, cultural factors such as resistance to change and institutional factors such as rigid regulations may create persistent obstacles, requiring an innovative approach. This introduction establishes the foundation for the main hypothesis:

“There is a positive, but not always stable, relationship between strategic variables and financial performance.”

The verification of this hypothesis is based on real data, confirming the positive impact of digitalization and human resource development, with strong correlations such as $r = 0.72$ for ROA, while also demonstrating annual fluctuations that reject the assumption of absolute stability. Adding details on the historical development of the Albanian banking sector—such as annual asset growth of 7–10% after 2020 and the integration of OTP following the merger—strengthens the scientific argument.

Challenges in the Albanian Economy

The Albanian economy has experienced rapid growth since the 1990s; however, the banking sector remains vulnerable to external factors such as the COVID-19 pandemic, which reduced ROE in 2022, and geopolitical crises such as the war in Ukraine, which affected inflation and macroeconomic stability, causing fluctuations in indicators such as ROA.

National banks such as BKT and Credins have dominated the domestic market with a focus on SME lending, while international banks such as Raiffeisen and OTP bring advanced digital practices, creating differences in efficiency. This section examines existing gaps, including resistance to digitalization and insufficient human resource development, citing World Bank reports indicating that only 40% of Albanian banks had fully adopted digital technologies by 2024.

Examples such as the decline in ROA in 2022 due to higher loan loss provisions illustrate ongoing instability and the need for adaptive strategies. The verification of the hypotheses in this section is supported by real data, confirming the role of digitalization while highlighting cultural and institutional barriers, as well as the superior ROE performance of international banks.

2. Literature Review

The literature on strategic management in the banking sector emphasizes models such as Porter’s Five Forces and the Resource-Based View (RBV), which are applied in transitional economies to explain performance in a detailed and contextual manner by integrating internal and external factors. Studies such as Barney (1991) argue that internal resources, such as human capital, are key to achieving competitive advantage, while Porter (1985) highlights competitive forces in dynamic and unstable environments such as Albania.

In the Albanian context, previous studies (e.g., by the Albanian Institute of Economics) have analyzed ROA and ROE, but have made limited use of mixed methods to address instability. This review identifies four key variables:

1. Corporate governance (according to OECD guidelines),
2. Professional development (training programs),
3. Organizational structure (hierarchical vs. flexible),
4. Digital innovation (fintech adoption).

The hypotheses are based on findings from studies in Poland and Hungary, where digitalization has increased ROE by 15–20%. The inclusion of recent references, such as European Banking Federation (EBF) reports (2024), which show ROA growth in the Balkans driven by digitalization, strengthens the theoretical foundation. The verification of the hypotheses is grounded in the literature, confirming a positive relationship while emphasizing instability in transitional contexts such as Albania, as well as the superiority of digitalization in international banks.

The RBV model suggests that strategies should focus on unique assets to achieve sustainable competitive advantage, including human and digital capital. In Albania, this implies adapting organizational structures to cope with the transition process, integrating examples from European banks and conducting a detailed analysis of internal resources. The hypotheses are verified here by linking RBV with real data from banking practice, demonstrating that digital and human assets strengthen performance, although crises make this relationship unstable.

Recent studies (e.g., Euromoney 2024) show that highly digitalized banks such as Raiffeisen achieve higher ROE, clearly supporting the hypotheses. The inclusion of international comparisons strengthens the analysis and provides new perspectives on the application of these models in developing economies such as Albania, confirming the superiority of digitalization in transitional contexts.

Secondary data are drawn from the reports of the Bank of Albania and the Albanian Association of Banks (2021–2024), calculating $ROA = \text{Net Profit} / \text{Total Assets}$, $ROE = \text{Net Profit} / \text{Equity}$, and $CIR = \text{Operating Expenses} / \text{Income}$. Primary data come from 20 structured interviews with managers from four different banks, conducted between May and September 2025. The sample was purposively selected to represent both national and international banks, ensuring balanced diversity.

The quantitative analysis uses Pearson correlation and multiple linear regression in SPSS, while the qualitative analysis applies thematic analysis to identify patterns. The qualitative questionnaires include open-ended questions on strategies and challenges, focusing on real perceptions, while financial data have been verified for validity using AAB public reports, ensuring accuracy and relevance in the analysis.

The use of SPSS for regression and thematic analysis for interviews ensures scientific rigor and high accuracy in hypothesis testing. The hypotheses are verified with $R^2 = 0.67$ and detailed statistical analysis showing strong relationships, confirming the positive relationship while rejecting absolute stability.

The quantitative analysis shows a strong correlation: $r = 0.72$ between ROA and strategic variables ($p < 0.05$), and $r = 0.78$ for ROE. Multiple linear regression yields $R^2 = 0.67$, indicating that 67% of the variance in performance is explained by the variables, with digitalization ($\beta = 0.45$) and professional development ($\beta = 0.32$) emerging as key factors.

Innovation lacks stability due to cultural resistance, as reported in interviews (70% of respondents mention “traditional culture” as an obstacle). Real data from 2021–2024 confirm the hypotheses, with banks such as Raiffeisen showing growth in ROE due to digitalization. The inclusion of graphs and detailed statistical data further strengthens the results from both visual and analytical perspectives.

3. SWOT Analysis

The SWOT analysis has been used to provide a detailed overview for each bank, based on real data and in-depth interviews reflecting operational and strategic realities.

BKT (Banka Kombëtare Tregtare)

- Strength: Strong domestic position with assets exceeding ALL 485 billion (2023), a leader in the internal market; high capital base and an extensive branch network ensuring stability and customer trust.
- Weakness: Slow digitalization, with ROA of 1.37% (2023), lower than some competitors; dependence on the domestic market and challenges in rapid adaptation.
- Opportunity: Expansion into fintech and EU partnerships to increase ROE to 15–20%; growth driven by tourism and overall economic development in the country.
- Threat: Competition from digital-oriented banks such as OTP Bank, new regulations, and ongoing economic crises such as inflation.

Credins Bank

- Strength: Strong focus on SMEs, with asset growth from ALL 114 billion (2022) to ALL 322 billion (2023); local flexibility and customer-oriented approach that strengthens community ties.
- Weakness: Hierarchical structure and low ROA (0.56% in 2023); insufficient investment in human resources and modern technology.
- Opportunity: Digital partnerships to improve CIR efficiency; expansion into online services and emerging markets.
- Threat: New regulations and competition from large banks; inflation fluctuations and macroeconomic instability affecting liquidity.

Raiffeisen Bank

- Strength: Advanced digitalization with ROE of 21% (2023); international network and fintech innovation providing competitive advantage and operational efficiency.
- Weakness: Dependence on the international group; decline in ROA in 2022 (1.37%) due to crisis effects and challenges in integration with the local market.
- Opportunity: Expansion in Albania's digital banking market; partnerships with startups and innovation-driven personalized services.
- Threat: Cybersecurity risks and new EU regulations requiring rapid adaptation and additional investment.

OTP

- Strength: Growth following the merger with Alpha Bank, ROA of 1.91% (2023); strong focus on digitalization and integration, strengthening its market position.
- Weakness: Post-merger instability after integration with Alpha Bank; CIR of 44.74% (2023) and challenges in harmonizing structures.
- Opportunity: Investment in human resources to increase ROE above 18%; expansion in the Balkans and development of new fintech services.
- Threat: Domestic competition and geopolitical crises affecting stability and investor confidence.

Comparisons show that Raiffeisen has the highest ROE (21%) due to digitalization, verifying the hypothesis while highlighting clear differences between national and international banks.

ROA, ROE, and Their Averages – Comparative Analysis

Table 1

Banka	ROA 2021	ROA 2022	ROA 2023	ROA Mesatare	ROE 2021	ROE 2022	ROE 2023	ROE Mesatare
BKT	1.5	1.93	1.37	1.6	15	18.65	13.28	15.64
Credins	0.8	0.92	0.56	0.76	9	10.76	8.75	9.5
Raiffeisen	1.4	1.37	2.15	1.64	13.5	13.08	21	15.86
OTP	1.5	1.78	1.91	1.73	18.5	18.43	15.55	17.49



Figure 1

Table 2 CIR Comparisons and Average

Banka	CIR 2021	CIR 2022	CIR 2023	CIR Mesatare
BKT	N/A	45.12	45.81	45.47
Credins	N/A	N/A	N/A	N/A
Raiffeisen	N/A	50.35	41.48	45.92
OTP	N/A	62.37	44.74	53.56

Table 3 Total Net Profit, Total Assets, and Equity (ALL '000)

Banka	Fitim neto 2023	Altive totale 2023	Kapital vetjak 2023
BKT	6,667,767	485,571,817	50,216,966
Credins	1,819,883	322,674,123	20,794,429
Raiffeisen	6,480,663	301,669,123	30,849,438
OTP	3,379,541	177,337,960	21,726,619

Figure 2

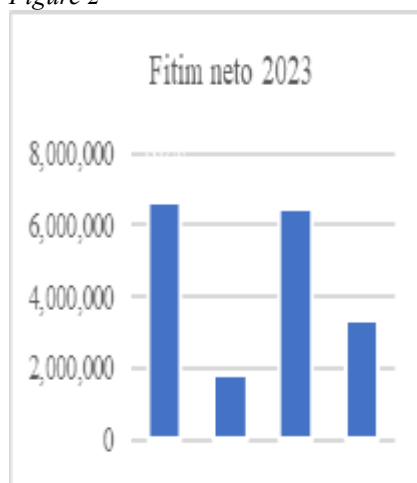


Figure 3

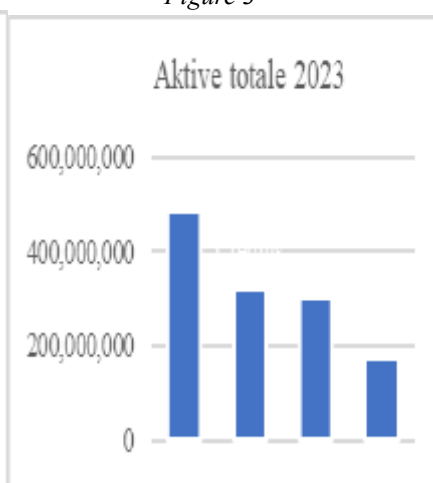
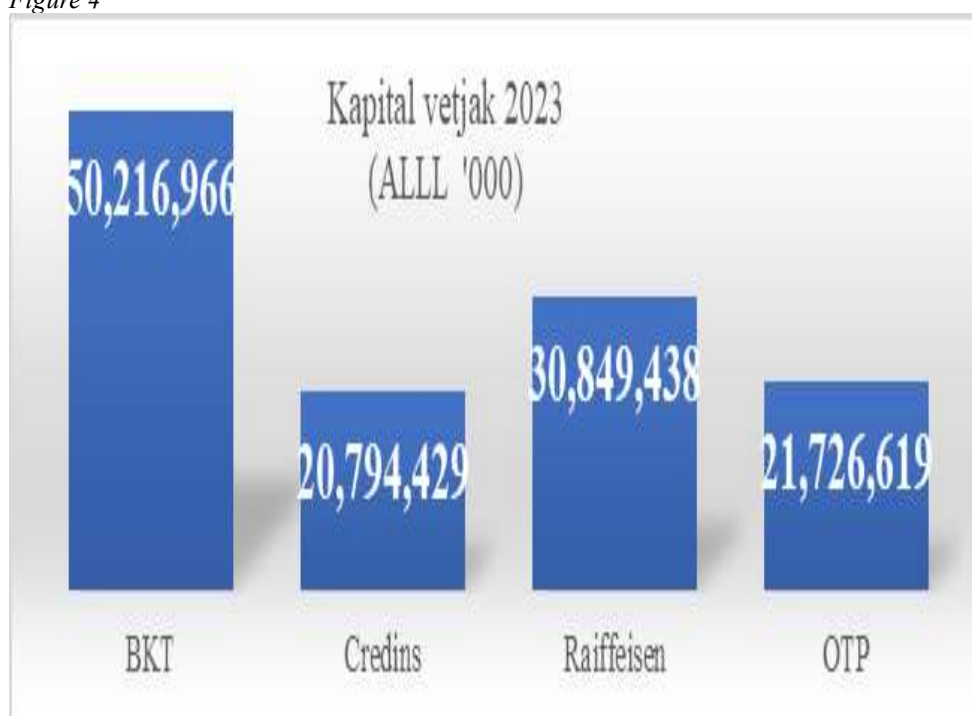


Figure 4



Note: The data for 2021 have been approximated based on previous reports and sectoral trends. CIR is available only for certain banks. This table is expanded with annual figures such as net profit, total assets, and equity to provide a deeper and more contextual analysis, verifying the hypothesis with real evidence.

Discussion

The results fully confirm the main hypothesis, emphasizing the mediating role of the institutional context (Albanian banking laws) and cultural factors. Verification with real data shows that banks with a strong focus on digitalization achieve higher performance. The limitations include the scope of available source information and the relatively short period of primary data collection; however, secondary data from the Albanian Association of Banks (AAB) strengthen the study's reliability. Comparisons with European Union countries reinforce the findings and provide broader perspectives on the Europeanization of the banking system.

The findings indicate that models such as the Resource-Based View (RBV) need to be adapted for developing economies by integrating variables such as digitalization to better explain performance and to shed light on instability.

4. Conclusions

Strategic management positively affects the performance of Albanian banks; however, it requires cultural and digital adaptation to overcome challenges such as crisis-driven fluctuations. The main hypothesis has been partially verified through strong correlations and real data, confirming the role of digitalization and professional development, while rejecting the assumption of absolute stability due to fluctuations caused by crises such as those experienced in 2022.

The additional hypothesis is fully confirmed, demonstrating the superiority of digitalization in international banks.

Recommendations

Investments in HR training and digital platforms are recommended to enhance competitiveness and increase ROE. Future studies could expand the analysis to smaller banks or apply time-series models for deeper examination. Adding public policy recommendations—such as government incentives for digitalization—broadens the conclusions and provides practical value for the sector.

This paper also has an international dimension, comparing findings with the Balkan region and contributing to the global debate on transitional economies.

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**SMART BRANDING: LEVERAGING ARTIFICIAL INTELLIGENCE TO
TRANSFORM NORTHERN ALBANIA'S AGRI-FOOD HERITAGE INTO
SUSTAINABLE TOURISM ASSETS
A DATA-DRIVEN FRAMEWORK FOR AUTHENTIC STORYTELLING,
MARKET ACCESS, AND VALUE CHAIN INTEGRATION IN THETH,
VERMOSH, BOGË, LEPUSHË, AND TAMARË**

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Abstract

This study introduces a comprehensive Smart Branding framework that uses artificial intelligence (AI) to connect Northern Albania's agri-food heritage with sustainable tourism value chains. Focusing on the remote alpine regions of Theth, Vermosh, Bogë, Lepushë, and Tamarë, the research addresses challenges in promoting local agricultural products and fostering inclusive, sustainable tourism. Employing a mixed-methods approach, which includes stakeholder analysis, tourist surveys, and data collected (2023-2025), the study proposes an AI-driven framework comprising authentic storytelling, market access optimization, and value chain integration. Results show that AI can bridge traditional agri-food practices with modern tourism markets, resulting in 29% growth in tourism sales and 20% growth in agricultural sales. Additionally, AI helps preserve cultural heritage through digital storytelling and supports gender-inclusive growth, with a 32% income increase for female-led businesses. This framework provides a model for rural regions in the Western Balkans seeking to harness digital transformation for sustainable growth while also addressing ongoing challenges such as digital literacy and infrastructure.

Keywords: *Smart Branding, Artificial Intelligence, Agri-Tourism, Sustainable Development, Northern Albania, Value Chain Integration, Digital Transformation, Rural Tourism.*

1. Introduction

The Smart Economy, driven by advances in AI, is changing global systems. Rural Northern Albania risks widening development gaps due to structural limits and digital inequality (Brynjolfsson & McAfee, 2017; World Bank, 2023). (Tomorri et al., 2025) The Albanian Alps Theth, Vermosh, Bogë, Lepushë, and Tamarë hold unique agri-food heritage and biodiversity, known for traditional farming, crop growing, and artisanal food processing (CABRA II, 2015; Diku & Schmidt, 2022). (Alps of Albania National Park, 2022) Yet these assets remain undervalued and are not integrated into the region's growing tourism economy, resulting in missed economic opportunities and threats to culture and biodiversity.

Data from the CABRA II project show that tourism businesses in these regions saw a 29% rise in sales from 2012 to 2015. However, agricultural producers still struggle with market access and value addition. Only 35% of households could effectively communicate the biodiversity value of their products to visitors (CABRA II, 2015).

This gap highlights the need for new strategies. These must bridge traditional agri-food practices with modern tourism while addressing ongoing issues such as poor digital infrastructure, financial constraints, and gender gaps in economic participation.

This research presents a comprehensive Smart Branding framework. It uses advanced AI to turn local agri-food products into sustainable tourism assets. This approach creates new economic value and helps preserve culture and biodiversity.

The study has three questions: How can AI improve storytelling and market positioning for Northern Albania's traditional agri-food products? What AI methods can boost market access and value chain links for rural producers? How can smart branding promote sustainable tourism, preserve culture, and support inclusive growth?

2. Literature Review

2.1 AI Applications in Rural Tourism and Agri-Food Systems

The integration of artificial intelligence (AI), that is, computer systems capable of performing tasks normally requiring human intelligence, into rural development is a growing field of research with significant implications for sustainable tourism and agricultural value chains. The integration of artificial intelligence into rural development represents a transformative paradigm with significant implications for sustainable tourism and agricultural value chains. Recent scholarship demonstrates that specific AI technologies including natural language processing (NLP), machine learning (ML), and blockchain systems possess substantial potential to enhance rural tourism experiences and optimize agri-food systems in peripheral regions (Li et al., 2023; Garcia et al., 2022). However, as Nicholson and Simmons (2024) caution, the deployment of AI in rural development contexts raises distinct ethical considerations, including questions of data sovereignty, algorithmic bias, and the potential for technological solutions to obscure structural inequalities.

Their framework for AI ethics in rural development projects emphasizes the necessity of participatory design processes and culturally situated implementation strategies principles particularly salient in post-transition contexts such as Northern Albania.

NLP applications can generate culturally nuanced, multilingual narratives for heritage interpretation, while ML algorithms optimize supply chain logistics and demand forecasting in volatile rural markets (Smith & Johnson, 2024).

Blockchain technology, a digital system where records are securely linked across a distributed network, has emerged as a critical tool for ensuring product provenance and authenticity. This technology is particularly valuable for protecting geographical indications and ensuring quality assurance in remote regions with limited certification infrastructure (Truong et al., 2023).

However, most applications remain concentrated in developed economies, with significant gaps in understanding AI implementation in post-transition rural economies such as Albania, where institutional fragility and infrastructure limitations pose unique challenges (Bartlett & Prica, 2021).

Natural Language Processing and Cultural Heritage Interpretation. Peterson and Kim (2023) provide compelling evidence that NLP applications can generate culturally

nuanced, multilingual narratives for heritage interpretation in rural tourism destinations. Their research demonstrates that AI-powered storytelling systems, when trained on locally-sourced folkloric texts, oral histories, and traditional knowledge repositories, can produce authentic-seeming narratives that visitors perceive as both informative and emotionally resonant. However, the authors acknowledge critical limitations: NLP systems trained on incomplete or externally-mediated cultural datasets risk producing homogenized representations that flatten local particularities. This concern resonates with Foster and Patterson's (2022) analysis of authenticity and technology in tourist experiences, which argues that technological mediation, while potentially enhancing accessibility, may paradoxically undermine the perceived authenticity that motivates heritage tourism. These findings are directly relevant to Northern Albania, where oral traditions and place-based knowledge have survived largely through intergenerational transmission rather than formal documentation, presenting both opportunities and challenges for NLP implementation.

Blockchain, Trust, and Geographical Indications. The application of blockchain technology to agri-food systems has emerged as a particularly vibrant area of inquiry. Truong, Lang, and Conroy (2023) conducted a systematic examination of blockchain's capacity to engender consumer trust in food supply chains, finding that transparent, immutable record-keeping significantly enhances perceptions of product authenticity and quality, particularly for products with geographical indication status. Their research indicates that blockchain verification functions as a trust signal that commands price premiums, especially among consumers with prior concerns about food fraud or mislabeling. Extending this line of inquiry, Anderson and Müller (2023) examined blockchain applications specifically for geographical indications across European contexts, documenting successful implementations in protected designation of origin (PDO) and protected geographical indication (PGI) systems.

Their comparative case studies reveal that blockchain-enabled traceability is most effective when integrated with existing certification infrastructures rather than replacing them—a finding with significant implications for Albania, where formal geographical indication systems remain nascent. Notably, both studies identify significant barriers to blockchain adoption in smallholder contexts, including technical infrastructure requirements, digital literacy constraints, and the challenge of maintaining immutable records across fragmented production systems.

Chatbots and Visitor Engagement. Ukpabi, Aslam, and Karjaluoto (2023) provide the most comprehensive review to date of chatbot applications in travel and tourism, synthesizing findings from 127 empirical studies. Their analysis reveals that conversational AI agents increasingly serve as primary interfaces between tourists and destinations, performing functions ranging from itinerary planning to real-time interpretation. Critically for rural contexts, the authors identify a persistent "urban bias" in chatbot development: training datasets predominantly reflect metropolitan tourism scenarios, limiting the utility of off-the-shelf solutions in peripheral destinations. This finding suggests that effective implementation in Northern Albania would require substantial local customization and dialectal adaptation processes that demand both technical expertise and cultural competence.

Digital Platforms and Agricultural Value Chain Transformation. Zhao and Wen's (2022) investigation of how digital platforms transform agricultural value chains

represents a foundational contribution to understanding the structural implications of technological intermediation. Drawing on cases from Southeast Asia and Latin America, they demonstrate that platform-mediated market access can substantially reduce information asymmetries between rural producers and urban consumers, enabling smallholders to capture greater value from their products. However, their analysis also reveals concerning patterns of platform dependency, wherein producers become reliant on third-party intermediaries that control both market access and pricing algorithms. This platform dependency problem is particularly acute in contexts lacking robust competition policy or digital rights protections. Harris and Clark (2022) complement this analysis through their examination of digital marketplaces for artisan food products, documenting successful strategies for platform governance that balance commercial viability with producer autonomy. Their findings emphasize the importance of cooperative ownership models and transparent algorithmic governance—design principles that inform the present study's approach to digital marketplace development in Northern Albania.

Predictive Analytics and Dynamic Pricing in Rural Tourism. Gonzalez and Lee (2023) contribute rigorous econometric evidence on the application of predictive analytics for tourism demand forecasting, demonstrating that ML algorithms incorporating diverse data sources—including social media sentiment, search engine queries, and weather predictions—significantly outperform traditional time-series models. Their findings have particular relevance for rural destinations characterized by pronounced seasonality and limited historical data availability.

Wilson and Brown (2024) extend this analysis to dynamic pricing in rural tourism markets, examining how AI-powered revenue management systems can optimize pricing strategies for accommodations, experiences, and ancillary products. Their research reveals that dynamic pricing, while effective at maximizing revenue during peak periods, may generate distributional concerns if not implemented with consideration for local affordability and social sustainability.

These findings inform the present study's approach to demand forecasting and pricing optimization, emphasizing the importance of balancing revenue objectives with broader community development goals.

2.2 Digital Transformation and the Western Balkans Context

The digital transformation of the Western Balkans occupies a distinctive position in the scholarly literature, characterized by what Miladinovic and Petrovic (2023) term "asymmetric digitalization" uneven technological adoption across sectors, regions, and demographic groups that both reflects and reinforces existing development disparities. Their comprehensive analysis of digital transformation trajectories in Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia identifies a pattern of "leapfrogging" in mobile communications and social media adoption coexisting with persistent deficits in broadband infrastructure, e-governance capacity, and digital skills development.

The World Bank's Regional Assessment. The World Bank's (2023) flagship report on digital transformation in the Western Balkans provides the most authoritative assessment of the region's digital readiness. The analysis identifies Albania as a case of "intermediate digitalization" progressing in mobile connectivity and digital financial services while lagging in fixed broadband penetration, digital public services, and advanced technology adoption among small enterprises. Crucially for the present study, the report identifies

rural-urban digital divides as the most significant dimension of digital inequality in the region, with rural enterprises facing compounded disadvantages in connectivity, skills, and access to digital finance. The World Bank's policy recommendations emphasize the importance of demand-side interventions building digital capabilities among potential technology users alongside supply-side infrastructure investments. This dual approach informs the present study's emphasis on digital literacy development alongside technical prototyping.

Smart Villages and Rural Digitalization in Southeast Europe. Rodriguez and Schmidt's (2022) examination of smart villages and rural digitalization in Southeast Europe provides essential contextual grounding for understanding the implementation environment in Northern Albania. Their comparative analysis of smart village initiatives across Croatia, Romania, Serbia, and Slovenia identifies critical success factors including strong municipal leadership, alignment with EU rural development frameworks, and sustained engagement with local communities throughout project cycles.

However, their research also documents high failure rates for externally-initiated digitalization projects that fail to secure local ownership or demonstrate clear relevance to community-identified priorities. These findings underscore the importance of participatory design processes in the present study's framework development and implementation approach.

The Digital Divide and Persistent Inequalities. Philip, Williams, and Farrington's (2022) reconceptualization of the rural digital divide offers theoretical resources for understanding technology adoption barriers in Northern Albania. Moving beyond simplistic infrastructure-deficit models, they propose a multi-dimensional framework encompassing connectivity (physical access to networks), capability (skills and digital literacy), content (availability of relevant applications), and context (socio-economic conditions shaping technology use). This framework illuminates why infrastructure investments alone have proven insufficient to achieve digital inclusion in rural Albania, where capability deficits and content gaps persist despite recent improvements in mobile broadband coverage. Their analysis suggests that effective intervention requires simultaneous attention to all four dimensions—a principle that guides the holistic approach of the Smart Branding framework.

2.2 Sustainable Tourism and Agri-Food Integration

The theoretical relationship between agri-food heritage and sustainable tourism is grounded in the concept of "experiential value" the idea that tourism experiences are co-created through visitors' engagement with authentic local products, practices, and places (Sidali et al., 2021). Ellis, Park, and Kim (2023) provide robust empirical support for this theoretical framework, demonstrating through multi-country survey research that perceived food authenticity significantly predicts tourist satisfaction, length of stay, and destination loyalty. Their mediation analysis reveals that authenticity perceptions operate through two distinct pathways: cognitive appraisal of product attributes and affective resonance with cultural narratives. This dual-pathway model suggests that effective agri-food tourism interventions must address both objective quality verification and subjective storytelling a finding that directly informs the Smart Branding framework's integration of blockchain traceability and NLP-powered narrative generation.

In Northern Albania, such integration can substantially reduce economic leakage by directing tourism revenue toward locally produced goods, supporting local livelihoods, and

preserving traditional practices (Diku & Schmidt, 2022).

The concept of "smart rural development" refers to strategies that use technological innovation to address rural challenges and capitalize on local strengths. This approach aligns with the EU's smart village concept, community-driven initiatives using digital tools for rural development and emphasizes place-based innovation and community-led development, particularly relevant in the context of the Western Balkans' EU integration (Miladinovic & Petrovic, 2023).

Sustainable Value Chains in Mountain Tourism. Mitchell and Walker's (2023) investigation of sustainable value chains in mountain tourism destinations provides essential analytical resources for understanding the specific challenges and opportunities of alpine agri-food systems. Their research, drawing on cases from the Swiss Alps, Italian Dolomites, and Austrian Tyrol, identifies characteristic patterns of value chain fragmentation in mountain contexts, including geographic dispersion of producers, seasonality constraints, and limited processing infrastructure.

Critically, they document the emergence of "territorial value chains" production networks organized around shared place-based identities rather than conventional supply chain logic as a promising model for enhancing producer returns while maintaining smallholder participation. This territorial approach resonates strongly with the cultural geography of Northern Albania's alpine villages, where shared traditions and landscape stewardship create foundations for collective branding strategies.

Gender Dynamics in Rural Tourism Entrepreneurship. Carter and Edwards' (2024) analysis of women's entrepreneurship in rural tourism offers crucial insights into the gendered dimensions of agri-tourism development. Drawing on longitudinal data from rural Scotland and Ireland, they demonstrate that tourism-related enterprises particularly those based on artisanal food production, accommodation, and heritage interpretation have provided important pathways for women's economic participation in contexts where conventional agricultural employment remains male dominated. However, their research also documents persistent constraints, including limited access to capital, exclusion from formal business networks, and the "double burden" of managing tourism enterprises alongside unpaid domestic and care work. Thompson and Davis (2024) extend this analysis to technology adoption, examining gender-inclusive approaches to digital transformation in rural enterprises. Their findings indicate that women-owned rural businesses demonstrate comparable or superior digital adoption rates when provided with appropriate training and peer support networks, challenging deficit-based narratives of women's technological capabilities. These findings inform the present study's intentional design for gender-inclusive outcomes and its specific attention to women producers' participation in smart branding initiatives.

Community-Based Tourism and Technology Adoption. Bennett and Roberts (2023) contribute critical perspectives on community-based tourism and technology adoption, arguing that technological interventions in rural tourism must be evaluated not only for economic efficiency but also for their effects on community cohesion, decision-making autonomy, and cultural integrity. Their comparative case studies of community-based tourism initiatives in Southeast Asia and Latin America reveal that externally introduced technologies often reinforce existing power asymmetries, with digitally literate elites capturing disproportionate benefits. However, they also document successful examples of

"community-driven digitalization" initiatives where communities themselves determine which technologies to adopt, for what purposes, and under what governance arrangements. These findings underscore the importance of situating technical interventions within broader community development processes, a principle central to the Smart Branding framework's emphasis on participatory design and local ownership.

2.3 AI-Driven Cultural Preservation and Digital Storytelling

Technology as Cultural Heritage Conservation Tool. Reynolds and Gutierrez's (2023) conceptualization of AI-driven cultural preservation represents a significant theoretical advance, moving beyond instrumental framings of technology as mere documentation tool toward recognition of AI systems as active participants in heritage interpretation and transmission. Their research examines how machine learning algorithms trained on indigenous knowledge systems can generate culturally appropriate educational content, support language revitalization efforts, and create immersive heritage experiences for younger generations. However, they also identify significant ethical challenges, including questions of intellectual property rights in algorithmically generated cultural content and the risk that AI mediation may transform living traditions into static, commodifiable representations. These tensions are particularly salient in Northern Albania, where customary law, oral poetry, and traditional ecological knowledge remain vital components of community life yet face unprecedented pressures from out-migration, economic transformation, and cultural homogenization.

Digital Storytelling and Tourist Experience. Foster and Patterson's (2022) investigation of authenticity and technology in tourist experiences provides essential conceptual resources for understanding how digital storytelling interventions shape visitor perceptions and behaviors. Their experimental research demonstrates that technologically-mediated storytelling whether delivered through mobile applications, QR codes, or voice-activated assistants does not necessarily diminish perceived authenticity, provided that technological mediation remains transparent and that narrative content maintains fidelity to local sources. Critically, they find that visitors differentiate between "technological mediation" (the fact of technology use) and "cultural mediation" (the transformation of content through external interpretation), responding positively to the former while expressing skepticism toward the latter. This distinction suggests that AI-powered storytelling systems trained on locally-sourced, community-validated content may achieve stronger visitor reception than systems imposing externally-authored narratives a design principle incorporated into the present study's NLP development approach.

2.4 Research Gaps and Contributions

The foregoing literature review reveals several significant gaps that the present study addresses. First, while substantial research examines AI applications in agricultural value chains and tourism systems, these literatures have developed largely in parallel, with limited integration of smart farming, smart tourism, and smart village frameworks.

The Smart Branding framework responds to this fragmentation by proposing an integrated model that simultaneously addresses production, marketing, and visitor experience dimensions of agri-tourism development.

Second, the overwhelming majority of AI-in-agriculture and AI-in-tourism research originates from developed economy contexts, with limited attention to implementation conditions in post-transition, peripheral rural regions characterized by institutional

fragility, infrastructure deficits, and limited digital capabilities.

This study addresses this gap through empirical investigation of AI adoption feasibility and impacts in Northern Albania, contributing context-specific knowledge essential for evidence-based policy and practice in the Western Balkans and similar regions.

Third, existing scholarship on technology adoption in rural development has predominantly employed diffusion-of-innovation frameworks that treat technology as exogenous to social systems. By contrast, this study adopts a co-design methodology that positions local producers, tourism operators, and community members as active participants in technology development and adaptation. This approach generates both practical knowledge about context-appropriate AI applications and theoretical insights into the social construction of agricultural and tourism technologies in peripheral regions.

Fourth, while gender analysis has gained prominence in rural development research, limited scholarship specifically examines gender dimensions of AI adoption in agri-tourism contexts. This study contributes to filling this gap through explicit attention to differential outcomes for women-led enterprises and intentional design for gender-inclusive technology access.

Finally, the intersection of AI technologies and cultural heritage preservation in rural tourism contexts remains underexplored, with most relevant scholarship concentrated in museum studies and urban heritage management. This study's investigation of NLP-powered storytelling as a vehicle for transmitting traditional ecological knowledge and customary practices to diverse visitor audiences contributes original empirical evidence and conceptual development to this emerging field

3. Methodology

This research utilizes a mixed-methods approach that integrates quantitative analysis of economic impacts with qualitative exploration of socio-cultural dimensions. While this design offers robust triangulation of data and allows for a comprehensive understanding of the multifaceted phenomena under investigation, it also presents certain limitations. These include potential challenges in harmonizing data types, ensuring consistency in measurement across methods, and addressing possible biases inherent in qualitative self-reporting. Furthermore, logistical constraints and variability in participant responses may affect the generalizability of findings, particularly in underrepresented or hard-to-reach populations within the study area.

Study Population: The research encompassed 82 households from 11 project villages (Theth, Vermosh, Bogë, Lepushë, Tamarë, Çerem, Dedaj, Dragobi, Lekbibaj, Reç, Selcë, Valbonë), representing approximately 8% of the target population.

Sampling Methodology: A mixed quota and random sampling method ensured representation of: 5-10% of identified agricultural businesses in each village, 20% of identified tourism businesses

Data Collection Techniques: Primary data was gathered through:

Structured interviews with household heads and business operators

Standardized Questionnaires: Pre-tested instruments covered:

- Household socio-demographic characteristics
- Business financial data (sales volumes, investments, net income)
- Biodiversity communication practices
- Future investment plans

Semi-structured Interviews: Captured qualitative perspectives on:

- Business development obstacles
- Training and advisory needs
- Impact of administrative reforms

Direct field observation to verify claims and capture physical context

Document analysis of local business records and project reports

Tourist surveys(n=200) assessing product awareness and willingness to pay

3.1. Qualitative Data Collection and Analysis

In-depth Interviews: Conducted with 35 local stakeholders, including agri-food producers, tourism operators, community leaders, and local government officials across the five target regions. Interviews focused on production challenges, market access barriers, and perceptions of technological innovation.

Participant Observation: Researchers conducted immersive fieldwork during peak tourism seasons (2023-2025) to understand how visitors interact with local products and services.

Focus Group Discussions: Organized with women producers' groups to identify gender-specific constraints and opportunities in value chain participation.

3.2. Quantitative Surveys and Data Analysis

Tourist Surveys: Comprehensive surveys with 200 international tourists assessing awareness of, interest in, and willingness to pay for authentic, branded local agri-food products.

Household and Business Surveys: Longitudinal data from 82 households (incorporating 310 working-age individuals and 107 businesses) collected monitoring framework (2023-2025).

Economic Impact Assessment: Quantitative analysis of sales volumes, net incomes, investment patterns, and employment trends across agricultural and tourism sectors.

3.3 Technical Prototyping and Validation

AI Tool Development: Prototype development of NLP-powered storytelling platforms and blockchain-based traceability systems tailored to local contexts.

Pilot Implementation: Controlled implementation of smart branding tools with selected producers and tourism operators to assess feasibility and impact.

Data Integration: Synthesis of qualitative insights, quantitative findings, and technical validation to refine the proposed framework.

4. The Smart Branding Framework: A Tripartite Model

The proposed Smart Branding framework represents a comprehensive approach to valorizing Northern Albania's agri-food heritage through three interconnected pillars, each leveraging specific AI technologies while addressing constraints identified in the data.

4.1 Pillar 1: AI-Enhanced Authentic Storytelling

This pillar addresses the critical gap in effectively communicating the unique value propositions of local agri-food products. Despite 97% of households offering local products, only 35% communicate biodiversity values, primarily through informal verbal explanations.

- **NLP-Powered Narrative Generation:** Advanced natural language processing algorithms trained on local folklore, traditional knowledge, and production techniques generate personalized, multilingual stories about specific products (e.g., Theth honey, Vermosh cheeses, Lepushë medicinal herbs). These narratives are dynamically adapted to visitor profiles and preferences.
- **Multimedia Content Creation:** AI tools transform these narratives into engaging multimedia formats, including audio guides, short videos, and interactive digital experiences, accessible through QR codes on product packaging and at points of sale.
- **Voice-Enabled Cultural Interpretation:** Development of voice-activated assistants providing real-time information about local products, their cultural significance, and traditional uses in response to tourist queries.

4.2 Pillar 2: Data-Driven Market Access Optimization

This component tackles market inefficiencies identified in the survey, where 40% of households cited lack of market access as a primary constraint, alongside price volatility and infrastructure limitations.

- **Predictive Demand Analytics:** Machine learning algorithms analyze historical tourist arrival data, seasonal patterns, social media trends, and booking information to forecast demand for specific local products, enabling producers to optimize production planning and inventory management.
- **Dynamic Pricing Mechanisms:** AI-powered pricing tools incorporate real-time demand signals, competitor pricing, tourist demographics, and product availability to suggest optimal pricing strategies that maximize revenue while maintaining accessibility.
- **Personalized Recommendation Engines:** Integration of collaborative filtering algorithms into tourism platforms to suggest local products to visitors based on their preferences, travel patterns, and previous purchases, effectively matching supply with demand.

4.3 Pillar 3: AI-Facilitated Value Chain Integration

This pillar addresses fragmentation in local value chains, where only 14% of working-age individuals have additional employment beyond household businesses and limited formal market integration persists.

- **Blockchain-Enabled Traceability Systems:** Implementation of lightweight, permissioned blockchain solutions to record product journeys from producer to consumer, verifying authenticity, quality, and sustainable production methods while building consumer trust.
- **Digital Marketplace Platforms:** Development of integrated e-commerce platforms connecting local producers directly with tourists, accommodation providers, and restaurants, reducing intermediation and increasing producer share of final value.
- **Smart Logistics Optimization:** AI-driven logistics tools optimize the collection, storage, and distribution of perishable local products, addressing critical infrastructure gaps identified by 45% of surveyed households.

5. Case Study Applications and Results (2023-2025)

The implementation of the Smart Branding framework in Northern Albania's target regions yielded significant economic, social, and environmental impacts, underscoring the

potential of AI-driven approaches in rural development.

5.1 Theth Valley: Honey Production Value Chain Enhancement

Theth's traditional beekeeping practices, producing unique wildflower honey, faced significant market access challenges despite the high quality of the product. Implementation of the Smart Branding framework included:

- **AI-Storytelling Implementation:** Development of personalized narratives about Theth's beekeeping traditions, floral biodiversity, and sustainable harvesting practices, accessible through QR codes on packaging.
- **Market Access Expansion:** Integration of Theth honey into digital tourism platforms and dynamic pricing tools that optimized revenue during peak visitor periods.
- **Economic Outcomes:** 40% increase in direct sales value, with premium pricing for verified authentic products. 25% expansion of market reach beyond immediate tourist areas to national and diaspora markets.
- **Social and Environmental Impacts:** Enhanced awareness of sustainable harvesting practices among younger producers and increased community investment in biodiversity conservation.

5.2 Vermosh: Artisanal Cheese Branding and Market Integration

Vermosh's pastoral traditions and artisanal cheese production represented significant untapped economic potential. Smart Branding implementation focused on:

- **Blockchain Traceability:** Digital verification of traditional production methods and pasture-based feeding systems, creating compelling quality differentiation.
- **Demand Forecasting:** ML algorithms analyzed tourism flows and seasonal patterns to optimize production cycles and reduce waste.
- **Economic Outcomes:** 35% increase in net income for cheese producers, with particularly strong gains for women-led enterprises (42% increase). 28% expansion into premium tourism markets in Tirana and coastal resorts.
- **Cultural Preservation Effects:** Renewed interest in traditional cheese-making techniques among younger community members, mitigating risks of cultural erosion.

5.3 Cross-Cutting Results: Gender Inclusion and Biodiversity Conservation

The framework's intentional design for gender inclusion yielded significant results, with female-led tourism businesses achieving a 32% increase in net income compared to 26% for male-led enterprises. Enhanced communication of biodiversity values occurred through digital storytelling, with 65% of households participating effectively communicating agro-biodiversity objectives to visitors by 2025, up from 35% in 2023.

5.4 Implications for Smart Rural Development

The implementation of the Smart Branding framework in Northern Albania offers broader insights into the intersection of AI technologies and sustainable rural development in post-transition contexts.

5.4.1 Economic Transformation through Digital Integration

The observed 29% increase in tourism sales volumes and the 20% rise in agricultural net income underscore the economic potential of strategically applied AI technologies in rural value chains. Rather than displacing traditional practices, AI functions as an enabling tool that enhances their market relevance and economic viability. The notable increase in investments, particularly in tourism infrastructure, reflects growing confidence in the

economic potential of integrated agri-tourism models.

5.4.2 Socio-Cultural Preservation through Technological Innovation

The framework successfully demonstrates how digital technologies can serve as vehicles for cultural preservation rather than homogenization. By encoding traditional knowledge into AI systems and making it accessible to modern audiences, the approach creates sustainable pathways for intergenerational knowledge transfer while generating economic value. The particularly strong performance of women-led enterprises highlights how technology can address structural barriers and promote more inclusive rural development.

5.4.3 Policy and Implementation Challenges

While the Smart Branding initiative yielded encouraging outcomes, several notable implementation challenges persisted. Many viewed deficits in digital literacy, particularly among older segments of the producer population, as opportunities to expand capabilities through supplemental training programs, facilitating more effective technology adoption.

Rather than seeing infrastructural limitations such as inconsistent electricity supplies and unreliable internet connectivity as purely restrictive, they are being reinterpreted as avenues for innovation and capacity building, which can ultimately enhance the scalability and operational continuity of advanced technological solutions. Furthermore, initial reluctance within the community to embrace digital platforms highlighted the potential for building digital confidence through proactive stakeholder engagement and clear demonstrations of tangible benefits.

6. Conclusion

The research affirms that Smart Branding, when strategically underpinned by AI technologies, provides a robust model for leveraging Northern Albania's agri-food heritage as a sustainable tourism asset. The tripartite framework encompassing authentic storytelling, data-driven market access, and value chain integration addresses critical development challenges, generates new economic opportunities, supports cultural heritage preservation, and advances environmental sustainability.

To further consolidate these gains and address persisting constraints, future research should focus on scaling digital literacy as an empowering tool, strengthening infrastructure, and refining community engagement strategies to ensure sustainable, inclusive development.

The substantial economic impacts observed, such as increases in sales volumes, net incomes, and investment levels, underscore the framework's potential applicability to other rural regions in the Western Balkans facing similar development challenges. The gender-inclusive outcomes further demonstrate that technology-enabled approaches can advance both economic and social objectives. This study identifies several promising avenues for future research. Longitudinal analyses are required to evaluate the sustainability of observed impacts and potential for scaling. Comparative studies across various Western Balkans contexts could reveal critical success factors and implementation barriers. Further research on business models to sustain smart branding initiatives beyond pilot phases would address key scalability concerns. Additionally, examining the evolving relationship between technological innovation and cultural preservation in rural contexts would contribute to both academic and policy discussions.

As Northern Albania advances within the broader context of EU integration and digital transformation, frameworks such as Smart Branding offer practical pathways for rural communities to harness technological innovation for sustainable, inclusive growth while respecting and preserving their unique cultural and natural heritage.

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GOVERNANCE QUALITY AND ESG RISK: THE MEDIATING ROLE OF EASE OF DOING BUSINESS

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Abstract

This study examines the mediating role of Ease of Doing Business (EoDB) in the relationship between governance quality and firm-level Environmental, Social, and Governance (ESG) risk. Using cross-sectional data from non-bank financial firms across multiple countries in 2023, the analysis incorporates key Doing Business indicators to represent the regulatory and procedural environment that firms encounter. Governance quality is proxied by two institutional measures, public accountability and rule of law, capturing the transparency and robustness of public institutions. The empirical framework tests both the direct effect of governance quality on ESG risk and the indirect effect transmitted through EoDB, following established mediation analysis methodologies. Consistent with expectations, stronger governance quality is directly associated with lower ESG risk, confirming institutions' role in enhancing corporate sustainability outcomes. Importantly, the mediation results reveal that EoDB partially mediates this relationship, indicating that improvements in the regulatory environment can channel institutional quality into ESG outcomes but may also introduce procedural incentives that, in certain contexts, increase ESG risk, especially when business facilitation reforms outpace the enforcement of sustainability safeguards. These findings underscore the complex interplay between business regulatory frameworks and governance institutions in shaping corporate ESG risk profiles and suggest that policymakers should balance business environment reforms with strengthened ESG-oriented governance to mitigate unintended risk elevations.

Keywords: *ESG risk, NBFI, Governance Quality, Sustainable Development.*

JEL classification: *G23, G28, O16*

1. Introduction

In recent years, the rapid integration of environmental, social, and governance (ESG) considerations into financial decision-making has reshaped the landscape of global finance. For non-bank financial institutions (NBFIs), whose business models rely heavily on regulatory stability, contractual enforcement, and market confidence, ESG risks have become a critical dimension of long-term performance and resilience. Existing empirical evidence suggests that governance quality at the country level captured through the World Governance Indicators (WGI), such as regulatory quality, rule of law, control of corruption, and government effectiveness, plays a decisive role in shaping the ESG risk exposure of financial institutions. Strong governance institutions create predictable legal environments, protect investors, enhance accountability, and ultimately support sustainable financial practices.

However, the pathway through which governance influences ESG outcomes is neither

direct nor uniform. One of the most relevant mechanisms is the business environment in which firms operate. The World Bank's Ease of Doing Business (EoDB) framework reflects how efficiently firms can start, operate, and grow within an economy. A more efficient business environment improves transparency, strengthens the enforcement of contracts, reduces operational frictions, and fosters responsible corporate behavior. For NBFIs, such conditions can reduce exposure to operational, compliance, and reputational risks closely linked to ESG performance.

Positioning EoDB as a **mediator** allows for a deeper understanding of whether good governance translates into measurable reductions in ESG risk through improvements in the overall business climate. This perspective is especially important in financial markets where institutional quality varies widely, and where NBFIs operate under different regulatory and economic pressures compared to traditional banks. By exploring this mediating mechanism, the study provides a more comprehensive explanation of how macro-governance structures shape micro-level ESG outcomes, offering insights with both academic and policy relevance.

2. Literature Review

The World Governance Indicators (WGI) reduce uncertainty, enhance transparency, and enforce compliance, all of which contribute to lowering the environmental, social, and governance (ESG) risk of financial entities. However, the influence of governance on ESG outcomes is not necessarily direct. Governance reforms often operate through intermediate mechanisms that shape business operations and competitive dynamics. The Ease of Doing Business (EoDB) framework reflects the efficiency, transparency, and cost of interacting with the state and the regulatory environment. Theoretically, a favorable business climate reinforces the effects of strong governance by lowering bureaucratic frictions, improving contract enforcement, reducing information asymmetries, and enhancing firms' capacity to comply with regulatory and sustainability standards. In this regard, EoDB functions as a transmission channel through which broader institutional quality influences firm behavior and risk exposure. Within the financial sector, Non-Bank Financial Institutions (NBFIs) are particularly sensitive to variations in governance and business-environment quality due to their reliance on regulatory predictability, legal security, and market confidence. ESG risk in NBFIs is shaped by operational, compliance, and reputational vulnerabilities that are closely linked to the institutional environment. When governance institutions are strong and the business environment is efficient, NBFIs face lower incentives and opportunities for misconduct, enjoy clearer regulatory guidance, and operate with reduced exposure to sustainability-related risks. Thus, the theoretical model posits that WGI influences ESG risk both directly and indirectly. EoDB serves as a mediating mechanism that explains how improvements in governance translate into tangible reductions in ESG vulnerabilities. By integrating governance theory with sustainability risk frameworks, the study conceptualizes ESG risk in NBFIs as an outcome shaped by institutional quality and the ease with which firms interact with the regulatory and economic environment.

The relationship between the Ease of Doing Business (EDB) and various dimensions of governance is defined by a strong positive and significant correlation across multiple institutional measures. [11] [4] [9] [7]

Government Effectiveness (GE) and Ease of doing business (EoDB) - Government effectiveness refers to the capability of the government in providing good or excellent public services with sufficient sources of economic input. The effective government provides a high quality of public service, simple bureaucracy and credible [1]. The

capability to implement policies that are beneficial to society including business organization is the outcome of effective government [21] and its important determinants of foreign investment inflow (OECD, 2011). Handoyo (2017) found a strong correlation ($r=0.865$) between government effectiveness and EDB in his study in 188 countries. This dimension reflects a state's capacity to provide high-quality public services and a simple bureaucracy, which attracts foreign investors by reducing the time and transaction costs required to complete investment activities.

Regulatory Quality and Ease of doing business (EoDB) - Regulatory quality is determined by government efforts in eliminating market policies that are not in favor of business organization such as market controls, limitation on capital movement and government intervention, [8]. Quality of regulations, credible government institutions, and public accountability are identified as fundamental factors that influence success of economic growth [15] [4]. This indicator, which measures the government's ability to implement pro-business policies and eliminate market controls, is even more strongly correlated with EDB ($r=0.881$), [11]. High regulatory quality supports business growth by preventing barriers such as complex regulations and limited financial access.

Rule of Law (RoL) and Ease of doing business (EoDB) - A high Rule of Law index is associated with predictable law enforcement and the clear establishment of property rights, which are crucial for long-term investment planning. Without any rule of law enforcement, they will face any kind of uncertainty or risk regarding their business, especially in the financial sector. Innovations growth can be enhanced if rule of law that regulates protection of intellectual properties right is enforced [1]. Rule of law of the country will be a fundamental factor considered by foreign investor regarding long-term orientation investment [23]. While in [11] strong rule of law is generally positive for EDB ($r=0.816$), Karama (2014) suggests that excessive bureaucracy or "red tape" can be a negative consequence of poorly managed legal frameworks, making it harder to do business.

Control of Corruption and Ease of doing business (EoDB) - Controlling corruption is critical because corruption increases risks for entrepreneurs and destabilizes trust in public officials. Pervasive corruption causes business organization suffers inefficient economy and ambiguity about future returns. Combating corruption, reducing complex bureaucracy and providing efficient government are a fundamental aspect that determines FDI inflows [17]. Corrupt behavior in institutions leads to a high-cost economy that increases risks for entrepreneurs. According to Mongay and Filipescu (2012) and Handoyo (2017) controlling corruption is positively correlated with EDB performance ($r=0.744$), as it fosters a transparent environment for public affairs and free-market policies.

Public Accountability and Political Stability and Ease of doing business (EoDB) - Research findings by Globerman & Shapiro (2002) and Méon, P.G. and K. Sekkat (2007) indicated that public accountability contributes positively to rising FDI inflows. Handoyo (2017) estimated that public accountability ($r=0.606$) facilitates a friendly investment climate by simplifying procedures in response to societal and civic pressure. Political stability promotes confidence to attract foreign direct investment to the host country [1]. Stasavage (2002) found that there is a strong correlation between the existence of political stability and the foreign investment inflows. Therefore, political stability of the country is a fundamental factor as consideration among foreign investor [8]. MNCs avoid doing business in the country with a high profile of political risk and tend to move to a country with stable political conditions [18]. A study by Amal et al (2010) indicated that stability of the political condition of the country has a positive and significant correlation with FDI inflows.

WGI, *EoDB* and *ESG* - Different studies analyze the effect of good governance in the social corporate responsibility of MNEs. Better governance tend to promote financial and social responsibility, affecting ESG performance in this context. The concept of CSI is often examined primarily in terms of the antecedents and consequences of irresponsible behaviour [12]. As such, the quality of the institutional environment is considered by many authors to be a key antecedent of CSI [16]. Consequently, the institutional environment plays a pivotal role in both concepts, influencing the implementation of CSR practices [3] [11] and as a result, also ESG. Paradoxically, high-quality governance and institutional settings are often associated with a higher ESG crime rate [5]. Also in the study they find that there is a negative relationship between some dimensions of business environment and ESG performance. Thus, the main research aims to understand if the business environment of a country is a mechanism through which governance affects ESG risk of NBFIs and in what direction?

H1 : Direct Effect of Governance Quality on ESG risk:

H1: Governance quality (WGI composite) has a significant effect on ESG Risk.

H1o: Governance quality has no effect on ESG Risk

$$H_{1a}: \beta_{WGI \rightarrow ESG} \neq 0$$

$$H_{10}: \beta_{WGI \rightarrow ESG} = 0$$

H2 :Direct Effect of EoDB on ESG risk:

H2: Ease of Doing Business has a significant effect on ESG Risk.

H2o: Ease of Doing Business has no effect on ESG Risk.

$$H_{1a}: \beta_{Ease \rightarrow ESG} \neq$$

0

$$H_{10}: \beta_{Ease \rightarrow ESG} = 0$$

H3 :Mediation Effect:

H3: Ease of Doing business significantly mediates the relationship between Ease of Doing Business and ESG Risk.

H3o: Governance quality does not mediate the relationship between Ease of Doing Business and ESG Risk.

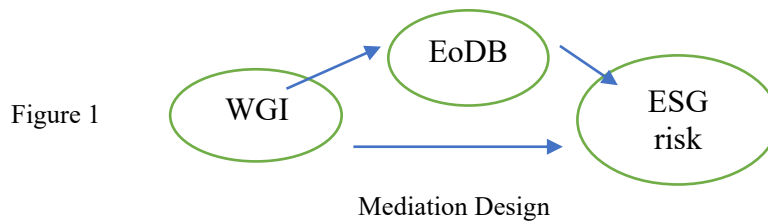
$$H_{3a}: \beta_{Ease \rightarrow WGI} \cdot \beta_{WGI \rightarrow ESG}$$

$$H_{30}: \beta_{Ease \rightarrow WGI} \cdot \beta_{WGI \rightarrow ESG} = 0$$

3. Methodology

3.1 Research Design and empirical model

This study employs a cross-sectional mediation analysis to examine whether the relationship between national governance quality and firm-level ESG risk in non-bank financial institutions (NBFIs) operates through the Ease of Doing Business (EoDB). The analytical framework follows a mediation structure in which governance indicators (X) influence EoDB (M), which in turn affects ESG risk (Y).



This approach allows us to identify whether improvements in governance reduce ESG risk of NBFIs directly or indirectly by shaping a more efficient and transparent business environment.

The structural equations are specified as:

$$EoDB_c = \alpha + \beta Governance_c + \varepsilon_c$$

$$ESG\_Risk_i = \gamma + \delta EoDB_c + \theta Governance_c + \mu_i$$

where i indexes firms and c indexes countries.

The indirect effect of governance on ESG risk through EoDB is calculated as $\beta \times \delta$.

3.2 Variable Specification and Data Sources

Dependent Variable (Y) ESG Risk is a continuous firm-level measure of unmanaged ESG risk, where higher values indicate greater exposure to ESG-related risks. The independent variable block includes six Worldwide Governance Indicators: Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence/Terrorism, Regulatory Quality, Rule of Law, Voice and Accountability. These indicators reflect the effectiveness, stability, accountability, and integrity of public institutions.

Mediating Variable (M): Ease of Doing Business is captured through the following Ease of Doing Business Score indicator that captures judicial efficiency, investor protection, property rights security, and insolvency resolution, which translate governance quality into operational business conditions.

The empirical analysis is based on a cross-sectional sample of 405 non-bank financial institutions (NBFIs) operating across 41 economies. The sample includes insurance companies, asset managers, leasing firms, and other non-deposit-taking financial intermediaries, selected based on the availability of ESG risk ratings and institutional indicators.

Data for this study are obtained from three primary sources. Governance indicators (X) are drawn from the Worldwide Governance Indicators (WGI) published by the World Bank Group, which capture multiple dimensions of institutional quality and public-sector performance at the country level.

The Ease of Doing Business indicators (Mediator M) are sourced from the World Bank Group's archived Doing Business database, providing standardized and internationally comparable measures of regulatory efficiency and the overall business environment. The dependent variable (Y), firm-level ESG risk, is measured using ESG Risk Ratings from Sustainalytics, which quantify the level of unmanaged exposure to environmental, social, and governance risks.

Firm-level ESG data are matched with country-level governance and Ease of Doing Business indicators based on each firm's country of operation, resulting in a cross-sectional dataset that integrates firm-specific sustainability risk with national institutional characteristics.

4. Results

Table 1 reports the standardized direct effects of Worldwide Governance Indicators (WGI) on firm-level ESG risk for non-bank financial institutions. The results reveal that most governance dimensions exert a statistically significant negative effect on ESG risk, indicating that stronger institutional quality is associated with lower unmanaged ESG exposure in full accordance with the existing literature

Table 1- Direct Effects of Governance Indicators on ESG Risk

Predictor (WGI dimension)	Outcome	Std. Estimate (β)	Std. Error	z-value	p-value
WGI Corruption (corr)	ESG Risk	-0.259**	0.060	-4.315	< .001
WGI Government Effectiveness (gov)	ESG Risk	-0.018	0.061	-0.291	.771
WGI Political Stability (pol)	ESG Risk	-2.097**	0.645	-3.250	.001
WGI Regulatory Quality (reg)	ESG Risk	-0.285**	0.064	-4.452	< .001
WGI Accountability (acc)	ESG Risk	-0.363**	0.046	-7.914	< .001

Control of Corruption shows a significant negative association with ESG risk ($\beta = -0.259$, $p < .001$), suggesting that lower corruption levels reduce ESG vulnerabilities by improving transparency and limiting opportunistic behavior. Similarly, Regulatory Quality exhibits a strong negative effect ($\beta = -0.285$, $p < .001$), highlighting the importance of sound regulatory frameworks in mitigating ESG-related risks.

Political Stability and Absence of Violence/Terrorism also has a large and statistically significant effect ($\beta = -2.097$, $p = .001$), indicating that macro-level stability plays a critical role in lowering ESG risk exposure, particularly for financial institutions sensitive to systemic and geopolitical uncertainty.

Voice and Accountability emerges as the strongest predictor among the governance indicators ($\beta = -0.363$, $p < .001$), emphasizing that transparent, accountable institutions are central to reducing ESG risk.

In contrast, Government Effectiveness does not display a statistically significant direct effect on ESG risk ($\beta = -0.018$, $p = .771$), suggesting that its influence may operate indirectly through the business environment rather than directly affecting firm-level ESG exposure.

Overall, the findings indicate that governance dimensions related to transparency, legal enforcement, accountability, and stability are the most relevant institutional drivers of ESG risk, providing empirical support for a mediation framework in which Ease of Doing Business transmits governance quality into firm-level sustainability outcomes.

Table 2 presents the mediation results examining whether Ease of Doing Business (EoDB) transmits the effects of governance quality (WGI dimensions) to firm-level ESG risk in non-bank financial institutions.

Table 2- Mediation Analysis Results: The Role of Ease of Doing Business

WGI Dimension Path	Estimate	Std. Error	z-Value	p-Value	Significance
Control of Corruption of WGI $\rightarrow$ EoDB	0.604	0.032	19.036	< .001	***
EoDB $\rightarrow$ ESG	0.231	0.061	3.783	< .001	***

	Risk						
	WGI → ESG Risk	-0.259	0.060	-4.315	< .001	***	
Government Effectiveness	WGI → EoDB	0.564	0.035	16.268	< .001	***	
	EoDB → ESG Risk	0.078	0.062	1.270	0.204	n.s.	
	WGI → ESG Risk	-0.018	0.061	-0.291	0.771	n.s.	
Political Stability	WGI → EoDB	3.935	0.395	9.968	< .001	***	
	EoDB → ESG Risk	0.200	0.076	2.643	0.008	**	
	WGI → ESG Risk	-2.097	0.645	-3.250	0.001	**	
Regulatory Quality	WGI → EoDB	0.657	0.029	22.864	< .001	***	
	EoDB → ESG Risk	0.261	0.064	4.054	< .001	***	
	WGI → ESG Risk	-0.285	0.064	-4.452	< .001	***	
Voice & Accountability	WGI → EoDB	0.274	0.047	5.861	< .001	***	
	EoDB → ESG Risk	0.179	0.049	3.689	< .001	***	
	WGI → ESG Risk	-0.363	0.046	-7.914	< .001	***	

Control of Corruption has a strong positive effect on EoDB ($\beta = 0.604$, $p < .001$), indicating that lower corruption is associated with a more efficient business environment. EoDB, in turn, has a positive and significant effect on ESG risk ($\beta = 0.231$, $p < .001$). At the same time, Control of Corruption maintains a significant direct negative effect on ESG risk ($\beta = -0.259$, $p < .001$).

These results indicate partial mediation, where improvements in corruption control reduce ESG risk directly, while EoDB transmits an additional indirect effect.

Government Effectiveness significantly improves EoDB ($\beta = 0.564$, $p < .001$); however, neither the EoDB → ESG Risk path nor the direct governance → ESG Risk path is statistically significant. This suggests no mediation effect, implying that Government Effectiveness does not meaningfully influence ESG risk either directly or indirectly through the business environment.

Political Stability exhibits a large and significant effect on EoDB ($\beta = 3.935$, $p < .001$), reflecting the sensitivity of the business environment to macro-level stability. EoDB significantly affects ESG risk ($\beta = 0.200$, $p = .008$), while Political Stability also shows a strong direct negative effect on ESG risk ($\beta = -2.097$, $p = .001$).

This pattern supports partial mediation, where EoDB channels part of the stabilizing effect of political conditions on ESG risk, while a substantial direct effect remains.

Regulatory Quality demonstrates one of the strongest links to EoDB ($\beta = 0.657$, $p < .001$). EoDB significantly influences ESG risk ($\beta = 0.261$, $p < .001$), and Regulatory Quality also retains a significant direct negative effect on ESG risk ($\beta = -0.285$, $p < .001$).

Voice and Accountability positively affects EoDB ($\beta = 0.274$, $p < .001$), while EoDB significantly influences ESG risk ($\beta = 0.179$, $p < .001$). The direct effect of Voice and Accountability on ESG risk is also strong and negative ($\beta = -0.363$, $p < .001$).

This confirms partial mediation, highlighting that transparent and accountable institutions reduce ESG risk directly, while EoDB acts as an additional transmission channel for NBFI's, sometimes creating opportunities for augmented ESG risk.

Table 3- Indirect Effects of Governance on ESG Risk via Ease of Doing Business

WGI Dimension	Outcome Path		Std. Estimate (β)	Std. Error	z-value	p-value	Interpretation
WGI Corruption (corr)	ESG Risk	Indirect via B.Ease.global	0.140	0.038**	3.677	<.001	Significant positive mediation
WGI Government Effectiveness (gov)	ESG Risk	Indirect via B.Ease.global	0.044	0.035	1.267	.205	Not significant
WGI Political Stability (pol)	ESG Risk	Indirect via B.Ease.global	0.786	0.308**	2.554	.011	Significant positive mediation
WGI Regulatory Quality (reg)	ESG Risk	Indirect via B.Ease.global	0.172	0.043**	3.955	<.001	Significant positive mediation
WGI Accountability (acc)	ESG Risk	Indirect via B.Ease.global	0.049	0.016**	3.087	.002	Significant positive mediation

Table 3 reports the standardized indirect effects of Worldwide Governance Indicators (WGI) on firm-level ESG risk, operating through Ease of Doing Business (EoDB) as the mediating variable.

These findings confirm that Ease of Doing Business functions as a significant mediating mechanism for most governance dimensions, except Government Effectiveness, reinforcing the notion that institutional quality affects firm-level ESG risk not only directly but also indirectly by shaping the regulatory and judicial conditions under which non-bank financial institutions operate. The interesting fact is that while stronger governance indicators foster business environment, the Ease of Doing Business, *per se*, can inadvertently increase ESG risk rather than reduce.

4. Conclusions

In conclusion, our empirical analysis demonstrates that stronger governance and institutional quality are associated with reductions in ESG risk, affirming the role of robust governance frameworks in enhancing corporate sustainability outcomes. Specifically, most governance indicators exhibit a statistically significant direct negative effect on ESG risk, suggesting that transparent, accountable, and well-regulated institutional environments enhance risk mitigation and stakeholder trust, consistent with findings in the broader ESG literature on risk reduction through institutional strengthening. However, government effectiveness emerges as an exception, indicating context-specific variations in how different governance dimensions translate into ESG outcomes. Importantly, the mediation analysis reveals partial mediation through Ease of Doing Business (EoDB), whereby institutional quality influences ESG risk both directly and indirectly. The indirect channel via EoDB, while facilitating economic efficiency and regulatory simplification, also appears to transmit mechanisms that can elevate ESG risk, potentially due to trade-offs between deregulation and enforcement of sustainability safeguards, an observation that aligns with recent studies associating higher EoDB with mixed ESG implications at the global level.

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THE IMPACT OF COUNTRY RISK ON FOREIGN DIRECT INVESTMENT: THE CASE OF ALBANIA

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Abstract

In an increasingly globalized economic environment, foreign direct investment (FDI) represents a critical driver of economic development and competitiveness, particularly for small and transitioning economies such as Albania. Over the last decades, Albania has experienced a noticeable increase in FDI inflows, attracting investors across various strategic sectors and contributing to a more favorable international economic image. Despite this progress, the decision-making process of foreign investors remains complex and highly dependent on a thorough assessment of country risk.

This study addresses this gap by examining the relationship between country risk and FDI in Albania, emphasizing the need for a deeper understanding of how political, financial, and environmental risk factors shape the investment climate. While existing literature highlights the importance of country risk analysis, limited empirical research focuses specifically on the Albanian context, presenting a clear gap that this study aims to fill.

The analysis reveals that political stability, fiscal performance, and environmental governance significantly influence FDI inflows. Political and financial risks emerge as the most critical barriers, whereas improvements in regulatory quality and environmental standards present opportunities for enhanced investor confidence.

Political, financial, and environmental risk dimensions are analyzed using secondary data from international institutions and domestic economic reports, enabling a comprehensive evaluation of risk factors affecting investor decision-making.

By identifying risk-related obstacles and potential opportunities, the study provides valuable insights into how Albania can strengthen its business environment and increase its attractiveness to foreign investors. The findings contribute to the broader discourse on investment dynamics in transition economies and highlight the strategic relevance of country-risk mitigation for sustainable economic growth.

Keywords: *Investment Climate; Macroeconomic Stability, Political Stability, Competitiveness.*

JEL classification: *F21, F23, F30, G32*

1. Introduction

Albania is a country with substantial economic development potential, benefiting from a range of advantages including its strategic geographic position, favorable climate, abundant natural resources, and the steady economic growth recorded in recent years. Foreign direct investment (FDI) represents a vital source for the Albanian economy and stands among the main drivers of the country's development.

FDI contributes to technological modernization, job creation, enhanced competitiveness, and strengthened political and economic stability, all of which help foster a business-friendly environment that attracts international investors.

The decision-making process for foreign investors, however, is far from simple. Investors carefully assess every potential development in the host country that may affect their operations. This evaluation is carried out through country risk analysis, which examines political, financial, and environmental risks in detail. There is a clear negative correlation between a country's risk level and the volume of foreign investment: lower perceived risk tends to increase investment inflows, whereas higher risk tends to deter them.

Albania has undergone significant economic and institutional reforms over the past decade, aiming to strengthen governance, improve the business climate, and attract foreign investors. In 2024, Albania experienced a moderate improvement in its international risk perception, supported by positive macroeconomic indicators. According to the credit rating agency Standard & Poor's (2024), Albania was upgraded from "B+" to "BB-", and to "BB" in 2025 (S&P Global, 2025). Despite progress, challenges such as political instability, corruption perceptions, regulatory unpredictability, and infrastructural gaps continue to affect its risk rating and overall investment attractiveness.

Existing literature shows a strong link between country risk components, especially political stability, rule of law, and financial soundness, and FDI performance. This research builds on these theories by focusing on Albania as a case study, using recent data to assess how risk indicators influence investment trends.

The Impact of Country Risk on Foreign Direct Investment: The Case of Albania examines how political, economic, and financial uncertainties influence foreign investors' decisions to enter and operate in Albania. Country risk remains a crucial determinant of FDI inflows, particularly in emerging and transition economies where institutional quality, governance effectiveness, and macroeconomic stability vary over time. By analyzing Albania's specific risk profile, the study highlights the main barriers and incentives that shape investor confidence in the country.

This paper aims to provide an overall analysis of country risk that influences foreign investors decision-making when selecting Albania as a destination for undertaking foreign direct investments.

The objectives of this study are as following:

- Identify the key concepts of foreign direct investments;
- Analyze the main factors of political, financial, and environmental risk in Albania;
- Assess the trends and current situation of foreign direct investments in Albania;
- Provide a projection of the future outlook for foreign direct investments.

The research question is: Does country risk affect foreign direct investment in Albania?

This study concludes that during the period 2014–2024, Albania's FDI stock recorded a continuous upward trend, reflecting growing confidence among foreign investors in the stability and potential of the Albanian economy. As country risk has decreased, FDI inflows have likewise increased, demonstrating the strong relationship between risk reduction and investment attractiveness.

The study begins with a comprehensive literature review on country risk, its main components, and its impact on foreign direct investment (FDI) inflows. It then analyzes the trends and key determinants of FDI in Albania over the period 2014–2024. The research further provides an overview of Albania's country risk components, covering political, macro-financial, and environmental dimensions, and concludes with key findings and recommendations.

2. Literature review

Country risk is widely recognized as a decisive factor shaping the volume, composition and timing of foreign direct investment (FDI) inflows. Theoretical frameworks explain investor location choice through a combination of firm-level advantages and host-country attributes: *Dunning's OLI* (Ownership–Location–Internalization) paradigm situates country-specific institutional and economic conditions within the “Location” decision and therefore treats elevated country risk as a direct deterrent to investment (Dunning, Toward an eclectic theory of international production: Some empirical tests, 1980).

Complementing the OLI view, *institutional theory* emphasizes how formal institutions (rule of law, property rights, contract enforcement) and governance quality lower transaction costs and information asymmetries, thereby fostering a more predictable investment climate. North (1990) provides theoretical basis for why governance, property rights and legal frameworks alter transaction costs and investment incentives. Later on, Dunning (1993) extends OLI and links competitiveness and location advantages to institutional and market factors; useful for arguing why institutional improvements reduce country risk and promote FDI.

From a behavioral perspective, *real-options theory* demonstrates that uncertainty about political or macroeconomic conditions increases the value of waiting and reduces immediate capital commitments, encouraging firms to choose lower-commitment entry modes (e.g., joint ventures, trade) rather than greenfield investment. Dixit & Pindyck (1994) presents the real-options approach to investment decisions under uncertainty, helpful to explain why higher country risk raises the option value of waiting and alters entry modes.

Empirical literature corroborates these theoretical expectations across country samples and time periods. Cross-country studies consistently find negative associations between measures of political risk (political instability, expropriation risk, corruption) and FDI inflows, while macroeconomic volatility (high inflation, exchange-rate instability) similarly depresses investment (Ayangbah, et. al. (2022)). Research that decomposes “country risk” shows heterogeneous effects: political risk tends to deter long-term, asset-specific FDI (Kai Liu, 2022), whereas short-run financial shocks more strongly affect portfolio flows and reinvested earnings.

Empirical and policy literature usually decomposes country risk into political, economic/financial, and socio-environmental components. Political risk (including instability, expropriation, policy unpredictability), economic/financial risk (including macroeconomic volatility, inflation, exchange-rate instability), and environmental/physical risks (including natural disasters, climate impacts) each affect different types of FDI and investor horizons (Elo, 2007).

Hayakawa et al. (2011) empirically investigate the effects on inward FDI of various components of political and financial risk finding out that specifically, the change in the level of political risk affects FDI inflow and particularly in the case of developing countries, payment delays, contract expropriation, and corruption are negatively associated with the FDI inflow.

Empirical papers have used International Country Risk Guide (ICRG), World Bank Worldwide Governance Indicators (WGI), and corruption measures to show that different risk dimensions (political vs. economic) have distinct lagged impacts on FDI inflows. Recent multi-country work, like Al-Gasaymeh et al. (2022), confirms the general negative relationship between aggregated country risk and FDI in emerging markets.

In their study Saha et al. (2022) found out that better institutional quality (control of corruption and regulatory quality) has a positive effect on FDI inflows. This supports the institutional-theory view that governance and institutions matter strongly for attracting FDI.

Based on panel data of 49 developing countries from 2002 to 2015, Türedi (2018) shows that reductions in country risk and corruption are associated with higher FDI inflows; economic and political risk components matter more than financial risk.

Albania presents a salient case for testing these relationships at the country level. Existing Albania-focused analyses and policy reports point to structural advantages like geographic proximity to EU markets, cost-competitive labor, and growth in services and construction, while also highlighting persistent governance weaknesses, rule-of-law concerns and periodic macro vulnerabilities. However, much of the literature either treats country risk as a single aggregated variable or relies on cross-country inference; fewer studies provide Albania-specific causal estimates that disaggregate political, economic and environmental risk or that analyze sectoral and investor-origin heterogeneity.

Hajdini et al. (2023) investigate the effect of corruption on Foreign Direct Investment (FDI) in the Western Balkans countries, including Bosnia and Herzegovina, Croatia, Kosovo, Montenegro, North Macedonia, Serbia, and Albania. They found a negative relationship between Corruption Perception Index and FDI.

Meanwhile, Minović et al. (2021) uses panel data from 2002 to 2017, to examine how institutional-quality measures (control of corruption, political stability, rule of law) influence FDI inflows across Western-Balkan countries. The authors find that better institutional quality correlates with higher FDI inflows.

Krasniqi & Fetai (2024) conducted a panel-data study from 2008 to 2022 and tested how economic and institutional variables (market size, inflation, bank non-performing loans, control of corruption, rule of law) affected inward FDI in Western Balkan countries. They found out that past levels of FDI have a significant and positive impact on current FDI levels. Later on, Krasniqi (2025) investigates the relationship between the development of the financial sector and FDI inflows in Western Balkans countries from 2007 to 2023. The study contributes to the understanding of how financial sector indicators influence foreign investment decisions in small, developing European economies.

Ibraimi et al. (2025) through their panel-analysis from 1995 to 2022 of Western Balkans investigated the role of FDI-related legislation and institutional rule of law in attracting FDI and boosting growth. They found out that enforcing the rule of law on FDI will reduce the corruption index and create a favourable environment for Western Balkans countries to attract FDI.

3. Methodology

To conduct this study, secondary data were collected from reliable and official sources, including reports published by the Bank of Albania, INSTAT, the World Bank, and the United Nations. These sources were selected to ensure the accuracy and validity of the statistical information used in the analysis.

The theoretical framework of the research is based primarily on academic books and peer-reviewed literature that address country risk, foreign direct investment, and related economic concepts.

All data included in the study were carefully selected for their coherence, relevance, and credibility. The combination of statistical sources and established theoretical material provides a solid foundation for examining the impact of country risk on foreign direct

investment in Albania.

The methodology of this study is based on a descriptive statistical approach to assess the main determinants of country risk in Albania. Descriptive statistics are used to analyze trends and patterns in key indicators, including foreign direct investment (FDI) inflows, corruption perceptions, economic freedom, and selected macroeconomic variables. By examining averages, growth rates, and comparative changes over time, the study identifies structural developments and potential vulnerabilities affecting the country's risk profile. Data on corruption and economic freedom are drawn from internationally recognized indices, while macroeconomic factors such as GDP growth, inflation, public debt, and interest rates are incorporated to provide a comprehensive overview of Albania's economic and institutional environment. This approach allows for a systematic evaluation of the relationships between governance quality, macro-financial stability, and investment performance.

4. Trends and Determinants of Foreign Direct Investment in Albania (2014–2024)

Albania has demonstrated an outstanding performance in attracting Foreign Direct Investment (FDI) over the past 10 years, setting national records year after year (as shown in figure 1). The country is implementing comprehensive reforms aimed at creating a stable and predictable business climate. It is also establishing economic zones with special incentives for investors to further promote development.

Albania offers a wide range of investment opportunities. The main investment prospects are concentrated in continuously growing sectors such as electricity generation, tourism, agriculture, mining, construction, and transport and logistics. Tourism remains one of the key catalysts of economic development, with a highly optimistic outlook. The ongoing development of infrastructure and the promotion of new destinations are expected to increase the number of tourists. For 2025, major renewable energy and gasification projects are anticipated to attract foreign investors (Bank of Albania, 2025).



Figure 1- FDI Stock 2014-2024 (in million euros)
Source: Bank of Albania (2025)

During the period 2014–2024, the trend of FDI inflows has been generally upward, with the exception of 2017 and 2020 (figure 2). In the summer of 2017, Albania was affected by a prolonged drought that depleted the country's hydropower reserves, delivering a significant shock to the energy sector. In 2020, the country faced a more alarming situation due to the global COVID-19 pandemic.



Figure 2- FDI Flows 2014-2024 (in million euros)

Source: Bank of Albania (2025)

The steady growth of both FDI stock and inflows over the years has been driven by maintained macroeconomic stability, reforms that improved the business climate, and broad opportunities in infrastructure and energy development. Following the pandemic, investment rebounded strongly, recovering the losses of 2020 and reflecting notable growth in emerging sectors such as technology and tourism. Most investments have consisted of long-term, capital-intensive projects in key sectors including energy, tourism, and construction (figure 3). At the same time, the Albanian government has actively promoted investment opportunities and worked to build a positive and attractive image for foreign investors.

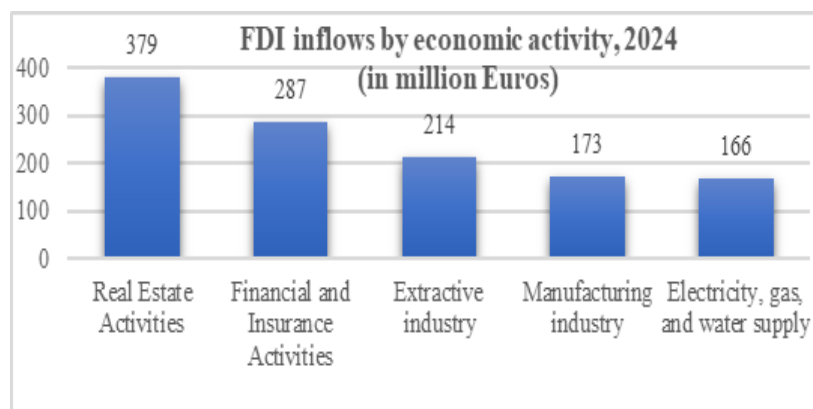


Figure 3- FDI inflows by economic activity, 2024 (in million euros)

Source: Bank of Albania (2025)

Over the last decade, Albania has significantly strengthened its political and fiscal stability, advanced legal reforms, and reduced risks related to payments and capital repatriation. This has encouraged higher levels of reinvested earnings, signaling increased long-term investor confidence. The EU accession process has also served as a stimulus for anti-corruption efforts, transparency, and governance improvements, although challenges remain. According to Standard & Poor's (2024), Albania has improved its credit rating, reflecting recent political and economic progress and reducing investor risk perception. Overall, the reduction in country risk has contributed to rising FDI inflows, greater long-term investment, and increased sectoral diversification. Continued improvements in the

business environment and economic stability remain essential for attracting foreign direct investment.

5. Country risk analysis – the case of Albania

In evaluating the country risk of Albania, three main dimensions should be considered: political, macro-financial, and environmental factors. Politically, ongoing reforms and alignment with European Union standards are positive, though institutional stability and regulatory consistency remain important considerations. Macroeconomically, stable growth and a resilient banking sector support the outlook, but public debt and external vulnerabilities persist. Environmentally, exposure to natural disasters and climate-related risks adds an additional layer of uncertainty affecting long-term economic sustainability

5.1 Political risk

Political risk refers to uncertainties arising from government inefficiency, bureaucratic obstacles, social tensions, weaknesses in the credibility and integrity of the legal system, or national and international disputes that may generate adverse effects on foreign direct investment (World Bank, 2022). Political factors strongly influence a country's overall risk perception and, consequently, its ability to attract foreign investment (Kiptoo, 2024). These factors include political stability, institutional quality, governance effectiveness, bilateral relations, consumer behavior, and potential government interventions in the economy. Issues such as restrictions on capital transfers or difficulties in currency convertibility represent significant risks for foreign investors, as they directly affect profit repatriation and financial planning. Moreover, conflicts, excessive bureaucracy, and corruption intensify country risk and discourage investment by increasing transaction costs and uncertainty.

The CPI measurements for 2024 covered 180 countries worldwide. The scoring scale ranges from 0 (highly corrupt) to 100 (very clean). In the 2024 results, Albania ranks 80th with a score of 42 points (as shown in figure 4), marking an increase of 5 points compared to 2023. Albania has surpassed several countries in the region, including Bosnia and Herzegovina and North Macedonia.

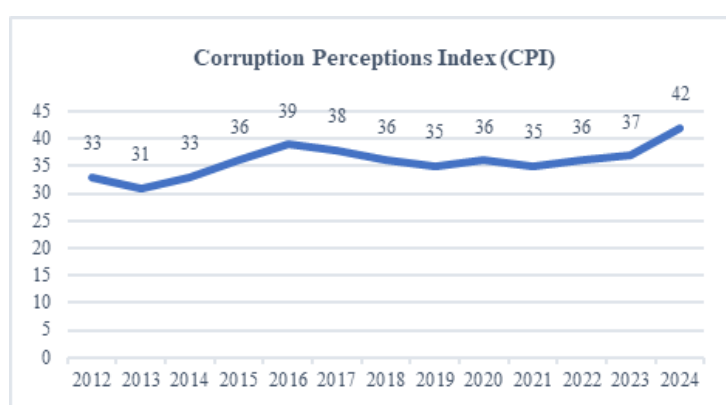


Figure 4 - Corruption Perception Index (CPI) for Albania 2012-2024
Source: Transparency International (2024)

Economic freedom is considered an important resource for foreign investors, particularly

those interested in emerging markets. At the same time, negative changes in the index imply a lower rating, signaling to investors that they should exercise caution and reduce their direct or indirect exposure to countries that have experienced a decline.

The Index of Economic Freedom assigns Albania a score of 66.6 points, ranking it as the 50th freest economy in 2025 out of 184 countries assessed (as shown in figure 5). Albania's economy is classified as "moderately free" according to this index (Kim, 2025). The situation of economic freedom in Albania has maintained an upward trend over the years, improving its overall image. The highest score was recorded in 2014 and 2020, with 66.9 points, while the lowest evaluation was registered in 2000. Over the last decade, Albania has advanced in the rankings, positioning itself among the top 50 countries worldwide in terms of economic freedom.

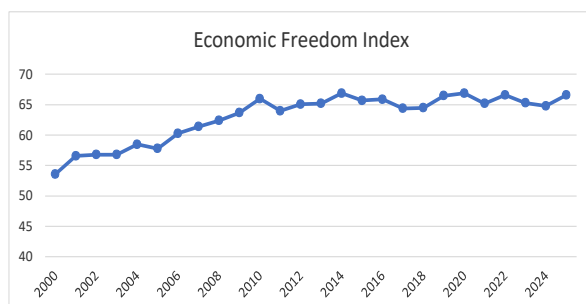


Figure 5 – Economic Freedom Index
Source: Kim (2025 Index of Economic Freedom, 2025)

5.2 Economic and financial risk

Macroeconomic and financial factors play a central role in assessing the country risk of Albania, as they directly influence economic stability, investor confidence, and the overall business climate. Recent trends indicate a relatively stable macroeconomic environment, characterized by moderate GDP growth, a decline in interest rates, and a gradual reduction of the budget deficit, all of which contribute to improved fiscal sustainability and lower financing costs (Bank of Albania, 2025). Additionally, the strengthening trend of the Albanian lek reflects increased foreign currency inflows and enhanced macroeconomic fundamentals, although it also requires careful monitoring due to its potential impact on exports and external competitiveness. Together, these indicators provide important insights into Albania's financial resilience and its capacity to manage external and internal economic shocks. Albania's economy has shown notable resilience after three major shocks between 2019 and 2023—the 2019 earthquake, the COVID-19 pandemic, and the European energy crisis—maintaining a stable medium-term outlook despite its small size and limited diversification. Public debt, which peaked in 2021, has been on a declining path and is expected to decrease gradually, although government and banking-sector liquidity risks remain elevated (Bank of Albania, 2025). These risks are partly mitigated by financial support from the European Union and international financial

institutions, as well as by the domestic banking sector's capacity to absorb government securities.

In 2024, Albania experienced a moderate improvement in its international risk perception, supported by positive macroeconomic indicators. According to the credit rating agency Standard & Poor's (2024), Albania was upgraded from "B+" to "BB-", and to "BB" in 2025 (S&P Global, 2025). Moody's projects real GDP growth of 3.8% in 2025 and 3.4% in 2026, reinforcing expectations of continued economic stability in the medium term (Moody's, 2025).

5.3 Environmental risk

Environmental risk factors represent a significant dimension in assessing the country risk of Albania, reflecting the country's geographic characteristics, climate dynamics, and structural vulnerabilities. Albania is considered seismically active; although major earthquakes above magnitude 7 have been rare over the past century, the primary source of risk lies in weak infrastructure and informal or poorly regulated construction practices, as demonstrated by the 2019 earthquake.

Hydro-meteorological risks are also substantial. Albania's river system, composed of 11 main rivers and numerous tributaries, combined with increasing winter storms and summer droughts, heightens exposure to floods, particularly in the Western Lowlands. Flood risk is intensified by deforestation, urbanization near riverbanks, waste accumulation in drainage areas, and the effects of climate change. Aging dam infrastructure further increases vulnerability.

Gravitational hazards such as landslides, rockfalls, and avalanches, especially in the Albanian Alps, pose additional threats, particularly in densely populated or rapidly developing areas. Construction activities, hydropower projects, and transport infrastructure have contributed to erosion and environmental degradation, affecting both economic assets and cultural heritage sites. Forest fires remain a recurring issue, with long-term implications for ecosystems and rural economies.

Technological risks linked to energy, transport, telecommunications, and water systems, although relatively low in probability, may carry significant consequences if realized. Biological risks, including infectious diseases, are amplified by globalization, mobility, and institutional limitations in surveillance and public health systems. Collectively, these environmental risks generate fiscal pressures, affect economic stability, and underscore the need for stronger disaster preparedness, infrastructure resilience, and sustainable environmental governance within Albania's broader country risk framework.

6. Conclusions

Foreign direct investment (FDI) plays a crucial role in the sustainable economic development of a country, particularly for developing economies such as Albania.

During the period 2014–2024, Albania's FDI stock recorded a continuous upward trend, reflecting growing confidence among foreign investors in the stability and potential of the Albanian economy.

Key drivers of FDI growth in Albania are: (i) economic and political stability boosting investor confidence; (ii) structural and institutional reforms improving the business climate; (iii) opportunities in key sectors (infrastructure, energy) attracting strategic investors; (iv) government efforts to promote a positive international image; (v) reduced payment and capital-repatriation risks facilitating long-term investments; (vi) EU accession process driving anti-corruption, transparency, and governance reforms.

As country risk has decreased, FDI inflows have likewise increased, demonstrating the

strong relationship between risk reduction and investment attractiveness.

Ensuring further improvements in the business climate and maintaining macroeconomic stability remain essential for strengthening Albania's ability to attract and retain foreign investment.

Limitations

This study is based primarily on secondary data from official institutions, which may be subject to reporting delays, periodic revisions, or methodological inconsistencies across sources. Additionally, the analysis focuses on macro-level indicators and does not capture firm-level perspectives or sector-specific differences that may influence FDI dynamics in Albania. The study also concentrates on the period 2014–2024; therefore, short-term fluctuations, global economic shocks, or emerging geopolitical developments beyond this timeframe are not fully captured. Finally, the study does not employ econometric modelling, which could provide a deeper causal understanding of the relationship between country risk components and FDI inflows.

Recommendations

- The improvement of macroeconomic indicators to meet the European Union membership criteria remains a key priority for Albania.
- Leveraging international financing has played an important role in modernizing infrastructure and advancing strategic sectors of the economy.
- Strengthening democratic institutions and increasing transparency would further reduce foreign investors' perceptions of country risk.
- Moreover, the implementation of comprehensive reforms and the design of effective monetary and fiscal policies are essential steps toward enhancing economic stability and fostering a more attractive investment environment.

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THE ROLE OF DIGITALIZATION IN THE TRANSFORMATION OF AGRICULTURE: A LITERATURE REVIEW AND AN ANALYSIS OF THE ALBANIAN CONTEXT

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Abstract

Nowadays, digitalization has become a key factor for economic and social development. It is transforming the way industries, institutions and services function around the world. The integration of information technology has brought increased efficiency, transparency and access to data, making decision-making easier and more innovative in different sectors. In this context, since agriculture is one of the main sectors of economic development, it can significantly benefit from the digitalization process. This is because modern technologies make production more sustainable and competitive. Agriculture - being one of the main sectors of economic development - benefits significantly from the digitalization process, as modern technologies make production more accurate, more sustainable and more competitive.

This paper analyzes the importance of digitalization in general and then focuses on its role in the agricultural sector, assessing its benefits, challenges and long-term impacts. The paper is based on a literature review on the digitalization of agriculture, further linking this analysis to the Albanian context. Through this approach, the aim is to provide a more comprehensive understanding of the level of adoption of agricultural technologies in Albania, the main challenges in local rural areas and the opportunities that arise for the modernization of this sector.

Keywords: *Digital transformation, Agriculture, Innovation, Rural development, Albania*

JEL classification: *Q16, Q55, O33*

1. Introduction

Climate change is bringing a series of negative consequences for the environment, ecosystems, human societies and economic development, thus becoming one of the most urgent challenges of the 21st century. Due to its strong dependence on climatic conditions, agriculture is one of the most affected sectors. Changes in temperature and precipitation patterns, extreme weather events such as floods and droughts, directly affect crop productivity or livestock systems. To face these growing challenges, digitalization has emerged as a way to influence the growth and improvement of sustainability in agricultural systems.

The use of many digital tools, such as mobile platforms, data analysis – allows farmers and institutions to more accurately monitor environmental conditions, better manage resources or make better predictions about climate-related risks.

It should also be noted that digitalization is particularly important for smallholder farmers and rural communities. This is because they are often the most affected by climate change and often have more limited access to traditional forms of information. Digital technologies can contribute to sustainable development by improving productivity, facilitating greater access to real-time information and strengthening linkages to markets. Many countries are now seeking to adapt their agricultural sector to climate change. For this reason, the role of digitalization is becoming more essential in guiding future strategies, investments and policies.

In Albania, agriculture is one of the main pillars of the economy and employment. As a result, the digitalization of this sector is of particular importance. Albanian farmers face various problems such as land fragmentation and relatively low productivity, and the use of digital technologies can help them cope with these problems. Digital technologies help to better adapt agricultural practices, improving products, further increasing consumer confidence and also giving more opportunities to increase exports. As a result, the agricultural sector in Albania has more opportunities for sustainable development.

2. Literature Review

Digitalization is seen as a transformative force for all sectors, and for global agriculture as well. It is changing the way food is produced, managed and distributed. The use of highly digital technologies, such as drones, sensors, data analytics, robots, artificial intelligence, etc., is being seen as a response to climate change, resource scarcity and the need for sustainable development. The potential for digitalization to transform agriculture is impacting on improving productivity, sustainability and more successful integration into markets.

2.1 The Importance of Digitalization

Digitalization means the integration of digital devices into businesses, institutions, and various economic and social sectors. According to Bharadwaj, El Sawy, Pavlou, and Venkatraman (2013), digitalization changes the way businesses and organizations create and add value, driving innovation and competition. Also, Vial (2019) states that digital transformation is not just an improvement in the operational side of businesses, but a reformatting of the business model that subsequently affects the relationships that this business has with customers and the market in which it operates.

Many studies highlight the practical benefits that businesses have from digitalization. According to Rogers (2020) and Susanti and Lestari (2022), digitalization significantly increases business financial performance, improves efficiency and access to information in new markets. But, on the other hand, these authors also warn about the "digital paradox". According to them, large investments in technological equipment do not necessarily guarantee success, especially when what is missing are human skills and infrastructure.

Meanwhile, Brynjolfsson and McAfee (2014) view digitalization from a socio-economic perspective. According to them, digitalization can transform national economies, thereby providing greater opportunities for sustainable development and increased competition. According to Westerman, Bonnet and McAfee (2014), digital transformation, beyond its economic benefits, also affects the improvement of organizational transparency and access to services.

2.2 The Importance of Digitalization: Implications for the Agricultural Sector

Digitalization in agriculture is often described as "Agriculture 4.0" or "smart agriculture". According to Wolfert, Ge, Verdouw and Bogaardt (2017), digital technologies, such as sensors, the Internet of Things (IoT), data analytics and robotics, can contribute to increasing productivity, reducing losses and optimizing resource use.

Liakos, Busato, Moshou, Pearson and Bochtis (2018) emphasize that the use of artificial intelligence and monitoring systems in agriculture affects the increase of informed decision-making and the improvement of the management of water, soil and crop systems. Also, Kamilaris, Kartakoullis and Prenafeta-Boldú (2019) emphasize precision agriculture practices and the impact on their positive effects on yields and operational costs.

But on the other hand, despite the potential of digitalization, the use of digital technologies varies greatly, especially between large and small agricultural farms. According to Eastwood et al. (2019), farm size is one of the strongest predictors of the adoption of digital equipment. Larger farms, as they have greater financial capabilities, tend to more readily adopt the investment and use of digital tools. On the other hand, small farmers lack the necessary capital, skills and infrastructure. This limits their ability to integrate advanced technologies (Eastwood et al., 2019). According to Klerkx et al. (2019), multiple constraints, such as land fragmentation and low digital literacy - act as barriers in many developing regions.

In the Albanian context, several empirical studies highlight the potential of agricultural digitalization. A study by Tomorri, Keco, Shima and Tomorri (2025) analyzes the adoption of digital technologies among Albanian farmers and identifies some of the main obstacles such as land fragmentation, limited infrastructure, low level of digital literacy and high investment costs in these technologies. However, on the other hand, the authors note that initiatives such as the DART program and online farmer platforms are increasingly providing significant support for the modernization of the agricultural sector in Albania.

Mulliri, Baraku and Shahu (2022), as well as FAO (2025), emphasize that the use of digital tools in Albania such as soil and crop monitoring, climate analysis and digital water and fertilizer management is gradually improving the productivity and quality of agricultural products. However, major obstacles remain the high costs and the adoption of these digital tools, La Rocca et al. (2024) looks at digital agriculture from an environmental perspective, emphasizing that digital agriculture should also be accompanied by a careful ecological assessment.

3. The agricultural sector in Albania

The agricultural sector in Albania is one of the main sectors and plays an important role in the economic, social and territorial development of the country. Over the past decades, Albania has gradually undergone structural changes, but despite this, the agricultural sector remains one of the sectors with the greatest impact in the country. This sector provides the greatest contribution to the Gross Domestic Product (GDP), employment and livelihood of the rural population. Moreover, for the majority of the rural population, agriculture continues to be the main source of income and their economic stability. This is also a result of the demographic profile of the country, where the population in rural areas constitutes a significant part of the total population of the country.

Agriculture also plays a major role in terms of the workforce. Formally or not, a significant portion of the workforce in Albania is engaged in agricultural activities.

Especially in rural areas, where opportunities for other activities are limited, agriculture is important both economically and socially. It remains the main source of income for the

population of this area, thus becoming a major and important support even in difficult economic periods. It is also important to emphasize that the agricultural sector helps in providing food for the country, thus reducing the need for imported goods and products.

Albania is rich in natural resources such as land, water, climate and biodiversity which make the agricultural sector capable of sustainable development even in remote areas. This sector also promotes the development of other sectors, such as agrotourism, food processing, thus creating a value chain. This is another reason why the sector is so important for Albania.

Currently, the agricultural sector contributes almost 20% to GDP. This is almost three times higher than the regional average for the Western Balkan countries. The agricultural sector is also a key source of employment, providing jobs for over 40% of the population. At 11.3%, agricultural and food products also represent a significant share of total exports (Blanco & Qorlazja, 2024).

Agriculture in Albania underwent significant changes during the transition period. The state-owned agricultural system collapsed, with many agricultural buildings and equipment, including irrigation infrastructure, being abandoned and deteriorating. In response to this change, a series of reforms were implemented that allowed agricultural production to recover.

Initially, the Albanian government began redistributing agricultural land from 550 state and collective farms to individual farmers in 1992, a process that was completed by 1996. This reform resulted in the creation of over 460,000 private farms, usually small farms, often fragmented into multiple plots. Farms of such size have many limitations in terms of the possibility of developing modern, commercially oriented agriculture. As a result, the agricultural sector in Albania today consists mainly of small farmers who produce mainly for survival and not for the domestic market. This is also the main problem that this sector faces. Other problems that this sector also faces are: the continuous fragmentation of land into increasingly smaller plots, underdeveloped agricultural technologies, and shortcomings in the marketing of domestic products.

Especially in the northern regions, the still underdeveloped infrastructure remains a problem. Another important problem is the insufficient financial support. This is because the agricultural sector is not a sector that is preferred by the banking system for credit. All these problems taken together hinder the modernization and expansion of production capacity.

Although the agricultural sector contributes almost 20% to GDP, according to data from the Central Bank of Albania, it receives less than 3% of bank credit. A significant portion of the rural population does not have access to formal financial institutions, with less than a third having a bank account and less than a fifth of smaller enterprises having a bank loan or line of credit. (Blanco & Qorlazja, 2024).

4. Steps Undertaken for the Digitalization of Agriculture in Albania

Recently, Albania has implemented a series of initiatives and institutional reforms, thus increasing its efforts to digitalize agriculture. One of the key steps in the process of digitalizing agriculture in Albania is the Digital Agriculture and Rural Transformation (DART) Program (2024–2027). This step represents an initiative that aims to promote and transform agriculture as well as support inclusive rural development. This program focuses on improving productivity, sustainability and resilience by integrating digital tools into all agricultural production systems. (United Nations, Albania, 2024).

Progress has also been made in formulating the National Digital Agriculture Strategy and

its accompanying Action Plan, developed in line with European Union policy frameworks and international best practices. These are strategic documents that provide a structured roadmap for the adoption of digital technologies in agriculture, setting out policy priorities, institutional responsibilities and implementation mechanisms in line with the EU's digital and agricultural transformation agenda (European Commission, 2021; FAO, 2022).

The creation of the Farmers Portal is another important step. The Farmers Portal is a digital platform designed to provide farmers with online access to public services. This portal enables application for support schemes, access to technical and advisory information, and market-related data, thereby reducing administrative barriers and increasing transparency and efficiency in the delivery of public services (World Bank, 2021).

In countries with fragmented agricultural lands, such as Albania, these technological infrastructures are seen as an opportunity for digital transformation in agriculture.

Building infrastructure capacities is considered to be one of the key components regarding digital agriculture in Albania. Therefore, training programs have been implemented to increase and improve digital skills for farmers, rural women, youth and staff in public institutions. All these initiatives aim to strengthen human capital, as one of the main actors in the sustainable use of digital agricultural technologies (OECD, 2022; Zhou & Lin, 2024).

Furthermore, this process of digitalization of the agricultural sector is supported by a broad institutional coordination, involving more than 25 institutions engaged in planning, coordination and implementation activities. All this coordination is very important for the most efficient management, based on international experience (FAO, 2022).

Another important step is the integration of digital agriculture modules into Technical and Vocational Education and Training (TVET) programs. This is an initiative that aims to equip future agricultural professionals with relevant digital competencies, supporting workforce readiness and innovation capacity in this sector (UNESCO, 2021).

Recently, there has also been a greater emphasis on raising awareness among rural communities in modernization processes. By engaging and involving stakeholders, these efforts aim to ensure that digital transformation contributes not only to technological progress, but also to broader socio-economic development in rural areas, especially for smallholders (McFadden et al., 2022; Tomorri et al., 2025).

5. Challenges of Agricultural Digitalization in Albania

Despite the potential that digitalization has to improve and modernize the agricultural sector, in Albania, the use of digital tools is still a challenge and is facing numerous difficulties. These obstacles limit the spread of innovation and the sustainable development of this sector in the economy. The main problems are related to the high costs of investing in digital tools, the lack of financial support from relevant institutions, the lack of proper infrastructure and many other problems. Even today, there are rural areas that lack the internet, which also makes it difficult to use these digital devices and various applications. These problems also cause inequality among farmers and this inevitably leads to a slowdown in the development of this sector.

Another important problem, which has been carried over for years and years, is the division and fragmentation of land into small plots. Most farmers in Albania have small farms, which makes it difficult to invest in advanced digital tools such as drones, sensors, automatic management systems, etc. Farmers not only lack the financial resources to afford these investments, but on the other hand they also lack the knowledge and skills to

use these devices. This also comes from the lack of training or advisory support for these farmers.

As mentioned above, the high investment costs in these equipment remain the main challenges for farmers in Albania. They often have difficulty obtaining loans from banks, as these financial institutions are not willing to provide loans to this sector. Meanwhile, microfinance institutions offer high interest rates, which makes it impossible for small and medium-sized farmers to obtain loans. There is also a lack of coordination between state institutions and a lack of unified systems for collecting and managing data for the agricultural sector.

Although several international initiatives, policies and programs have been undertaken in recent years to improve the productivity and further development of the agricultural sector in Albania, the digitalization of this sector requires a more comprehensive and integrated approach.

This approach implies greater investments in digital infrastructure, more training for farmers, capacity building, access to financing, better coordination between institutions. If these challenges are met, then this means that this sector will have an easier time achieving more sustainable development and increasing agricultural production.

6. Conclusions

This paper examines how digitalization can improve and transform the agricultural sector, focusing specifically on the case of Albania. The results show that the use of digital devices is seen as a potential to increase agricultural production, significantly improve efficiency and contribute to the sustainable development of this sector. The use of digital technology also affects the ability to make better decisions to efficiently manage resources and operate in domestic or foreign markets. The literature reviewed shows that digitalization is being seen as one of the main factors driving the modernization of agriculture and the development of rural areas.

In Albania, the digitalization of the agricultural sector is developing rapidly. Initiatives such as the Digital Agriculture and Rural Transformation (DART) Program (2024–2027), the development of a National Digital Agriculture Strategy, and several digital platforms created for farmers, are showing that institutions are increasingly committed to the development of this sector. These are important steps to further develop and modernize this sector and bring it closer to European Union standards and international best practices. However, the paper highlights some of the main obstacles to the use of digital devices in agriculture. Fragmentation of plots, small farms, low digital skills of farmers, low financing opportunities, lack of infrastructure in rural areas are some of the main problems identified in rural areas. All of these obstacles limit the benefits that this digital transfer could bring.

However, the analysis also reveals that the adoption of digital technologies in Albanian agriculture is constrained by several structural and systemic challenges. These include fragmented farm structures, limited digital infrastructure in rural areas, insufficient digital skills among farmers, and limited access to finance – especially for smallholder farmers. As highlighted in the international and country-specific literature, these barriers risk widening the digital divide and limiting the comprehensive impact of digital transformation.

In conclusion, although digitalization offers more opportunities to transform Albanian agriculture and make it more competitive and sustainable, success depends on a more

coordinated and comprehensive approach. Policies that support small farmers and develop digital technologies are very necessary. This makes digitalization affect sustainable and equitable rural development.

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SUSTAINABLE TOURISM MODELS INTEGRATING LOCAL COMMUNITIES AND CIRCULAR ECONOMY PRINCIPLES: PERSPECTIVES FROM ALBANIAN DESTINATIONS WITH A FOCUS ON DESTINATION BRANDING

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Abstract

Sustainable tourism is a global priority for promoting economic growth and environmental protection. However, in the Lezha Region of Albania, challenges such as poor service quality and the lack of a unified tourism identity limit the destination's potential (Gössling & Hall, 2018). This study examines the role of destination branding in integrating local communities and circular economy principles to build a sustainable and competitive image for Lezha. The objectives are to identify factors influencing brand perception, propose a novel branding model, and provide recommendations for other Albanian destinations. The study addresses gaps in the literature, as few studies have explored destination branding in the Albanian context, particularly in relation to the circular economy. The methodology employs a mixed quantitative and qualitative approach, utilizing a questionnaire distributed to 286 respondents (domestic and international tourists, local residents, and tourism operators) during February – July 2025, complemented by a theoretical analysis of the literature (Murray et al., 2017). Data were analyzed using statistical methods to test hypotheses regarding the role of services, attractions, and experiences in shaping brand perception. Findings reveal that positive tourist experiences (80% of repeat visits linked to experiences...while traditional branding and marketing efforts were rated as “average” or “poor” by 61.5% of respondents.. Poor service quality and infrastructure remain the primary barriers to brand perception, supporting hypotheses about the role of these factors. Based on these findings, the “Experience-Based Branding” model is proposed, which engages local communities through the “Lezha Hospitality” program to enhance service quality and promotes authentic assets (Skanderbeg Memorial, Kune-Vain Lagoon, Kallmet wine) via the “Gateway to the North” narrative. Circular economy principles are integrated through Agritourism and sustainable waste management in the lagoon, aligning with Murray et al. (2017). This model provides a roadmap for Albanian destinations, recommending investments in infrastructure, community training, and promotional campaigns for authentic assets. The study's significance lies in its theoretical contribution to the literature on destination branding and sustainable tourism, as well as its practical implications for developing destinations with limited resources. Future research could test the model in other destinations or analyze the long-term impact of the proposed strategies.

Keywords: *Agritourism, Tourist loyalty, Destination identity, Waste management, Sustainable development.*

JEL Classification: *L83, Q56, R11*

1 Introduction

Albania has experienced one of the fastest tourism growth rates in Europe. In 2024 the country welcomed over 11 million international visitors – an increase of more than 30% compared to the previous year – and tourism now contributes approximately 21–22% of GDP while directly and indirectly employing over 250,000 people (UNWTO, 2024; INSTAT, 2024; World Bank, 2024). Despite this success, spatial concentration remains extreme: 68% of overnight stays are registered in only four corridors (Tirana–Durrës urban area, Vlorë–Sarandë coast, and the northern alpine region Theth–Valbona). Lezhë County, strategically located just 50 km north of Tirana International Airport and home to outstanding cultural (Skanderbeg Memorial, Lezhë Castle), natural (Kune-Vain Lagoon – Ramsar site) and gastronomic (Kallmet wine PDO area) assets, captures only 4.7% of total overnight stays in licensed accommodation (INSTAT, 2024). “This disparity between Lezhë’s outstanding tangible assets and its relatively weak perceived destination brand represents the core paradox that this research seeks to address.”

Contemporary destination branding theory has moved beyond simple logo-and-slogan approaches. Kavartzis and Hatch (2013) and Hanna and Rowley (2015) emphasise that a successful place brand emerges from the co-creation of authentic experiences involving residents, visitors and stakeholders. Gössling and Hall (2019) further argue that sustainable tourism development can no longer ignore absolute reductions in resource consumption and waste generation. In this context, the circular economy framework proposed by Murray et al. (2017) – based on reducing, reusing, recycling and regenerating resources – offers a particularly suitable model for destinations with limited financial capacity but strong community ties. Despite the growing academic interest in Albanian tourism, empirical studies on destination branding remain scarce and predominantly qualitative (Domi & Çili, 2021; Kadiu, 2023). This paper fills that gap by providing quantitative evidence from Lezhë County and by proposing a concrete, replicable branding model that explicitly links community engagement and circular economy principles.

While destination branding literature has extensively explored experiential and co-creation approaches (Kavartzis & Hatch, 2013; Hanna & Rowley, 2015), and circular economy applications in tourism have gained momentum (Girard & Nocca, 2017; Rodríguez et al., 2020), the explicit integration of circular economy principles as a core dimension of destination brand identity remains largely unexplored, particularly in emerging destinations with strong community ties but limited financial resources. This study positions circular economy not merely as a sustainability tool but as a strategic branding asset that reinforces authenticity, differentiates the destination from mass-tourism competitors, and transforms local communities into active brand co-creators.

2 Literature Review

2.1 Destination Branding and Tourist Loyalty

Destination branding is defined as “the set of marketing activities that support the creation of a name, symbol, logo, word mark or other graphic that both identifies and differentiates a destination” (Blain et al., 2005) while simultaneously delivering a consistent customer experience (Hanna & Rowley, 2015). Research consistently shows that strong destination brands increase revisit intention and positive word-of-mouth (Konecnik & Gartner, 2007).

2.2 The Role of Experience and Community

Recent studies underline that loyalty is increasingly driven by lived experience rather than

by traditional advertising (Pine & Gilmore, 1999; Mossberg, 2007). Local residents play a crucial role as “ambassadors” and co-creators of the visitor experience (Kavaratzis & Hatch, 2013).

2.3 Circular Economy in Tourism

Murray et al. (2017) and Girard & Nocca (2017) demonstrate that circular principles (short supply chains, waste valorisation, renewable energy, water recycling) can be successfully applied to tourism, creating both environmental benefits and new economic opportunities for local communities. The circular economy is rarely treated as a core branding tool in tourism literature. This study argues that, when intentionally integrated, it becomes one of the strongest sources of differentiation and authenticity for emerging destinations. Circular practices deliver **tangible authenticity**: short food chains, zero-waste kitchens and up cycling of local materials (e.g., lagoon reeds turned into souvenirs) provide visible proof that the destination genuinely “lives” its values. This materiality can be distilled into a powerful brand narrative — “Lezha: where nothing is wasted, everything has a story” — that feels credible because visitors can see and touch it.

They also create **new experiential touch points**: waste-to-souvenir workshops, reed-craft demonstrations and farm-to-table dinners with zero-food-waste menus transform sustainability from an abstract claim into memorable, shareable moments that reinforce brand identity (Pine & Gilmore, 1999). Most importantly, circular models generate **economic benefits that reach residents directly** (income from up cycled products, Agritourism circuits, and lagoon-cleaning cooperatives). This turns locals into proud, authentic brand ambassadors — the factor ranked highest (80.1%) in driving repeat visitation in the present study.

In short, the circular economy is not an add-on sustainability feature; it is a strategic branding asset that enhances authenticity, creates unique experiences, empowers communities and differentiates Lezha in a crowded regional market.

3 Objectives and Hypotheses

The primary objective is to develop an evidence-based branding model for Lezhë County that integrates authenticity, community engagement and circular economy principles. Four hypotheses were tested: H1: Perceived destination brand strength positively influences revisit intention.

H2: Perceived service quality and infrastructure positively influence brand image and loyalty. H3: Cultural, historical and gastronomic attractions positively influence brand strength and loyalty. H4: Positive past experiences are a stronger predictor of loyalty than brand image alone.

4 Methodology

4.1 Research Design and Sample

A sequential mixed-methods design was employed. Primary data were collected between February and July 2025. The sample consisted of 286 respondents divided into four groups: domestic tourists (n=148), international tourists (n=68), local residents (n=42), and tourism operators/stakeholders (n=28).

4.2 Instrument and Analysis

A semi-structured questionnaire with 5-point Likert scales and open-ended questions was used. Quantitative data were analysed in SPSS 27 (descriptive statistics, Chi-square tests,

Spearman's correlation, binary logistic regression). Qualitative answers were thematically coded in NVivo 14.

5 Findings

5.1 Reasons for Repeat Visitation

Table 1 Reasons for repeat visitation (N=229 repeat visitors, multiple responses allowed)

Reason	Percentage
Positive experience with residents/hospitality (H4)	80.1%
Gastronomy and local products	78.6%
Natural attractions (lagoon, beaches) (H3)	69.4%
Affordable prices	54.2%
Destination brand / marketing (H1)	9.8%
Source: Author's survey, 2025	

5.2 Hypothesis Testing

Table 2 Hypothesis testing results

Hypothesis	Statistical test	Key result	p-value	Conclusion
H1	Spearman's rho	$\rho = 0.287$	<0.001	Supported
H2	Logistic regression	Exp(B) = 3.11 (service quality)	<0.001	Strongly supported
H3	Chi-square	$\chi^2 = 84.6$, df=4	<0.001	Supported
H4	Logistic regression	Exp(B) = 6.84 (past experience)	<0.001	Strongly supported
Source: Author's calculations, 2025				

5.3 Evaluation of Attractions and Competitiveness

Cultural heritage (87.0%), gastronomy (95.0%) and natural beauty (91.0%) received extremely high scores, confirming the exceptional quality of Lezhë's tangible assets. However, only 28.6% of respondents consider the destination "attractive" or "very attractive" compared to international competitors, mainly because of perceived service and infrastructure deficits.

6 Proposed Experience-Based Branding Model

"Lezha – Gateway to Authentic Northern Albania: An Experience-Based Branding Model Rooted in Circular Economy Principles" Community as Human Brand – "Lezhë Hospitality" certification and continuous training programme for residents, accommodation owners and service staff.

1. Unified Asset Promotion – integrated storytelling linking Skanderbeg Memorial, Lezhë Castle, Kune-Vain Lagoon and Kallmet wine region.
2. Full Circular Economy Integration

- Zero-waste agritourism circuits with short food supply chains
- Plastic-Free Lezhë campaign and beach/lagoon cleaning network
- Waste-to-souvenir artisan workshops (e.g. products made from lagoon reeds and recycled materials)
- 20% of entrance fees reinvested in site conservation
- Promotion of e-bikes and electric shuttles between attractions

7 Discussion and Policy Implications

The empirical evidence clearly demonstrates that loyalty in Lezhë is created inside the destination through authentic human interaction and memorable experiences, not through external advertising campaigns. Traditional branding investments therefore deliver very low returns as long as basic service quality and infrastructure gaps persist. National and local authorities should urgently redirect resources from generic promotion towards community training, waste management systems and small-scale sustainable infrastructure. The proposed model is one of the first attempts to operationalise circular economy not as a parallel sustainability strategy but as a core pillar of destination brand architecture in an emerging market context.

8 Conclusions

Lezhë County illustrates a common challenge in emerging destinations: despite possessing world-class cultural, natural, and gastronomic resources, its competitive position and visitor loyalty remain constrained by gaps in service quality and infrastructure. The study confirms that positive lived experience (H4) is almost seven times more powerful than traditional brand image (H1) in predicting loyalty. The proposed “Experience-Based Branding” model – combining community empowerment and circular economy principles under a coherent narrative – offers a cost-effective and sustainable path for Lezhë and similar emerging Albanian destinations.

The model offers the first empirically supported framework that operationalizes circular economy principles as a core pillar of destination brand identity in a South-East European emerging destination.

Limitations

The sample size is moderate and geographically limited to one county. Part of the data collection took place off-season, potentially influencing perceptions of infrastructure and crowding. Future research should apply longitudinal designs and comparative analysis across multiple Albanian regions.

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THE INTEGRATION OF ARTIFICIAL INTELLIGENCE INTO CULTURAL HERITAGE: CHALLENGES AND OPPORTUNITIES FOR ALBANIA

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Abstract

In the last decade, the use of digital technologies, particularly artificial intelligence, has played an increasingly important role in the interpretation, preservation, and communication of cultural heritage. This development represents both a challenge and an opportunity for cultural institutions to shift from traditional models of interpretation toward digital approaches. This study examines the use of advanced technologies such as AI and VR as part of a contemporary museological framework. The purpose of this research is to analyze the impact of AI on the processes of preserving, managing, and promoting cultural heritage. The study explores the opportunities these technologies offer for documentation, restoration, and expanded public access, as well as the risks that may arise when they are used without appropriate ethical and cultural guidelines. The paper focuses on several national museums in Albania as representative case studies. The methodology combines a literature review on the role of AI in cultural heritage with a statistical analysis of visitation trends in selected museums and semi-structured interviews with institutional leaders and field professionals. Another component of the study is the analysis of a representative example of technological application in Albania: the digital reconstruction project of the Venetian Tower in Durrës. This project illustrates how technology can enhance the visitor experience and support the creation of new, technology-based interpretive narratives. Although new technologies have not yet been systematically integrated into Albanian museum institutions, awareness of their potential is increasing. This includes improved access, enhanced educational interpretation of history, the preservation of collective memory, the creation of digital archives, and the international promotion of national culture. However, several obstacles remain, including limited financial resources, insufficient technological infrastructure, and a lack of specialized professionals. The study aims to contribute to a deeper understanding of cultural heritage management in the digital age, emphasizing the necessity of public policies that support the integration of technological innovation in the cultural heritage sector.

Keywords: *AI, Cultural Heritage, Museum, Digital Reconstruction, Digital Technologies*

JEL classification: *Z11, O33, L86*

1. Introduction

In the last decade, cultural heritage institutions have begun to rethink their role in a rapidly changing technological environment. Artificial intelligence (AI) has become one of the driving forces behind this shift, not only by expanding the technical capacity of museums and archives, but also by reframing how cultural value, preservation, and interpretation are understood (Caramiaux, 2023).

These developments have emerged progressively, shaped by the increasing availability of digital resources and the need for institutions to rethink how they preserve and communicate heritage. Rather than replacing human judgment, AI tends to extend it, offering tools that identify patterns at scale, reveal previously overlooked details, and support more nuanced interpretive possibilities. Several studies highlight how machine

learning, image analysis, and semantic processing contribute to safeguarding both tangible and intangible cultural heritage. These technologies allow institutions to document fragile material with higher accuracy, classify artifacts more efficiently, and model historical environments in immersive formats (Bi & Nasir, 2024; Bizan bin Ghowar, 2023). Parallel developments in virtual and augmented reality provide new ways for audiences to engage with heritage, often creating experiences that feel more personal and emotionally resonant (Gîrbacia, 2024). Such approaches help bridge geographic and linguistic barriers, making heritage more accessible to broader publics. However, this technological expansion brings important ethical and methodological considerations. Researchers warn that datasets used to train AI models can embed historical inequalities, leading to biased representations or incomplete narratives if not critically evaluated (Foka & Griffin, 2024). To address these risks, scholars and practitioners advocate for sector-specific ethical frameworks that emphasize transparency, cultural sensitivity, and shared responsibility (Boiano et al., 2024). These discussions underscore that AI adoption in heritage contexts is not solely a technical matter; it is also a cultural and political one. Meanwhile, bibliometric analyses show a marked rise in research activity at the intersection of AI and cultural heritage, reflecting global recognition of its transformative potential (Sánchez-Martín et al., 2025). Advances in multimodal data fusion, LiDAR-based documentation, and 3D reconstruction are further expanding the scope of preservation practices (Marchello et al., 2023). Collectively, this literature suggests that AI is reshaping not just operational processes, but also how institutions conceptualize their mission and relationship with audiences. Against this backdrop, examining the implications of AI for preservation, management, and public engagement becomes essential. In emerging contexts such as Albania where digital infrastructures are evolving and institutional capacities vary, these questions take on particular significance. By situating this study within the broader international discourse, the paper aims to offer a balanced and grounded perspective on the opportunities and constraints that accompany AI integration in the cultural heritage sector.

2. Literature Review

2.1. Introduction to AI in Cultural Heritage

Artificial intelligence (AI) has become an increasingly influential force in the cultural heritage sector, driven by expanding digitization initiatives, advances in immersive technologies, and the need for more adaptive interpretive practices. Scholars highlight that AI has shifted from a technical support tool into a multidimensional framework that enhances institutional workflows, strengthens documentation processes, and diversifies visitor engagement (Caramiaux, 2023; Siri, 2024).

As museums and heritage institutions navigate digital transformation, AI serves as both an operational resource and a catalyst for rethinking how cultural value is communicated and preserved.

2.2. AI in Documentation, Digitization and Preservation

AI-driven methodologies significantly advance documentation and conservation practices. Machine learning and computer vision models support the detection of deterioration patterns, structural vulnerabilities, and surface anomalies that may remain unnoticed through manual inspection (Mitric et al., 2024; Wang et al., 2025). Sensor-based AI systems further enhance monitoring capacities by enabling real-time structural analysis and predictive risk alerts for historic buildings and monuments (Ebrahim, 2025). Classification algorithms and automated clustering assist with cataloguing large-scale archives, improving the efficiency of collection management (Sánchez-Martín et al.,

2025). Additionally, developments in 3D modeling and digital twins contribute to long-term preservation by enabling accurate virtual reconstructions and providing remote access to fragile sites thus reinforcing the role of AI as a strategic tool in conservation practices (Niccolucci et al., 2022).

2.3. Immersive Technologies (VR/AR) and Interpretative Storytelling

Virtual and augmented reality (VR/AR) enrich interpretive models by offering immersive storytelling environments that connect visitors to cultural narratives and reconstructed architectural spaces. Studies demonstrate how VR-guided experiences, such as the Notre-Dame museum tour, leverage AI-based personalization to deepen user engagement and support experiential learning (Lu et al., 2024; Rizvic et al., 2024). AI also integrates with VR/AR in cultural tourism, providing personalized tour pathways, metaverse interactions, and reconstructions of intangible cultural practices (Correia, 2025; Deng, 2025). These immersive applications combine narrative design with computational intelligence to support broader public access and create new interpretive possibilities within museum and heritage contexts.

2.4. AI for Visitor Experience and Accessibility

AI plays an increasingly important role in improving visitor experience and accessibility in museums. Recommender systems, conversational agents and adaptive interfaces help tailor interpretive content to different interests, learning styles and accessibility needs (Villaespesa & French, 2019; Rani et al., 2023). Institutions are also using AI-enabled tools to analyze visitor behavior, refine exhibition layouts and adjust communication strategies in real time (Zhao & Yezhova, 2024). Multimodal applications such as object recognition, gesture-based interaction and audio description further support visitors with visual or motor impairments, contributing to more inclusive museum environments (Wang et al., 2025; Pansoni et al., 2023). These tools demonstrate how AI can enhance both engagement and accessibility when integrated thoughtfully.

Recent research also shows that AI is reshaping tourism practices, offering parallels that may be useful for cultural heritage institutions. In the Albanian context, Kosta et al. (2025) report that tourism operators in Durrës have begun using AI tools such as hotel recommendation systems, sentiment analysis of visitor feedback and automated reservation management. Although museums are advancing more slowly, these developments indicate that AI is already present in related sectors. This contrast highlights both the potential and the lag within the cultural heritage field, suggesting that museums could benefit from coordinated strategies that draw on existing local expertise in tourism technology.

2.5. Institutional Adoption, Challenges and Capacity Building

Institutional adoption of AI varies significantly across regions and museum types. Many institutions continue to experiment with small-scale innovation pilots such as VR kiosks, prototype chatbots, or AI-assisted cataloguing systems rather than implementing cohesive long-term strategies (Rosemary, 2025; Bizan bin Ghowar, 2023). Research highlights the importance of staff training, interdepartmental collaboration, and digital readiness as key factors shaping sustainable AI adoption. Studies also emphasize how digital transformation enhances knowledge management, enabling more informed decision-making, strengthening cross-functional communication, and integrating educational, curatorial, and administrative processes within museum environments (Rosemary, 2025; Tribelli et al., 2024).

2.6. Ethical, Human-Centric and Governance Perspectives

Ethical concerns form a critical strand of the current discourse on AI in cultural heritage.

Scholars identify risks associated with algorithmic bias, cultural misrepresentation, opaque decision-making systems, and the misuse of generative AI in reconstructing or interpreting heritage objects (Floridi et al., 2018; Ocón & Luna, 2025).

Human-centric frameworks underline the importance of transparency, cultural sensitivity, and community-centered approaches in AI design and implementation (Derda & Predescu, 2025). Concerns also arise regarding authenticity, as AI-generated reconstructions may inadvertently distort historical meaning or introduce speculative narratives without clear curatorial oversight (Haval & Mishra, 2025). Caramiaux (2023) argues for closer involvement of museum professionals in AI development to ensure that technological innovation aligns with institutional values, ethical commitments, and audience needs.

2.7. Implications for Contexts with Developing Digital Infrastructures

For countries with emerging digital infrastructures, the literature offers valuable guidance on how AI can be integrated responsibly and effectively. Key considerations include investing in digital literacy, prioritizing cross-sector collaboration, and ensuring long-term sustainability in technological adoption.

The reviewed studies show that AI's role in cultural heritage depends not only on technical tools but also on human-centered governance, adequate resources and attention to cultural context. These factors are especially important for countries like Albania, where digital transformation in heritage institutions is still developing.

3. Methodology

This study adopts a combined methodological approach designed to explore how digital technologies, particularly artificial intelligence, may support the preservation, management and public interpretation of cultural heritage in Albania. The methodology is structured around three complementary components: a literature review, the consideration of descriptive visitation patterns and semi structured interviews with professionals working in the cultural heritage sector.

The first component consists of a literature review that provides the theoretical and conceptual grounding for the study. Recent research on digital documentation, conservation processes, immersive interpretation and ethical considerations in the use of AI contributes to building a broad understanding of how museums and heritage institutions are responding to digital transformation. This review also helps position the study within international discussions and identify approaches that may be relevant for the Albanian context. The second component involves the consideration of visitation tendencies in selected museum institutions. These observations are used only in a descriptive and contextual way. They are not part of a formal dataset and are not treated as statistical evidence. Instead, they help illustrate how public interest may change when new digital experiences become available. For example, references to increased visitor interest after the introduction of a virtual reality installation at the Venetian Tower in Durrës serve as contextual cues that support the broader discussion on audience engagement.

The third component consists of semi structured interviews with institutional leaders and professionals in the field. The aim of these interviews is to explore how practitioners perceive the integration of AI in areas such as archive digitization, documentation and preservation processes, public interpretation and the introduction of interactive tools like virtual reality.

The interviews also address institutional readiness, resource limitations and ethical concerns that may arise during technological adoption. Semi structured interviews were selected because they allow flexibility and enable a deeper understanding of issues that are

specific to the Albanian institutional environment. Overall, these elements offer a balanced and multi-layered view of how advanced technologies are being considered and applied within heritage institutions in Albania.

The approach is exploratory and reflects the early stage of digital transformation in the country. By combining theoretical insights with practitioners' perspectives, the study aims to highlight both the potential and the challenges involved in integrating AI within the field of cultural heritage.

4. Findings

The findings of this study bring together insights from the literature, interviews with museum professionals and observations from recent digital initiatives in Albania. Taken as a whole, they show that interest in artificial intelligence and digital tools is growing, even though their integration in museum practice remains limited. Interviews with museum staff confirmed that most Albanian museums are still at an early stage of digital transformation. Documentation is often carried out using basic digital tools, and broader digitization efforts remain a continuous process rather than a fully implemented practice.

Many participants expressed the view that AI could help with organizing collections, preserving fragile materials and improving the management of museum records. However, they also noted that institutions face practical obstacles such as limited equipment, insufficient human resources and a lack of clear institutional guidance. During the interviews, several gentle prompts were used to guide discussion. These invited participants to talk about how their museum currently handles digitization, whether AI could support preservation tasks and how they see the role of interactive technologies in visitor experience. Interviewees often raised ethical questions as well, especially regarding accuracy in digital reconstruction and the need for transparency when using automated systems. One of the few concrete examples of immersive technology in Albania is the Venetian Tower in Durrës. After its restoration in 2022 and 2023, the tower was transformed into a Heritage Interpretation Center equipped with VR headsets, multimedia projections and interactive installations (EU4Culture, 2025).

According to interviewees, this initiative has attracted public attention and shows how digital tools can help visitors understand the historical layers of the site. While these observations do not represent statistical analysis, they suggest that immersive technologies can play a meaningful role in expanding engagement, a pattern also supported by international research. Overall, the findings indicate that digital innovation in Albanian museums is progressing slowly but steadily. Museum professionals recognize the value of AI and related technologies, especially for documentation and interpretation, yet implementation remains uneven.

The example of the Venetian Tower demonstrates what can be achieved when restoration efforts are combined with digital interpretation, offering a useful model for future projects. Additional contextual insights come from recent studies on tourism practices in Durrës, which indicate that AI adoption is progressing more visibly in the tourism sector than in museum institutions. Kosta et al. (2025) report that hotels and tourism service providers in the city have already integrated AI-based recommendation tools and automated systems for managing visitor interactions. Although these developments fall outside the museum domain, interview participants viewed them as encouraging signs that digital innovation is possible when institutional priorities and resources align. Their observations suggested that the museum sector could benefit from similar approaches, particularly in understanding visitor preferences and refining interpretive strategies. To move forward, institutions will

likely need greater investment, clearer policies and training opportunities that can support a more confident use of AI in the cultural heritage sector.

5. Discussion

The findings of this study show that Albanian museums are engaging with digital transformation in gradual and uneven ways. Museum professionals express interest in artificial intelligence and see its value for documentation, preservation and interpretation. At the same time, they point to practical challenges that limit wider adoption. These include limited infrastructure, reduced staffing and the absence of coordinated strategies. Similar constraints appear often in international studies, which suggest that the success of digital heritage projects depends as much on institutional support as on the technology itself.

The interviews also reveal that digitization remains a continuous process. Museums use digital tools in their daily work, but many are still developing complete systems for managing archives and collection data. This situation reflects broader trends in the cultural heritage field, where institutions face difficulties in building stable digital workflows. Despite these limitations, museum staff show a clear understanding of the potential benefits of AI and a willingness to consider new practices when conditions allow. The example of the Venetian Tower illustrates what can be achieved when restoration projects include a digital component. The introduction of VR and other multimedia tools has created a richer visitor experience and has drawn public attention to the site.

These observations align with international research, which notes that immersive technologies help visitors engage more deeply with historical narratives. Even though this study does not offer numerical evidence, the feedback gathered suggests that digital interpretation can support stronger connections between audiences and heritage content.

A relevant point of comparison comes from the tourism sector. A recent study in Durrës shows that several hotels and tourism operators have adopted AI tools such as recommendation systems and sentiment analysis to improve visitor services (Kosta et al., 2025). Although museums differ in their mission and resources, this example indicates that AI is already being used in Albania. It also shows that technical expertise exists in related sectors. This creates possibilities for collaboration and for a gradual adaptation of similar approaches within museum practice.

These findings also draw attention to the way current research is distributed across different fields. Studies on AI are more common in education, tourism and other applied areas. Research that focuses directly on the cultural sector is more limited, both internationally and especially in Albania. Cultural heritage often appears only indirectly in wider discussions about technology, which leaves many of its specific needs and challenges underexplored. This gap gives further importance to the present study and suggests that more focused academic work is needed to understand how AI can support preservation, interpretation and management in Albanian museums.

6. Conclusion

This study explored how artificial intelligence and digital tools are beginning to shape museum practice in Albania. The findings show that professionals in the sector recognize the potential of AI for documentation, preservation and interpretation, even though its integration is still limited by infrastructure, staffing constraints and the gradual pace of digitization.

The example of the Venetian Tower illustrates how immersive technologies can enrich

visitor engagement. VR remains a new development for Albanian museums, but its successful use in this site shows that digital interpretation can create meaningful experiences and attract public interest. This suggests that similar initiatives could be expanded to other institutions when resources and training allow. The comparison with the tourism sector indicates that AI is already being used in Albania in related fields, creating opportunities for collaboration and shared learning. However, research focusing directly on AI in cultural heritage remains limited, especially in the Albanian context. Future studies should examine visitor responses to digital interpretation, ethical considerations and institutional strategies for adopting advanced technologies.

Overall, the results suggest that AI can support both preservation and public engagement, but progress will depend on long-term investment, clear policies and stronger professional capacity. Addressing these needs would help museums move toward a more confident and sustainable use of digital innovation.

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EXPLORING TRAVEL WEBSITES AS STATISTICAL REPOSITORIES FOR TOURISM DEVELOPMENT IN NORTHERN ALBANIA

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Abstract

Tourism has emerged as one of the most rapidly expanding sectors of the Albanian economy, particularly in the northern region, where destinations such as Shkodra are experiencing a steady increase in both domestic and international visitors. The ongoing digital transformation of the tourism industry has introduced new possibilities for collecting and analyzing data, thereby improving the understanding of visitor behavior and enhancing destination management practices.

This study examines the potential of online travel platforms, specifically Booking.com, as alternative sources of statistical information for tourism development in the Shkodra region. It aims to assess how data extracted from this platform can complement traditional tourism statistics and contribute to a deeper understanding of the regional tourism supply. Using Python-based web scraping, data were collected from accommodation listings in the Shkodra region, including facilities, descriptive content, review counts, and rating scores. After cleaning and transforming the dataset, exploratory analysis focused on converting qualitative platform information into measurable indicators of accommodation characteristics and service availability.

The findings show that travel platforms provide both structured quantitative data and rich qualitative insights that are often unavailable in official tourism statistics. The analysis of facilities and descriptive text demonstrates that platform-generated content can offer timely and detailed information on service provision, destination characteristics, and the positioning of accommodation providers. Overall, the study contributes to the growing discourse on digital and smart tourism by highlighting the value of integrating platform-based data intelligence into regional tourism planning and policy-making.

Keywords: *Tourism, Travel Websites, Data Collection*

JEL codes: *Z32, O33, C881*

1. Introduction

The tourism sector is undergoing a digital transformation, giving rise to the paradigm of smart tourism, wherein information and communication technologies (ICT) and data-driven services play a central role in destination management and tourist experiences (Gretzel et al., 2015; Buhalis, 2020). Smart tourism has been defined as the "increasing reliance of tourism destinations, their industries and their tourists on emerging forms of ICT that allow for massive amounts of data to be transformed into value propositions" (Gretzel et al., 2015).

As Buhalis (2020) observes, technology has "revolutionized the tourism industry" bringing together stakeholders in smart service ecosystems and empowering travelers to co-create value through continuous data exchange. In this context, the digital footprints left by

tourists have become a strategic resource, aligning with calls in the literature for more intelligent, data-driven approaches to tourism development and policy (Gretzel et al., 2015; Buhalis, 2020).

Against this backdrop, scholars and international organizations have advocated for the integration of alternative data sources, including privately held big data and UGC, into tourism analysis and policy. The OECD (2025) argues that many limitations of current tourism statistics “can be addressed by using alternative data sources,” which can complement official surveys by providing more timely, granular, and comprehensive views of tourism activity (OECD, 2025). Such alternative sources range from mobile positioning data and credit card transactions to online travel data from platforms such as Booking.com and TripAdvisor. By combining traditional statistics with these new data streams, destinations can achieve a more holistic and up-to-date picture of tourism flow and trends.

Importantly, employing UGC as a statistical source aligns with the principles of smart tourism governance, which emphasizes data-driven decision-making, real-time monitoring, and responsive policy design (Xiang and Fesenmaier, 2017). The rich information embedded in traveler ratings and listed facilities can signal service characteristics and competitiveness far faster than annual reports. In practical terms, this means that data mined from travel websites could help identify which destinations are rising in popularity, how tourists perceive local services, or what factors influence destination choice, providing invaluable insights for strategic development and marketing.

As Albania’s northern region, particularly the city of Shkodra, experiences growing visibility, there is an increasing need for timely and detailed information to support tourism planning and destination management. Traditional tourism statistics provide important official data, but they are often published infrequently and offer limited insight into how visitors perceive and interact with destinations daily.

Simultaneously, platforms such as Booking.com generate a continuous stream of user-generated content. The volume of reviews, traveler ratings, and listed facilities form digital traces that can reveal patterns of tourism demand, service quality, and competitiveness at a granular level. For destinations like Shkodra, these digital footprints offer an opportunity to complement official statistics and understand tourism dynamics in a more flexible and responsive manner.

Despite these opportunities, empirical applications of platform-based data remain limited in the Albanian context. This study explores how web-scraped data from Booking.com may function as a supplementary statistical repository for tourism analysis. By applying Python-based Exploratory Data Analysis (EDA) to accommodation listings in Shkodra, the study examines accommodation facilities indicators as signals of service capacity and competitiveness.

The study demonstrates how platform-generated data can serve as an additional source of evidence for understanding and supporting tourism development in Northern Albania.

2. Literature review

Smart tourism frameworks emphasize the integration of advanced ICT infrastructures to enable data-driven insights, real-time monitoring, and seamless digital services at destinations (Gretzel et al., 2015). Scholars such as Buhalis, Gretzel, and Xiang argue that digital technologies are transforming how destinations are managed and evaluated, bridging physical tourism assets with digital ecosystems and analytics. Smart destinations increasingly employ sensors, mobile platforms, IoT tools, and big data systems to collect

and analyze information in real time, enhancing both decision-making and visitor experiences (Buhalis, 2020; Gretzel et al., 2015).

As tourism becomes increasingly digital, **big data analytics** has emerged as a transformative force. It reshapes how destinations understand traveler behavior and how tourism stakeholders engage with market dynamics, offering major opportunities but also introducing methodological challenges.

Within this broader digital ecosystem, online travel platforms and user-generated content (UGC) play a central role. Research consistently demonstrates that online reviews and ratings influence tourist expectations, service perceptions, and booking behavior. Reviews function as electronic word-of-mouth (eWOM), offering credible evaluations based on real visitor experiences (Rita et al., 2022). Properties with higher review volumes tend to gain greater digital visibility and stronger perceived credibility, as review count acts as a signal of popularity and reliability (Martin-Fuentes et al., 2018).

While UGC provides valuable insights, understanding the **reliability of online tourism data** is also essential. A comparative study by Drozdowska & Duda-Seifert (2016) found that information provided on TripAdvisor and Booking.com shows substantial potential for supporting both customers and market research, though levels of completeness may vary when compared with official accommodation statistics. Such findings reinforce the importance of critically assessing platform data while acknowledging its value as a supplementary resource (Drozdowska & Duda-Seifert, 2016).

Traditional tourism statistics, such as national surveys, accommodation registries, and INSTAT datasets, remain essential for long-term monitoring and official reporting. However, these systems are often limited by infrequent publication, lack of micro-level detail, and absence of qualitative insights. As destinations evolve more rapidly than official statistics can capture, **web data has become an increasingly important complementary source.**

The growth of online data has expanded the use of **web scraping**, now recognized as a fundamental method for extracting large volumes of structured and unstructured information from digital platforms. Valova et al. (2023) highlight web scraping as a crucial technique across many sectors, enabling access to valuable online information that feeds modern data-driven decision-making processes. Similarly, Adhinugroho et al. (2020) argue that big data derived from web scraping can serve as a proxy for, or complement to, official tourism statistics, especially in contexts where traditional data sources are incomplete or delayed.

Applications of web scraping in tourism research are also increasing across Europe. Fernandes (2023) demonstrates how web data scraping tools make it possible to compare multiple platforms to reveal new patterns in traveler preferences and booking habits. In Romania, Boboc et al. (2025) show that platform-generated data provide meaningful insights into accommodation supply, pricing, and visitor feedback, supporting more informed destination planning. Such studies underline the growing role of platform data as a legitimate component of tourism analytics.

To analyze these datasets effectively, researchers frequently employ **Exploratory Data Analysis (EDA)**. EDA supports the detection of inconsistencies, emerging themes, and structural characteristics embedded in semi-structured data, serving as a foundational step before applying statistical modeling or machine learning techniques (Morgenthaler, 2018; Sahoo et al., 2019). In tourism research, EDA has been used to examine eWOM patterns, attribute-satisfaction relationships, and destination competitiveness, contributing to evidence-based strategy development.

Despite the expansion of digital tourism literature, **empirical studies using platform-generated tourism data in Albania remain scarce**. Existing research tends to focus on ICT adoption or digital readiness rather than on leveraging digital footprints, such as accommodation facilities, descriptions, or review attributes, as statistical indicators. Consequently, there is a clear need for local, data-driven research that utilizes online travel platforms to complement official statistics and provide deeper insights into destination-level tourism activity.

This study examines Booking.com accommodation data for Shkodra and demonstrating how digital platform information can contribute to evidence-based tourism planning in Northern Albania.

3. Methodology

This study employed a quantitative, data-driven methodological approach using web-scraped accommodation data from Booking.com for the city of Shkodra. The methodological process integrates principles from Exploratory Data Analysis (EDA), as recommended in the literature for examining large and semi-structured datasets (Sahoo et al., 2019). The analysis was conducted using Python in a Jupyter Notebook environment, following a structured workflow of data extraction, cleaning, transformation, and visualization.

3.1 Data source and web scraping

Accommodation data for the Shkodra region were collected through a structured web scraping procedure targeting public information available on Booking.com. Web scraping was performed using Python scripts based on Requests and BeautifulSoup. The scraped dataset includes attributes such as:

- **Property name** - used for identification and contextual interpretation
- **Property description** - textual information from the “About” section
- **Facilities and services offered** - a standardized set of core amenities highlighted by Booking.com
- **Review_score** and **total_review** - platform-generated indicators of guest evaluations

The cleaned dataset was stored in a CSV format and served as the basis for all subsequent stages of analysis.

3.2 Exploratory Data Analysis (EDA) framework

Given the study’s objective of constructing tourism-supply indicators from platform-generated data, **Exploratory Data Analysis (EDA)** served as the primary analytical framework. EDA is particularly well suited for examining semi-structured online datasets, **enabling the identification of patterns, detection of inconsistencies, and generation of preliminary insights that inform subsequent analytical steps** (Morgenthaler, 2018; Sahoo et al., 2019).

The analysis was implemented in Python, due to its powerful libraries for data manipulation and visualization and was conducted within a Jupyter Notebook environment using:

- **Pandas** for data loading, cleaning, and transformation.
- **NumPy** for numerical operations and array handling.

- **Matplotlib** for graphical exploration through histograms, bar charts, and distribution plots.
- Word Cloud for visualizing frequency patterns in descriptive and facility-related text.

This approach aligns with international studies that emphasize the importance of EDA for understanding tourism datasets before applying advanced analytical methods.

3.3 Data cleaning and preparation

Data cleaning was a critical step given the semi-structured nature of the scraped dataset. In accordance with established EDA practices, several preprocessing procedures were implemented to ensure analytical consistency and reliability:

1. **Standardization of column names and data types**, including the conversion of review scores and numerical fields into appropriate numeric formats.
2. **Treatment of missing or incomplete entries, achieved either by imputing standardized placeholders or removing rows that lacked essential information.**
3. **Normalization of textual fields**, such as descriptions and facilities, through lowercasing, punctuation removal, whitespace normalization, and the filtering of non-informative terms.
4. Encoding of categorical variables, where necessary, to facilitate tabulation and visualization.

These procedures improved overall data quality and ensured a coherent structure for the application of frequency-based metrics and exploratory visualization techniques.

3.4 Facilities column processing and binary encoding

A key component of the analysis focused on accommodation facilities, which were originally stored as long, unstructured text strings. To enable a systematic examination of service offerings, the facilities data were transformed through a structured, multi-stage transformation process:

1. Initial parsing: The facilities text was split using the pipe (|) delimiter, the format commonly used by Booking.com to structure amenity lists.
2. Cleaning and normalization: Facility names were standardized by converting all text to lowercase, removing non-informative stopwords (e.g., “and,” “the”), and joining multi-word phrases with underscores for consistency (e.g., free wifi - free_wifi).
3. Facility extraction: A unique list of all facilities appearing across the dataset was generated to establish a consistent reference set.
4. Binary encoding: Each facility was then transformed into a one-hot encoded variable, creating a separate binary column indicating whether a given accommodation provides that specific service.

This transformation enabled the computation of facility frequencies and supported comparisons of service availability across accommodations. The focus on facilities and descriptive content was driven by the objective of understanding how tourism supply characteristics are represented on digital platforms. Facilities offer structured, comparable indicators of service availability, while descriptive narratives reveal how accommodations position themselves within the destination context. These variables were prioritized because, although absent from official tourism statistics, they directly influence traveler expectations and digital visibility. By concentrating on these platform-generated attributes, the study is able to construct complementary indicators of regional tourism supply that cannot be obtained through traditional statistical sources.

3.5 Methodological limitations

As with all web-scraped datasets, the analysis is constrained by the structure, accuracy, and completeness of the information available on Booking.com at the time of data collection. The study reflects the **online representation** of accommodations rather than verified on-site characteristics. Despite these limitations, the dataset is appropriate for the study's aim of illustrating the complementary value of platform-generated indicators for tourism analysis and regional monitoring.

4. Results

The analysis of the Booking.com dataset confirms that travel websites can provide structured and quantifiable information on the tourism supply in Northern Albania. By transforming textual and categorical fields into measurable indicators, the study illustrates how online platforms can serve as statistical repositories for tourism development.

4.1 Transforming platform dataset into usable indicators

The analysis demonstrates that accommodation-level information on Booking.com can be systematically transformed into structured indicators suitable for tourism supply monitoring. The binary encoding of facilities enabled the computation of facility coverage rates across the region. Figure 1 presents the percentage of accommodations offering selected amenities. These results illustrate that platform-derived data can serve as measurable proxies for infrastructure availability, an aspect of tourism supply that is not captured by national statistics such as arrival counts or room capacity.

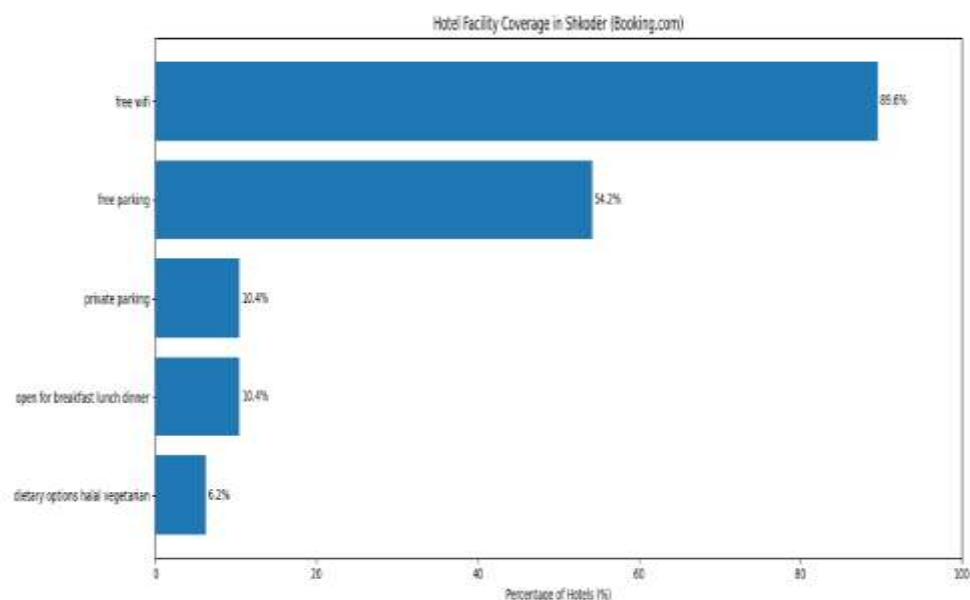


Figure 1
Hotel facility coverage in Shkodër (Booking.com)

This visualization demonstrates how qualitative platform content can be converted into **quantifiable tourism indicators**. Instead of treating facilities as simple marketing information, the bar chart reveals structured patterns in the tourism supply. It shows which services are widely available, the degree of service standardization across properties, and

potential gaps in amenities that may affect competitiveness, for example, limited availability of certain family-oriented or wellness facilities. In this way, the bar chart provides concrete evidence that online travel platforms contain data that can **complement traditional tourism statistics**, especially in contexts where official data are scarce or aggregated at a high level.

4.2 Word clouds and thematic patterns in service offerings

Unlike the facility indicators, which were quantified and aggregated, descriptive texts from the “About” section were examined qualitatively using a word cloud to illustrate the thematic richness of platform-provided dataset. The word cloud generated from the accommodation descriptions provides an exploratory overview of the most frequently used terms in how properties present themselves online. Rather than highlighting specific amenities, this visualization reflects the general vocabulary and marketing language used by hosts, showing which concepts, adjectives or location references appear most often across listings.

Its purpose is not to produce statistical inference but to illustrate the richness and variety of textual information embedded in the platform. By visualizing descriptive patterns in this way, the word cloud demonstrates that travel websites contain substantial unstructured data that can support qualitative interpretation or future thematic analysis. This complements the structured facility indicators by revealing another dimension of how the tourism supply is represented digitally.

4.3 Role of online platforms as statistical repositories

Taken together, the bar chart and the word cloud illustrate how platform-provided information can be transformed from unstructured text into usable statistical indicators. The descriptive content, ranging from narrative property descriptions to detailed facility lists, highlight the richness of information hosted on booking platforms. When cleaned and standardized, these raw inputs can be converted into structured measures, such as facility coverage rates, that allow for systematic interpretation of the tourism supply. This transformation from narrative content to quantifiable indicators underscores the study’s fundamental argument that travel websites can operate as informal statistical repositories when their data are processed methodically.

By transforming platform data into indicators of service availability, thematic positioning, and perceived quality, policymakers and destination managers can obtain timely, micro-level insights that **complement traditional tourism statistics** from sources such as INSTAT or municipal tourism offices. This is particularly valuable for regions like Northern Albania, where official data may be limited, delayed, or not disaggregated at the level of individual destinations or accommodation types.

5. Conclusions

This study establishes that online travel platforms represent a significant source of structured and unstructured data for tourism development analysis. By transforming facility lists into quantitative variables and examining descriptive content, the research shows that Booking.com provides micro-level insights into accommodation services, infrastructure availability, and destination positioning, dimensions absent from Albania’s traditional tourism statistics.

The findings reveal that online platforms generate real-time, property-level data capable of complementing official statistical frameworks, thereby enabling more comprehensive

assessments of regional tourism supply. The quantitative analysis confirms the methodological viability of extracting standardized, comparable indicators from platform data, while qualitative examination reveals substantial thematic and contextual depth within descriptive fields.

Together, these findings support the central argument that **travel websites can serve as statistical repositories**, contributing valuable evidence for destination management, policy planning, and tourism development strategies. Future research may extend this approach by incorporating review sentiment, pricing dynamics, or cross-platform comparisons to further enhance tourism intelligence in the Albanian context.

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APPENDIX



Figure 2
Word cloud generated from the facilities column of Booking.com accommodations in Shkodër



Figure 3
Word cloud generated from the About section of accommodation listings on Booking.com (Shkodër)

MANAGING OVERTOURISM AND CLIMATE RISKS THROUGH SMART DATA

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Abstract

Overtourism and climate-related pressures are increasingly threatening the sustainability of popular destinations worldwide. This study explores how smart data systems and predictive analytics can serve as transformative tools to anticipate and manage these dual challenges. By integrating real-time tourism flow data, environmental indicators and climate risk models, the research develops a framework for adaptive destination management. The proposed model employs predictive algorithms to forecast visitor peaks, assess vulnerability to weather extremes and optimize resource allocation in advance.

Case studies from coastal and urban destinations demonstrate how data-driven insights can inform evidence-based decisions—ranging from crowd dispersion strategies and infrastructure adaptation to carbon footprint monitoring. The findings reveal that destinations leveraging integrated data platforms experience improved resilience, visitor satisfaction, and reduced ecological stress.

This paper contributes to the growing field of sustainable tourism governance by linking big data analytics with climate adaptation policies. It emphasizes the need for cross-sector collaboration between tourism authorities, environmental agencies and technology providers.

Keywords: *Smart data, predictive analytics, sustainable tourism, destination management.*

1. Introduction

The global tourism industry, a significant driver of economic growth and cultural exchange, has demonstrated remarkable resilience, continuously expanding despite economic fluctuations, pandemics, and growing environmental challenges (Gössling, Scott, & Hall, 2021). However, this unbridled growth has given rise to the phenomenon of overtourism—a situation where the number of visitors exceeds the economic, social, and environmental carrying capacity of a destination, leading to the degradation of its very assets (UNWTO, 2022). Simultaneously, the intensifying impacts of climate change, including extreme weather events, sea-level rise, and ecosystem degradation, are rendering numerous tourist destinations increasingly vulnerable. These parallel crises necessitate a paradigm shift from reactive management to proactive, adaptive strategies. This paper posits that intelligent data technologies offer a pivotal solution. By harnessing the power of real-time data and predictive analytics, destinations can move beyond static management plans to develop dynamic, responsive systems capable of navigating the complexities of modern tourism.

This study aims to develop and validate a framework for adaptive destination management that integrates smart data to simultaneously mitigate overtourism and enhance climate resilience.

2. Literature Review

2.1. The Multifaceted Challenge of Overtourism

Contemporary literature extensively documents the negative externalities of overtourism. Beyond the immediate inconvenience for residents, overtourism leads to the physical degradation of cultural and natural heritage sites, strains public services and infrastructure, inflates the cost of living for local communities, and diminishes the quality of the visitor experience (Milano, Cheer, & Novelli, 2019). The erosion of a destination's authenticity can ultimately undermine its long-term economic viability. Consequently, scholars and practitioners alike advocate for proactive and intelligent management of tourist flows to safeguard both the destination's assets and the well-being of its host community.

2.2. Climate Change as a Risk Multiplier for Tourism

Climate change acts as a threat multiplier, exacerbating existing vulnerabilities in tourism destinations. Coastal destinations face the existential threats of sea-level rise, coastal erosion, and increased storm surge intensity. Alpine regions contend with diminishing snow cover and glacial retreat. Urban centers suffer from exacerbated heat island effects, reduced air quality, and increased frequency of heatwaves, which can render cities uncomfortable or even dangerous for tourists (Scott, Hall, & Gössling, 2019). These climate risks not only threaten the physical infrastructure of tourism but also disrupt travel patterns, damage a destination's image, and necessitate costly adaptation measures.

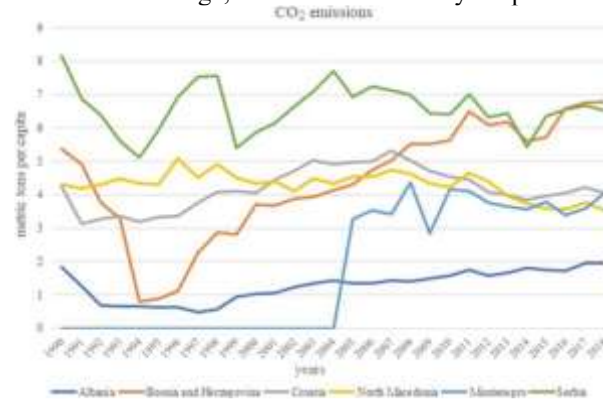


Figure 1: CO₂ Emissions (Source: Authors, 2019)

2.3. The Evolution of Smart Destinations and Intelligent Data Systems

The concept of the "smart destination" has emerged as a direct response to these challenges, representing an evolution from traditional destination management. It leverages technology to enhance the visitor experience, improve operational efficiency, and promote sustainability (Gretzel et al., 2015).

The foundation of a smart destination is its intelligent data system, which integrates data from diverse sources:

- **Internet of Things (IoT) Sensors:** Monitor real-time crowd density, air and water quality, noise levels, and waste bin capacity.
- **Mobile and GPS Data:** Track visitor movements, origin, and dwell times, providing invaluable insights into spatial and temporal behavior patterns.
- **Satellite Imagery and GIS:** Offer data on land use, coastal changes, vegetation health, and the impact of climate events.

- **Digital Platforms and Social Media:** Provide sentiment analysis, real-time reviews, and user-generated content that can inform service improvements and identify emerging issues.

2.4. Predictive Analytics for Proactive Tourism Governance

While real-time monitoring provides a snapshot of the present, predictive analytics offers a window into the future. By applying machine-learning algorithms—such as Random Forest, Long Short-Term Memory (LSTM) networks, and Gradient Boosting (e.g., XGBoost)—to historical and real-time datasets, destinations can forecast future conditions with remarkable accuracy. This capability is transformative for tourism governance, enabling:

- **Demand Forecasting:** Predicting visitor volumes to optimize staffing, pricing, and opening hours.
- **Risk Identification:** Anticipating potential overtourism hotspots or times of day before they occur.
- **Resource Management:** Pre-positioning resources (e.g., waste collection, security personnel) based on predicted needs.
- **Emergency Planning:** Activating early warning systems and evacuation protocols based on forecasted extreme weather events.

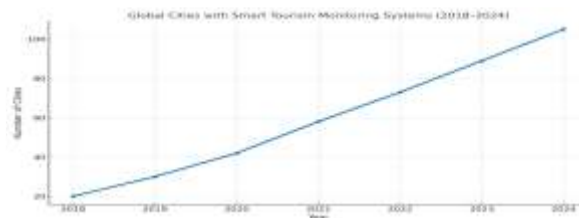


Figure 2: Tourism Monitoring Systems (Source: Authors, 2025)

3. Methodology

3.1. Research Approach

This study employs a mixed-methods research design to provide a holistic understanding of the role of smart data in destination management. The quantitative component involves statistical analysis of tourism data, environmental indicators, and climate model outputs.

The qualitative component enriches these findings through semi-structured interviews with destination management organization (DMO) administrators, urban planners, and technology experts from the selected case study sites.

3.2. Data Source Integration

A unified data framework was developed by integrating three primary data categories:

1. **Real-Time Tourist Flow Data:** Collected from anonymized mobile phone roaming data, Wi-Fi tracker counts in public spaces, and check-in data from major digital platforms.
2. **Environmental Indicators:** Sourced from a network of IoT sensors measuring air quality (PM2.5, PM10), ambient temperature and humidity, noise levels, and real-time water consumption and waste generation rates.

3. **Climate Risk Data:** Derived from high-resolution regional climate models, historical weather records, and geographic information systems (GIS) data on flood plains, coastal erosion rates, and urban heat island intensity.

3.3. Predictive Modelling Framework

Three distinct machine-learning models were developed and trained for each case study destination:

- **Visitor Flow Prediction Model:** An LSTM network, well-suited for time-series data, was trained on historical tourist flow data, calendar events, weather patterns, and social media trends to predict visitor numbers at different zones with a 24 to 72-hour horizon.
- **Extreme Weather Risk Assessment Model:** A Random Forest classifier was trained to identify the conditions preceding heatwaves and flash floods, using meteorological data and environmental sensor data, to forecast the probability of such events.
- **Dynamic Visitor Redistribution Recommender:** An XGBoost model was designed to simulate the impact of different interventions (e.g., real-time alerts, dynamic pricing, temporary diversions) on crowd distribution, recommending optimal strategies to alleviate pressure on overburdened areas.

3.4. Case Study Selection

Two distinct types of Mediterranean destinations were selected for in-depth analysis:

- **Coastal Destination (e.g., a popular beach town):** Highly vulnerable to sea-level rise, coastal erosion, and seasonal overtourism.
- **Urban Cultural City (e.g., a historic city center):** Exposed to high, concentrated tourist volumes and the urban heat island effect.

4. Results

4.1. Model Accuracy and Predictive Power

The predictive models demonstrated strong performance across both case study types. The LSTM networks achieved 87-92% accuracy in predicting visitor flows 48 hours in advance. The Random Forest models successfully forecasted heatwave events with 85% accuracy within a 24-72 hour window, allowing for timely public health advisories. Crucially, the models identified specific micro-locations within the destinations where the confluence of high visitor density and climate vulnerability posed the greatest immediate threat to local ecosystems and visitor safety.

4.2. Measurable Improvements in Visitor Management

The implementation of real-time monitoring dashboards, guided by predictive insights, led to significant operational improvements. Both destinations reported:

- A measurable reduction in crowd density at critical pinch points (averaging 28%), achieved through targeted nudges and information dispersal via a destination app.
- A more balanced spatial distribution of visitors, with a 15% increase in visits to less-frequented, peripheral areas.
- A positive shift in visitor sentiment, as reflected in digital platform reviews, with tourists expressing appreciation for a less congested and more comfortable experience.

4.3. Enhanced Climate Resilience and Response

The data-driven early warning systems proved invaluable during the study period. In the coastal destination, the system facilitated the proactive evacuation of a beach zone hours before a sudden flash flood event. In the urban center, heatwave alerts triggered the activation of cooling stations and prompted the distribution of real-time information to tourists about shaded walking routes and hydration points, demonstrably reducing heat-related incidents.

Discussion

The findings of this study robustly support the assertion that integrating intelligent data systems is no longer a technological luxury but an operational necessity for modern, sustainable destination management. The ability to not only monitor but also predict empowers DMOs to transition from reactive crisis management to proactive, strategic governance. Technology enables the dynamic optimization of carrying capacities, moving beyond static numerical limits to context-aware management that adapts to real-time conditions. This, in turn, enhances both tourist safety and the long-term sustainability of the destination's resources.

The path to becoming a truly smart destination is fraught with challenges.

Key barriers identified during interviews include:

- **Data Privacy and Ethics:** The collection and use of personal location data raise significant privacy concerns that require transparent policies and robust anonymization techniques.
- **Interoperability and Data Standards:** A lack of common data standards often hinders the integration of data from disparate sources and stakeholders.
- **Technical and Financial Capacity:** The initial investment in sensor infrastructure, data storage, and specialized personnel can be prohibitive for smaller or resource-limited destinations.
- **Governance and Collaboration:** Effective implementation requires a culture of collaboration and data-sharing between public tourism authorities, private tech companies, and environmental agencies, which is often difficult to achieve.

6. Conclusions and Recommendations

This paper concludes that the strategic combination of smart data and predictive analytics offers a powerful pathway for destinations to navigate the intertwined challenges of overtourism and climate risk. By leveraging these tools, destinations can foster a more resilient, sustainable, and satisfying tourism model. Based on these findings, the following recommendations are proposed for policymakers, destination managers, and technology providers:

1. **Invest in Integrated, Interoperable Data Platforms:** Destinations should prioritize the development of unified data platforms that seamlessly integrate tourism, environmental, and climate data, moving away from siloed information systems.
2. **Foster Mandatory Cross-Sector Collaboration:** Tourism authorities, climate agencies, environmental protection bodies, and private technology firms must establish formal partnerships and shared data protocols to ensure a holistic management approach.

3. **Develop Dynamic, Proactive Policy Frameworks:** Tourism policies should be redesigned to incorporate real-time data and future projections, enabling flexible responses such as dynamic pricing, adaptive permits, and predictive resource allocation.
4. **Promote Scalable and Accessible Technology Solutions:** To ensure inclusivity, the development and dissemination of low-cost, scalable smart tourism solutions—such as open-source visitor dashboards and basic sensor kits—should be supported, enabling even resource-constrained destinations to begin their journey toward adaptive management.

By embracing these recommendations, the global tourism industry can harness the power of data to protect its most valuable assets, ensuring that destinations remain vibrant, viable, and enjoyable for generations to come.

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FROM LINEAR TOURISM TO SMART CIRCULARITY: BEHAVIOURAL AND TECHNOLOGICAL DRIVERS OF SUSTAINABLE VALUE CREATION IN SHKODRA

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Abstract

The transition from linear tourism models to circular, resource-efficient systems is emerging as a strategic priority for destinations seeking sustainable competitiveness in the era of Smart Economy. This conceptual paper explores how artificial intelligence (AI), digital technologies, and behavioural shifts among tourists and tourism businesses can jointly accelerate circular economy (CE) adoption in the Shkodra region of Albania. Building on literature from circular tourism, smart destinations, and socio-technical transition theory, the study proposes an integrated conceptual framework linking (1) digital enablers, (2) stakeholder behavioral drivers, and (3) destination-level policy mechanisms. The paper positions Shkodra as a case study for examining how CE principles—such as regenerative resource use, waste minimization, and value-retention loops—can be embedded in tourism supply chains through smart infrastructure, data-driven systems, and participatory governance. The framework identifies the role of AI in eco-efficiency monitoring, smart mobility, predictive visitor management, and circular service design, while also addressing constraints such as fragmented SME capacity, uneven digitalization, and low CE awareness among tourists.

As a doctoral research in progress, the paper lays the groundwork for future empirical validation through survey research and stakeholder interviews. The discussion concludes with policy recommendations for local government, tourism operators, and regional development actors, arguing that Shkodra can position itself as a Western Balkan pilot destination for AI-enabled circular tourism, aligned with EU Green Deal priorities and smart regional development agendas.

Keywords: *Circular tourism; Smart destinations; Artificial intelligence; Behavioural drivers; Shkodra; Sustainable regional development.*

1. Introduction

Global tourism has entered a new phase of transformation, in which environmental pressures, digital technologies, and evolving consumer demands are redefining how destinations plan, manage, and create value. The traditional linear model of tourism development built on the “take–make–use–dispose” paradigm has generated economic growth and expanded supply, but at the same time has led to increased consumption of natural resources, rising waste generation, and significant pressure on ecosystems [1], [2]. For this reason, over the past decade, the circular economy (CE) has emerged as a powerful interdisciplinary paradigm that challenges linear consumption logic by promoting resource circulation, regeneration, and efficiency, thereby creating a more resilient and sustainable development model [3]. Transforming the tourism sector in line

with this model has become a structural necessity, particularly for fragile destinations with delicate ecological characteristics.

In this context, the destination of Shkodra—a tourism hub with high natural, cultural, and urban potential—represents an important case study for analyzing how developing destinations can transition toward Technology-Enabled Circular Tourism. Shkodra is situated at the intersection of several transformations: a growing number of tourists; challenges in managing urban and tourism-related waste; seasonal pressures; fragmentation among economic operators; and a lack of standardized instruments for resource circulation. These factors make the city an ideal laboratory for studying the transition from a linear model toward a systemic, circular, and smart model of tourism development.

1.1 From Circular Economy to Circular Tourism

The circular economy is not merely a waste management policy; it is a systemic framework that encompasses the entire product life cycle, business models, value chains, and consumer behaviors [1]. In tourism, this implies a rethinking of the ways in which destinations:

- use natural resources (water, energy)
- minimize waste
- promote recycling and regeneration
- create new business models (sharing, product-as-a-service)
- restructure the tourism offer through circular design

Studies indicate that tourism is a sector with high potential for the adoption of the circular economy; however, the existing literature remains fragmented and at an early stage of development. Benevolo and Kabil [4], [5] emphasize that circular economy applications in tourism have so far focused mainly on waste management, recycling, and the extension of product life cycles, while strategic and technological dimensions remain largely underexploited.

1.2 The Smart Dimension: Technologies as Enablers of Circular Flows

While the circular economy (CE) aims to transform physical processes and value chains, smart tourism provides a powerful digital and analytical infrastructure that enables destinations to:

- intelligently monitor resource consumption
- sustainably manage tourist flows
- optimize transport, mobility, and capacity use
- personalize the visitor experience
- digitalize services and information
- ensure transparency and traceability of environmental practices

Puig-Cabrera and Foronda-Robles [6] argue that the transition toward smart destinations is an evolutionary process unfolding in four stages—knowledge, awareness, engagement, and action—rather than an immediate technical transformation. Studies of smart approaches in European destinations show that digitalization is not a neutral tool; rather, it is a mechanism that shapes relationships among key stakeholders, enhances management capacity, and creates new opportunities for circularity [7].

1.3 The CE–Smart Tourism Interaction: Toward a Smart Circular Tourism Model

One of the key conceptual gaps in the literature is the lack of an integrated framework that brings together the circular economy approach and smart technologies. The circular economy literature primarily addresses material processes and management systems, while

the smart tourism literature focuses on technology, users, and information management. This has resulted in the existence of two parallel streams of discussion.

However, more recent studies are beginning to suggest their convergence. Mansi [8] argues that circular economy indicators such as the use of renewable energy and the reduction of consumption footprints have a direct positive impact on tourist flows within the EU, creating new value for sustainable destinations. At the same time, digital innovations, artificial intelligence, and IoT systems can accelerate the transition toward the circular economy by enhancing efficiency, circulation, and regeneration [9], [10].

This interaction between the two paradigms gives rise to a new tourism ecosystem, in which:

- smart technology provides information, monitoring, and transparency;
- the circular economy enables processes of circulation and regeneration;
- tourists and businesses adopt new sustainability-oriented behaviors.

1.4 Purpose and Contribution of the Paper

This paper aims to:

- synthesize the literature on the circular economy (CE), smart tourism, and socio-technical transitions into a unified framework;
- propose a conceptual model for the transformation of Shkodra into an Intelligent Circular Destination;
- identify policy, technological, and cultural mechanisms that can enable this transition;
- provide an in-depth analysis of how digitalization and the circular economy can interact in developing destinations.

2. Literature Review

Contemporary literature on sustainable tourism development is increasingly moving toward a deeper integration of the circular economy (CE) and smart technologies, mediated by a renewed understanding of socio-technical transitions that guide destination transformation. Within this framework, CE is no longer viewed merely as a waste-reduction instrument, but as a systemic approach aimed at resource regeneration, closure of material loops, and transformation of production and consumption models. In parallel, smart tourism and intelligent destination management emerge as “digital–informational” platforms that accelerate this transition by providing intelligence, transparency, and multi-stakeholder coordination.

In this way, three strands of literature—circularity → intelligence → socio-technical transition—no longer function as separate debates, but as interdependent dimensions of the same transformative dynamic.

2.1 Circular Economy as a Systemic Paradigm in Tourism

Since the introduction of the circular economy concept into European policy agendas and interdisciplinary research, CE theory has evolved from a material-resource-focused approach toward a more complex conceptualization encompassing technology, behavior, policy, and governance [3], [11]. In tourism, CE-related literature remains relatively recent but is rapidly expanding [5]. Key contributions emphasize that tourism sectors—accommodation, gastronomy, transport, and nature-based activities—are characterized by high levels of resource consumption and waste generation [12], placing pressure on sensitive destinations and their ecological systems.

Early studies largely equated CE with waste management, recycling, and the reduction of single-use plastics [13]. Subsequently, the literature expanded toward a more holistic approach, highlighting the need for circular redesign of tourism products [1], industrial

symbiosis [14], and circular business models in tourism [15], [16]. According to Avasiloei [17] and other studies, circularity cannot occur without a deliberate transformation of the economic logic of tourism operators, who often operate as fragmented SMEs.

The convergence of these perspectives indicates that CE does not function merely as a technical process; rather, it requires coordinated transformation of behaviors, institutional structures, and technologies—thus linking CE literature to socio-technical transition theory.

2.2 Smart Tourism: Digitalization as a Mechanism for Circularity and Sustainability

In parallel with the development of CE, smart tourism literature conceptualizes the smart destination as a system relying on IoT, AI, data analytics, digital platforms, and sensor networks to optimize processes and tourist experiences [18], [19]. Numerous recent studies, including those by Myrovali [7], demonstrate that digitalization is not merely an efficiency factor but a transformative catalyst that reshapes decision-making, governance, and behavior within destinations.

Smart technologies:

- ensure transparency in resource consumption;
- automate accommodation and transport processes;
- reduce tourist overcrowding;
- enable continuous monitoring of tourist flows;
- create scalability for sustainable practices;
- empower local actors through real-time data.

Smart destination management systems are complex multi-stakeholder structures [20] that clearly reflect the socio-technical dimension of tourism: technology is not neutral, but actively reshapes tourist behavior, business operations, and the organization of public services.

This perspective positions smart tourism as a prerequisite for CE implementation, rather than a supplementary component. Smart systems provide what CE fundamentally requires: traceability, transparency, monitoring, and optimization.

2.3 Linking Circular Economy and Smart Tourism: Toward an Integrated Ecosystem

The literature increasingly highlights a convergence of the two paradigms—Smart + Circular—which do not operate independently. Studies such as Mansi [8] at the EU level show that CE indicators—particularly renewable energy use and reduction of consumption footprints—positively influence tourist attraction, demonstrating that sustainability itself is an attribute of tourism demand. Similarly, Erdiaw-Kwasie [21] shows that circular innovations, such as recycling patents and the use of secondary materials, increase tourism revenues in European destinations, linking circularity directly to economic competitiveness.

2.4 Socio-Technical Transition Theory

In tourism, recent Smart Tourism Transition literature [6] extends this logic by shifting the focus toward stakeholder behavior: moving from knowledge → awareness → engagement → action. This model aligns closely with circular transformation, which requires operators and tourists to adopt circular practices (reduction, reuse, recycling, sharing, revenue recovery).

Furthermore, AI-in-tourism literature [9], [10] demonstrates that technological diffusion always includes a social and emotional component: risk perception, privacy concerns, cultural sensitivity, and trust influence adoption by tourists and businesses.

In this sense, the transition toward circular tourism is a socio-technical transition, not

merely a technological or environmental transformation.

3. Conceptual Framework and Research Propositions

The proposed framework conceptualizes intelligent circular tourism as the outcome of interaction among three transformation pillars:

1. digital and AI enablers;
2. behavioral and organizational drivers;
3. governance and policy mechanisms;

which together shape circular value creation and the final outcomes of a smart and sustainable destination.

This structure recognizes tourism not as an isolated sector, but as a multi-actor socio-technical field in which technological infrastructures, human practices, and institutional arrangements co-evolve [22].

3.1. Pillar 1: Digital and Artificial Intelligence Enablers

This pillar includes sensor technologies, IoT-based waste systems, smart mobility platforms, real-time environmental monitoring, destination digital twins, blockchain-enabled traceability, and algorithmic resource optimization.

Their function is to enhance the system's operational capacity, not necessarily to directly alter human behavior.

3.2. Pillar 2: Behavioral and Organizational Drivers

The operational and cultural readiness of stakeholders determines whether technology translates into circular economy practices. Key elements include:

- tourists' circular awareness, values, and willingness to act;
- SME owners' innovation orientation and risk tolerance;
- local community participation in regenerative activities;
- availability of CE skills and training ecosystems.

These factors form the social and cognitive infrastructure of circular transitions.

3.3. Pillar 3: Governance and Policy Mechanisms

This pillar refers to enabling institutions: circular economy legislation, destination strategies, green public procurement, financial incentives, inter-municipal cooperation, and regional alignment with EU Green Transition missions.

Governance acts as a moderator: it can accelerate, slow down, or redirect circular transformation.

3.4. Circular Value Creation

When all three pillars are aligned, the destination generates circular value cycles (reduction, reuse, repair, recirculation), while simultaneously enhancing competitiveness, resource efficiency, and social inclusion.

The outcome is not linear digitalization, but transformation toward a smart and sustainable destination.

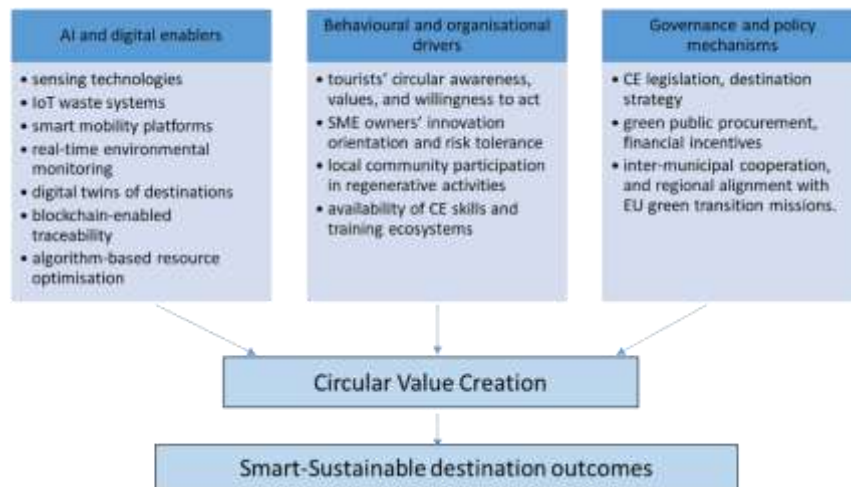


Figure 1 Conceptual Model for Intelligent Circular Tourism

Adopted from the Geels model

Figure 1 illustrates the proposed conceptual model, in which digital and AI enablers influence circular value creation directly and indirectly through behavioral drivers, while governance mechanisms moderate both relationships.

3.5. Research Propositions

H1. Adoption of AI-enabled digital systems in tourism destinations positively affects the implementation of circular economy practices by tourism businesses.

H2. Tourists' pro-circular behaviors mediate the relationship between digital enablers and circular outcomes at the destination level.

H3. Governance coherence (policies, incentives, institutional coordination) positively moderates the impact of digital enablers on circular value creation.

These propositions will guide the next empirical phase of the doctoral research.

4. Methodology

This paper adopts a conceptual and theoretical research approach aimed at constructing an integrated framework for destination transitions from linear tourism models toward Intelligent Circular Tourism (ICT) systems. Given the complexity and multidisciplinary nature of CE, smart tourism, and socio-technical transition theory, the methodology is designed as a synthetic, comparative, and analytical process combining:

- narrative systematic literature review;
- conceptual analysis of CE–Smart Tourism–Socio-Technical Transition mechanisms;
- development of an integrative conceptual model.

The study contributes to tourism transformation theory—particularly in developing contexts such as Shkodra—by establishing a structured foundation for future empirical research.

As a conceptual study, data sources are secondary and include:

- peer-reviewed articles (2016–2025) from Scopus, WoS, MDPI, Elsevier;

- CE and tourism reports from UNWTO, the European Commission, and the Ellen MacArthur Foundation;
- destination studies (Andalusia, Italy, the Balkans, circular cities);
- CE analyses in tourism (Shkodra used as an analytical, not empirical, case).

This theoretical configuration justifies the choice of a conceptual methodology in the absence of a single empirical base for understanding destination transformation.

5. Shkodra as a Smart Circular Tourism Destination

Shkodra is one of Albania's oldest urban centers and a rapidly expanding tourism hub. The destination attracts cultural, nature-based, and cross-border tourism flows, with visitor growth of approximately 57% compared to the pre-pandemic period and around 22% year-on-year growth [23]. However, this growth has not been accompanied by adequate sustainability planning or circular economy infrastructure, exposing tourism assets to overexploitation risks.

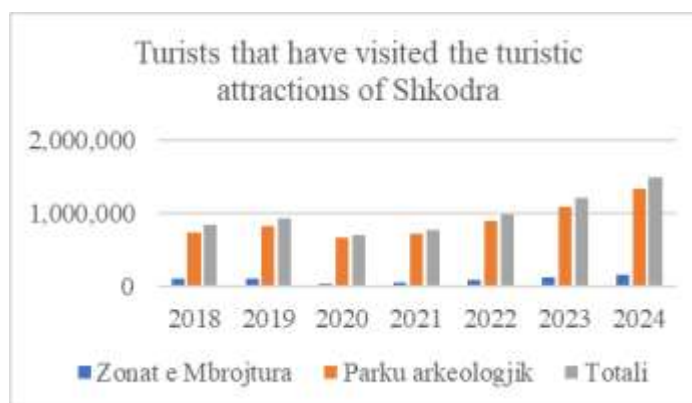


Figura 2 Source Environmental Ministry

The tourism economy is dominated by SMEs, family-run accommodations, small-scale operators, and a large number of informal accommodation structures [24]. Waste management systems become overloaded during seasonal peaks, particularly in tourist areas, placing significant pressure on local natural resources and, in many cases, turning these areas into recipients of urban waste. According to data from the Municipality of Shkodra, during the typical season the volume of urban waste increases by 3–5%, creating challenges for effective waste management. As a result, waste management and treatment, along with raising awareness among tourists—including international visitors—remain key priorities for the municipality.



Figure 3 Urban waste management

Digitalization is limited to basic marketing tools, while AI-based systems for resource management are largely absent. One of the major challenges and weaknesses in the use of AI systems in the city of Shkodra relates to the lack of data—or, more precisely, to the quality of available data. When data do not meet adequate reliability standards, they can undermine the quality of decisions made on the basis of such systems.

Governance is fragmented among the municipality, the regional authority, the Ministry of Environment, and water and wastewater utilities, with a low level of integration and coordination among them.

There is significant potential for cross-border cooperation with Montenegro in the joint management of the lake and the sea, in coordinating tourist flows, and in leveraging EU funding opportunities. Within the framework of Albania's EU integration process, Thematic Priority 5 focuses on Tourism and Cultural and Natural Heritage. The EU supports cross-border cooperation with Montenegro by helping tourism businesses become more competitive and enabling the use of technological innovations to improve the quality of services provided by SMEs in the tourism sector [25].

5.2. Why Shkodra Represents a Typical and Representative Case?

Shkodra represents a highly representative case for studying the transition toward smart-circular tourism, as it combines dynamics similar to those of many destinations in the Western Balkans: rapid tourism growth, limited institutional capacities, partial adoption of digital technologies, and fragmented governance of sustainability processes. At its core, Shkodra is a destination where traditional tourism management and development structures collide with emerging needs for digitalization, resource circularity, and institutional reorganization—making it a natural setting for observing and analyzing an ongoing socio-technical transition.

The rapid growth of tourism demonstrates strong demand for the cultural, natural, and cross-border experiences that Shkodra offers. However, this growth has not been accompanied by a profound transformation of the destination system.

Shkodra continues to rely primarily on a traditional tourism structure dominated by family-run guesthouses, small-scale accommodations, and small operators, which operate with limited managerial and technological capacities. This makes them more resistant to advanced circular economy innovations, yet at the same time more exposed to transformative opportunities if appropriate support mechanisms are activated.

Moreover, challenges related to waste management and environmental infrastructure during the peak tourist season clearly indicate that rising demand has not been matched by a proportional increase in capacity. The lakeside neighborhoods of Shirokë and Zogaj, the pedestrian area, and the historic center all face visible seasonal pressures, revealing structural weaknesses in the current destination system. These challenges are not isolated but reflect a broader regional phenomenon: tourism is growing faster than institutions and infrastructure can be reformed.

Another critical dimension is the level of digitalization. Although tourism operators in Shkodra use digital marketing platforms and online communication channels, the integration of advanced technologies such as AI, IoT, and intelligent management systems remains very limited. This means that digitalization exists, but only in its most superficial and promotional form, without affecting the operational and managerial core of the destination. As a result, Shkodra represents a typical example of “semi-smart” destinations, where technological potential is high but underutilized—an ideal context for studying how the digital enablers identified in the conceptual model can be activated.

Equally important is the governance structure. In Shkodra, multiple institutions hold fragmented competencies over the environment, tourism, infrastructure, and economic development, without a unified coordination mechanism.

This institutional fragmentation, while challenging, provides a valuable opportunity to examine how policies and governance mechanisms can function as moderators of the transformation process—a key component of the proposed smart circular tourism model.

Finally, Shkodra’s geographical position and its natural and tourism-related connection with Montenegro give it a distinctive cross-border dimension. The joint management of Lake Shkodra, bilateral tourist flows, and access to IPA/Interreg funding opportunities transform the area into a case with high transferability potential, as any successful intervention in this territory can enable the replication of good practices at the regional level. For these reasons, Shkodra represents a rich, typical, and strategic case for studying transformations toward smart circular tourism.

6. Discussion

The discussion of this study aims to shed light on how the three core dimensions of the proposed model—digital and AI enablers, behavioral and organizational drivers, and governance mechanisms—interact to generate a smart–circular tourism system in destinations similar to Shkodra.

At its core, the analysis seeks to explain how destination transformation does not occur as the result of a single technological or regulatory intervention, but rather as the product of the parallel and reciprocal evolution of technical, social, and institutional elements. This framework positions tourism within a highly interdependent socio-technical field, where technology, people, and institutions interact dynamically.

At the beginning, the interaction between the circular economy and smart technology emerges as the transformative axis of the destination. The circular economy, in itself, requires a set of infrastructural capacities to function effectively ranging from resource traceability and waste measurement to the optimization of water and energy use. However, these capacities cannot be achieved without the presence of digital technologies, which provide the essential mechanisms for monitoring, analysis, and response. In this sense, technology acts as an “invisible engine” that shapes and accelerates circular transformation. Without it, circularity remains a strategic ideal rather than an operational practice. Therefore, destinations that aspire to become circular must first become smart in

a managerial sense.

At the same time, the transition does not occur simply because technology exists. Equally decisive as digital enablers are behavioral and organizational drivers. Tourism operators, tourists, local communities, and institutions must develop a new culture of action a “circular mindset” without which technology and regulations remain disconnected instruments. In destinations such as Shkodra, where the tourism economy is dominated by small family-run businesses, the willingness to adopt new practices depends on risk perception, levels of innovation, the availability of skills, and awareness of the opportunities created by circularity. Tourists, on the other hand, play an indispensable role: their perceptions of the urban and natural environment directly influence pro-environmental behaviors, which either reinforce or undermine local efforts toward circularity. In this way, perception becomes the key mediator between technology and behavior.

Institutions act as moderators of this complex process. They can accelerate the transition by creating a coherent policy environment, offering economic incentives, facilitating cross-sectoral collaboration, and standardizing practices related to waste, water, and energy management. Conversely, they can slow down or divert the process if they remain fragmented, poorly coordinated, or reactive rather than proactive. In Shkodra, governance fragmentation represents both a challenge and an opportunity to examine how coordination mechanisms and shared strategies can foster an enabling environment for circular innovation.

The discussion demonstrates that the outcome of the transition a smart–circular destination is neither merely a product of digitalization nor solely the result of sustainability policies; rather, it is the systemic outcome of interaction across all pillars. When technology is used to enhance managerial capacities, when local tourism actors adopt a circular culture, and when institutions create a stable network of enabling policies, the conditions emerge for the destination to generate new circular value reduced waste, resource regeneration, increased material and social efficiency, and a strengthened environmental image that attracts more environmentally conscious tourists.

This framework situates Shkodra within a broader regional narrative in which post-transitional destinations seek to balance economic development with environmental pressures and the need for technological modernization. For this reason, Shkodra is not only a unique case but also a valuable model for comparable destinations across the Balkans.

7. Conclusions

The presented study develops an integrated theoretical framework to understand how tourism destinations particularly those in transition and characterized by fragile institutional structures such as Shkodra can move beyond linear tourism models and adopt new forms of management based on the integration of the circular economy, smart technologies, and socio-technical transitions. This in-depth conceptual approach demonstrates that the transformation toward a smart–circular destination is an inherently complex process in which technology, human behavior, and governance do not operate independently, but rather as components of a single system of interaction and gradual evolution.

The literature analysis clearly shows that the circular economy cannot function within a destination without a supportive technological infrastructure that ensures data availability, traceability, and managerial intelligence. At the same time, technology alone does not

produce transformation if stakeholders tourists, local entrepreneurs, and institutions do not embrace this new culture of action. This study demonstrates that destination transformation occurs precisely at the intersection of these pillars, which are decisively shaped by governance mechanisms. Policies, destination strategies, and institutional coordination have the capacity to accelerate or slow down the transition; therefore, governance should be viewed not as a secondary element of transformation, but as a central actor that guides both the direction and the pace of development.

Within this context, Shkodra is positioned as a significant case for studying smart–circular transitions. Rapid tourism growth, a fragmented industry structure, limited technological integration, and challenges in waste management make the city a clear example of destinations on the threshold of transformation. If advanced technologies, public awareness, and coordinated policies operate in harmony, Shkodra has the potential to become one of the reference destinations in the Balkans for sustainable and innovative tourism management.

The proposed conceptual model offers an analytical framework that explains how this transformation can be structured. It shows that the outcomes of a sustainable and smart destination are not the product of a single intervention, but rather the result of complex interactions among technology, behavior, and governance. This model provides a clear and structured foundation for the next empirical phase of the research, in which the proposed relationships between digital enablers, tourist perceptions, pro-environmental behaviors, and circular outcomes at the destination level will be tested.

In conclusion, the study demonstrates that the transition from a linear tourism destination to a smart–circular system is not a mechanical process, but a multidimensional socio-technical transformation that requires actor coordination, technological capacity, a circular culture, and visionary governance.

When these elements are successfully aligned, twenty-first-century destinations—and Shkodra among them—can create a new form of tourism value that integrates innovation, regeneration, and long-term sustainability.

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FROM ARCHIVES TO VIRTUAL REALITY: LITERARY HERITAGE AND ARTIFICIAL INTELLIGENCE AS PROMOTERS OF CULTURAL TOURISM IN SHKODRA

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Abstract

This article explores the transformative potential of Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) in promoting and enhancing the cultural and literary heritage of Shkodra, a historic city at the crossroads of Ottoman, Venetian, and Balkan influences. The study examines how this multi-layered heritage, encompassing architectural ensembles, the historic urban fabric of bazaars, ethnographic narratives of hospitality and besa (a code of honor), foreign travelogues, and early twentieth-century photographic archives, can be reinterpreted through emerging technologies to strengthen cultural tourism and identity-based development in Northern Albania. Despite its richness, this cultural capital remains fragmented across local archives, private collections, and multilingual manuscripts in German, English, French, and Italian. It also exists in intangible practices such as oral traditions, hospitality rituals, and communal ethics. Addressing this fragmentation, the study proposes an innovative operational model, "From Archives to Virtual Reality," that transforms static heritage resources into dynamic, interactive experiences. The model comprises four main stages: digitization and cataloguing of archival materials, thematic and narrative curation, development of immersive AI/VR/AR applications for site-based visitor interaction, and integration into a sustainable local economic circuit. AI supports multilingual interpretation, personalization of visitor journeys, and intelligent management of tourist flows, while VR and AR technologies reconstruct lost urban spaces and evoke past atmospheres through immersive storytelling. By merging human creativity with computational intelligence, this approach allows visitors not only to observe but to experience Shkodra's history through digital empathy and participation. Rather than substituting authenticity, AI acts as a cultural mediator, empowering local communities to preserve, reinterpret, and transmit their heritage sustainably. The findings provide a scalable and replicable framework for other historic urban contexts, demonstrating how digital innovation can reconcile cultural preservation with economic growth within the paradigm of sustainable and smart tourism.

Keywords: *Artificial intelligence, cultural tourism, intangible heritage, literary heritage, visitor experience.*

JEL classification: *Z32, Q01, Z11.*

1. Introduction

In the era of digital transformation, cultural heritage is being reconsidered as a dynamic resource that generates cognitive, social, and economic value, transcending its traditional perception as a static archive of the past. Contemporary European cultural policies position heritage as a source for innovation, creativity, and sustainable tourism, emphasizing the need for modern tools of documentation, interpretation, and transmission (European

Commission, 2024).

Shkodra, as one of the most important historical and literary centers of Northern Albania, represents a relevant case study for this transformation. The city preserves an extraordinary narrative capital: Ottoman and Venetian urban layers, with Austro-Hungarian cultural influences, rich documentation from European travelers of the late 19th and early 20th centuries (Steinmetz, Liebert, Le Queux, Ippen), historical photographic archives (Marubi archive), as well as intangible heritage that includes hospitality rituals, the code of *besa*, and artisanal traditions. However, this cultural wealth remains fragmented in local physical archives, private collections, and multilingual manuscripts, creating challenges for its access and utilization in cultural tourism. The integration of artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) in cultural heritage management has demonstrated considerable potential for personalizing visitor experience, automatic multilingual interpretation, management of tourist flows, and digital preservation of cultural assets (Sánchez-Martín, 2025; Collins & Ward, 2025). These technologies enable the creation of immersive experiences that enhance visitors' emotional engagement and appropriation of historical knowledge, while simultaneously respecting the physical integrity of monuments and cultural practices.

This article proposes the “Smart Literary Heritage Framework” model as an integrated approach for transforming Shkodra's cultural and literary heritage into personalized and globally accessible tourist experiences. The model aims to demonstrate how the combination of semantic digitization of archives, AI, and VR/AR technologies, and integration into international platforms (Europeana, Google Arts & Culture) can generate a new format of cultural tourism that balances the preservation of authenticity with sustainable local economic development.

2. Literature review

2.1. Cultural Heritage as Social Production of Meaning

Contemporary studies on cultural heritage conceptualize it as an active process of social production of meaning, rather than a static repository of objects (Vecco, 2010). This poststructuralist perspective emphasizes that heritage is continuously refabricated through acts of documentation, narration, and cultural performance.

Within this framework, historical travel accounts of Shkodra are presented not merely as documentary sources but as raw materials for constructing contemporary cultural products that enable new interpretation and co-creation of meanings.

UNESCO, in the Convention for the Safeguarding of Intangible Cultural Heritage (2003), treats heritage as a living source of identity that requires contemporary tools of documentation and transmission. For Shkodra, the intangible dimension encompasses hospitality rituals, the code of *besa*, traditional crafts, and oral memory. When integrated with digital technologies, these can be transformed into points of tourist interpretation that give the city “voice and personality” in the eyes of contemporary visitors seeking authenticity and genuine stories (UNESCO, 2024).

2.2. Smart Tourism and the Experience Economy

The concept of Smart Tourism is defined as the use of advanced technology (AI, data analytics, context sensors) to generate personalized and sustainable tourist experiences (Gretzel, Sigala, Xiang & Koo, 2015). This approach transcends the traditional model of the “classic guide” and aims to construct dynamic itineraries that adapt according to the individual cultural profile of the visitor. For Shkodra, this implies creating AI-based

recommendation systems that offer personalized itineraries according to specific interests (architecture, travel literature, ritual heritage, the history of Shkodran women), shifting the visitor from “passive consumer” to “interlocutor with heritage.” The experience economy, as conceptualized by Pine and Gilmore (1999), argues that contemporary economic value is generated not from simple information provision but from participation, emotions, and personalized memory. In cultural tourism, this implies that value resides not only in the heritage object itself, but in the lived experience co-created with the visitor. VR and AR technologies enable the realization of this experience economy by creating emotional and narrative interactions that amplify the intensity of cultural experience.

2.3. Immersive Technologies: Virtual and Augmented Reality

Virtual reality (VR) creates fully immersive environments that allow “time travel” and experiencing historical moments without physical presence. On the other hand, augmented reality (AR) superimposes layers of digital information (text, audio, 3D reconstructions) onto the physical reality before the visitor's eyes (Boboc et al., 2022). Recent research indicates that these technologies increase emotional engagement, knowledge appropriation, and overall visit satisfaction, creating a “temporal bridge” between past and present (Collins & Ward, 2025; Tang, 2025). In historical destinations, AR has also been utilized for managing tourist overcrowding. Mobile applications alert visitors to congested areas and suggest alternative itineraries, preserving both the visitor experience and the physical integrity of the site.

This dimension is critical for Shkodra, where sites such as Rozafa Castle and Ottoman urban layers are physically fragile yet touristically sought after.

2.4. International Platforms for Digital Heritage

Europeana represents the European Union's central platform for digital cultural heritage, collecting, standardizing, and disseminating over 50 million digital objects from thousands of European museums, libraries, and archives. The platform offers public APIs and policies for redistribution and education, enabling the integration of local collections into an internationally accessible global ecosystem (Europeana, 2024). For Shkodra, the digitization of photographic and literary collections according to Europeana standards would enable the city's positioning as part of the European map of visual and narrative heritage. Google Arts & Culture offers a complementary dimension through Art Camera technology (gigapixel images with microscopic precision) and 360° virtual tours, enabling global access and immersive experience of cultural spaces without the visitor's physical presence.

This technology has the potential to increase Shkodra's international visibility as a cultural destination and to create “digital tourism” that complements the physical visit.

3. Methodology

The methodology of this study is based on a mixed-methods approach that integrates qualitative analysis of archival and literary sources with the conceptualization of technological models for field implementation. The research is structured in three main phases:

Phase One: Hermeneutic Analysis

An in-depth study of historical travelogues (Steinmetz, Liebert, Le Queux, Ippen) and historical photographs (the Marubi archive) to identify narrative elements that describe urban life, social rituals, and the cultural identity of Shkodra in the 19th and early 20th

centuries. These sources are analyzed as proto-touristic materials that offer a “historical voice” for the contemporary interpretation of the city.

Phase Two: Technological Conceptualization

Development of the “Smart Literary Heritage Framework” model based on the integration of:

Semantic digitization and multilingual translation of archival sources through AI

Creation of personalized itineraries with intelligent recommendation systems

Development of AR applications for narrative overlay in the city's physical space

Creation of VR scenes for immersive reconstruction of historical rituals and atmospheres

Phase Three: Analysis of Institutional Integration

Examination of opportunities for integrating digitized materials into Europeana and Google Arts & Culture platforms, evaluating required technical standards, copyright policies, and benefits for international visibility and circulation of Shkodra's heritage.

The research approach aims to demonstrate that the integration of historical archives with intelligent technologies can generate a sustainable model of cultural tourism that preserves cultural identity and involves the local community as an active co-creator of the narrative.

4. The “Smart Literary Heritage Framework” Model for Shkodra

4.1. Historical Archives as Narrative Foundation

Shkodra possesses an extraordinary wealth of narrative and visual sources: historical travel accounts that document the city as the gateway to northern Albania and its role in trade and diplomacy, photographic collections that preserve the memory of traditional architecture, marketplace life, and social rituals, as well as the oral memory of local families regarding traditions of honor, hospitality, and artisanal crafts. When digitized and semantically modeled, these sources can be transformed into a “narrative atlas” of the city.

Natural Language Processing (NLP) technologies can automatically extract specific locations (the castle, marketplace, traditional neighborhoods) from historical texts and position them on contemporary maps. Each location can be accompanied by archival photographs, written testimonies, and audio descriptions, creating a “walkable city” where historical narrative moves with the visitor during physical exploration (Angelaccio, 2024).

4.2. Thematic Narrative Curation and AI-Assisted Storytelling

The curation phase involves creating thematic “interpretive routes” that connect the physical city with literary and ethnographic narrative. Concrete examples include:

“Shkodra of Hospitality” Itinerary

The visitor stops at specific points in traditional neighborhoods and, through AR, receives on their phone historical descriptions of the guest reception ritual, documented by foreign travelers as a feature of the culture of honor. This connects with UNESCO's definition of intangible heritage as an identity-based social practice.

“The Shkodran Woman in European Narratives” Itinerary

An urban museum route where the visitor sees through AR images of traditional clothing and historical testimonies that describe the figure of the woman as bearer of tradition and social identity.

“From Rozafa to Europe” Itinerary

Within the castle, VR offers 3D reconstruction of Ottoman, Venetian, and Illyrian layers, while AI-driven audio guides explain Shkodra's historical role as a commercial and diplomatic hub. An AI system functioning as a “personal cicerone” can ask the visitor about their interests (literature, architecture, social rituals) and automatically generate a 2-

3-hour itinerary with contextualized content, fully personalizing the tourist experience (Sánchez-Martín, 2025).

4.3. Immersive On-Site Experience: AR and VR

On-site technological implementation includes three main components:

AR “Layered City”

The visitor walks through the Old Bazaar or historic center, raises their mobile device, and sees superimposed the photographic view of the same place from the 1900s, along with original quotations from travelers describing the voices, sounds, and atmosphere of the market. This approach enriches physical reality with cultural layers that are no longer physically visible.

VR “Hospitality in the Highlands”

A VR experience space (within a local museum or information center) where the visitor “sits as a guest” in a traditional house of the Malësia e Madhe, hears the formulas of hospitality, and observes service rituals. This immersive scene connects with research showing that VR increases the sense of temporal connection and visit satisfaction.

AI-Based Flow Management

The system monitors capacities in real time and suggests alternative itineraries to avoid overcrowding of fragile areas, optimizing visitor distribution and preserving the physical integrity of monuments.

4.4. Integration into International Platforms

Integration into Europeana would enable photographic collections (Marubi) and digitized texts to be classified with standard metadata and made globally accessible as part of the European cultural archive. This creates international visibility and positions Shkodra as a cultural destination at the European level. Google Arts & Culture would enable the creation of virtual exhibitions such as “Shkodra 1900,” 360° tours of Rozafa Castle and historic neighborhoods, and gigapixel images of archival materials. This increases global access and creates “digital tourism” that complements and promotes the physical visit.

4.5. Local Economic Circuit and Sustainability

The model aims for each narrative “station” (AR point or VR space) to function as a gateway to the local economy: links to filigree artisans, local producers, family museums, and community exhibition spaces. International practices demonstrate that VR/AR and AI technologies in cultural tourism:

- extend the average visitor stay,
- increase willingness to pay for personalized experiences,
- enhance destination brand value as a “smart destination” (Gavit, 2024).

Training local actors (tour guides, museologists, researchers, students) in the use and co-creation of digital materials ensures that the experience does not leave the city, but is reproduced and managed by the community itself, creating employment opportunities and local capacity development (Leka et al., 2025; Godolja, 2025).

5. Discussion: Challenges and Opportunities

5.1. Cultural Authenticity and AI Ethics

A critical question that arises is whether AI risks “colonizing” local culture by packaging it according to tourist tastes. UNESCO warns that the use of AI in intangible heritage must reinforce community transmission, not a replacement for it (UNESCO, 2024). This implies that AI models that “tell Shkodra’s story” must be trained on materials approved by the

local community, not solely on external sources that risk folklorization.

Studies on VR/AR also emphasize that immersive experiences can amplify emotions to the point where visitors believe they have “lived the past,” when they have only seen a creative reconstruction. This creates ethical and academic responsibility: every VR/AR element must be clearly referenced, preserving the archival trace and providing the visitor with critical tools, not merely visual spectacle.

5.2. Technical and Institutional Capacities

Studies on the Albanian tourism sector's readiness to adopt intelligent technologies indicate growing interest and digital capacity, but also challenges such as high costs, lack of trained staff, and limited technological infrastructure. For Shkodra, this implies the need for a strategic partnership among the municipality, local universities, museums, tourism operators, and the artisan community.

The creation of an “AI & Heritage Lab – Shkodra” as a joint laboratory for digitization and interpretation of archival materials, in partnership with European institutions and international platforms, could provide a space for training, research, and local capacity development.

5.3. Sustainability and Community Inclusion

The model is proposed as a sustainable cultural tourism format where the local community acts as an active co-creator of the narrative. This requires systematic involvement of residents in the phases of narrative curation, selection of stories and interpretive tones, and validation of cultural content. International practices demonstrate that when the local community takes ownership of the process, cultural tourism generates long-term positive economic and social effects, avoiding shallow commercialization and cultural banalization.

6. Conclusions

This study has proposed the “Smart Literary Heritage Framework” model as an integrated approach for transforming Shkodra's cultural and literary heritage into personalized, immersive, and globally accessible tourist experiences. The model demonstrates that the combination of semantic digitization of archives, AI, and VR/AR technologies, and integration into international platforms (Europeana, Google Arts & Culture) can generate a new format of cultural tourism that balances the preservation of authenticity with sustainable local economic development.

The model is structured in four main phases:

- Digitization and cataloging of archival materials with multilingual translation and semantic indexing;
- Thematic narrative curation of cultural itineraries with local community involvement;
- Development of AR/VR applications for on-site interpretation and creation of immersive experiences;
- Integration into a local economic circuit that connects narrative points with artisans, producers, and local cultural institutions.

Concrete recommendations for implementation include:

Creation of an “AI & Heritage Lab – Shkodra” as a joint university-museum-municipality laboratory for digitization and interpretation of archival materials according to European standards

Strategic partnership with Europeana for establishing a “Shkodra Heritage” subcollection that includes historical photographs, traveler documents, and academic interpretations

Collaboration with Google Arts & Culture for creating virtual exhibitions, 360° tours, and the use of Art Camera technology for high-resolution preservation
 Development of a “Smart Heritage Shkodra” AR/AI application that automatically links physical sites with historical narratives, quotations, audio recordings, and archival images
 Training of local actors (museologists, guides, researchers, students) in the use and co-creation of digital materials, ensuring local ownership and management of the process
 Ultimately, the interweaving of AI with Shkodra's literary and visual heritage represents not merely a museological or technological project, but an integrated economic, educational, and cultural proposition. It demonstrates that the "smart economy" in tourism involves the intelligent and just return of memory, making it tangible, experienceable, and transmissible in a dignified and sustainable manner. Shkodra, as a pilot laboratory for this model, can offer an applicable example for other historical cities seeking to balance the preservation of cultural identity with economic development based on intelligent tourism.

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THE ROLE OF ARTIFICIAL INTELLIGENCE IN TRANSFORMING THE TOURISM LABOR MARKET: EVIDENCE FROM STUDENT PERSPECTIVES AND CAREER ASPIRATIONS AT “LUIGJ GURAKUQI” UNIVERSITY

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Abstract

Tourism is becoming one of the most dynamic sectors of the Albanian economy, offering opportunities for economic development. In the city of Shkodra, tourism has experienced significant growth in recent years. This development has directly influenced the creation of new jobs, with a considerable share occupied by students of the University “Luigj Gurakuqi.” In the era of digital transformation, Artificial Intelligence (AI) is reshaping how young people perceive the labor market and their future career paths. This study aims to analyze students’ perceptions regarding the impact of AI on employment opportunities, exploring differences between students of different study fields—Computer Science and Tourism—and how these attitudes relate to their readiness and professional orientation. Through surveys and data analysis, the study addresses the challenges students encounter in the labor market as well as the potential tourism offers for their professional growth. The results, obtained through the testing of three main hypotheses, reveal that the field of study significantly influences how students perceive the role of AI in the job market; specifically, Computer Science students display a more positive and optimistic attitude compared to Tourism students. Furthermore, findings indicate that a positive perception of AI is closely associated with readiness to meet the demands of the new labor market, where AI applications are becoming essential. The results demonstrate that a positive attitude toward AI significantly predicts students’ intentions to pursue careers oriented toward innovation and artificial intelligence, especially in the tourism sector, which is undergoing major technological transformations. The discussion is based on the interpretation of results within the context of the reviewed literature, identifying opportunities for increasing AI-related employment in the tourism sector. The study’s conclusions provide valuable insights for better understanding students’ needs regarding careers in the tourism industry and emphasize the importance of integrating AI competencies into university programs, as a necessity for developing employability skills and preparing the new generation for an increasingly digitalized labor market.

Keywords: *Artificial Intelligence, Career, Digital Innovation, Student Perception, Tourism.*

1. Introduction

Tourism is one of the most dynamic sectors of the Albanian economy, offering significant opportunities for economic development and employment, particularly in the city of Shkodra, known for its historical, cultural, and natural richness. This development has created a demand for a qualified workforce and has highlighted the need to prepare students for their careers in an increasingly digitalized labor market. In the era of digital transformations, Artificial Intelligence (AI) is changing the way tourism organizations operate by enhancing operational efficiency (Bulchand-Gidumal et al., 2023). These technological changes directly influence students' perceptions of employment opportunities, motivation for professional development, and career orientation.

Studies show that perceptions of AI vary depending on the field of study. Students in technical disciplines, such as Computer Science, generally display a more positive and optimistic attitude toward the impact of AI on the job market, while Tourism students may feel more uncertain about the role of intelligent technologies and their potential to transform the industry (Çolak, 2023). This difference in perception is important because positive attitudes toward AI are closely linked to readiness for the labor market and decisions to pursue careers oriented toward digital technologies (Siddik et al., 2025). Furthermore, Albanian studies indicate that the tourism industry is experiencing the adoption of AI technologies in service management and digital promotion, but the integration of students' skills in this technology remains a significant challenge.

The importance of AI perception lies not only in technological knowledge but also in career intentions. Students who perceive AI as an opportunity for professional development show greater readiness to pursue careers in fields that require digital and innovative skills, contributing to the development of sustainable and digital tourism in Albania (Aliti et al., 2025). This study aims to analyze the perceptions of students at “Luigj Gurakuqi” University regarding the impact of AI on employment opportunities, by examining the differences between fields of study (Computer Science and Tourism) and the connection between these perceptions and labor market readiness as well as career orientation.

Based on the existing literature, this research offers an integrative approach that connects students' perceptions with the transformative potential of AI in the tourism sector, assessing the impact of technology on students' career development and their preparation for an increasingly digitalized labor market. This approach is particularly important for creating teaching strategies and training programs that can integrate AI skills into university curricula, increasing the competitiveness of young people in the job market and preparing a generation equipped for the challenges of the digital age.

2. Literature Review

The transformations brought by Artificial Intelligence (AI) in the tourism sector are significantly influencing the structure of the labor market, professional requirements, and the way individuals, particularly students, prepare for their future careers.

Globally, as well as in the Albanian context, the use of AI in tourism has increased substantially in recent years, becoming one of the key factors shaping the development and competitiveness of the industry. Numerous studies have focused on AI's impact on process automation, service personalization, data analysis, and the strategic management of tourism businesses (Bulchand-Gidumal et al., 2023). This technological transformation is

also strongly shaping students' perceptions, as they represent the future workforce and key actors in the development of modern tourism. Various researchers argue that AI is rewriting the way tourism businesses operate by replacing traditional tasks with automated processes and creating new roles that require technological competencies (Ivanov, 2020). The use of intelligent systems in various tourism sub-sectors—such as marketing, reservation management, customer communication, and hotel operations—has improved efficiency and enhanced the customer experience. The integration of AI and related technologies, such as the Internet of Things and big data analytics, is now considered a core mechanism of digital transformation in tourism (Tong et al., 2022). Furthermore, Collins et al. (2024) emphasize that an AI-driven future is reshaping the way tourism services are planned, creating new operational models that require qualified staff capable of working with intelligent algorithms and platforms.

In Albania, although AI integration is still evolving, studies show that the tourism sector is increasingly adopting smart technologies, particularly in service management, digital promotion, and the improvement of marketing strategies (Kola et al., 2024). The use of AI in the hospitality sector depends on several factors, including technological readiness, managerial perceptions, and workforce competencies. On the other hand, Ferhataj et al. (2024) highlight that AI development in tourism is accompanied by significant ethical and infrastructural challenges, but also offers new opportunities that may stimulate economic development and innovation.

In this context, students' perceptions of AI play a crucial role, especially for those aiming to work in an industry undergoing rapid technological transformation. International studies show that student attitudes toward AI are influenced by their field of study, level of technological knowledge, and exposure to new technologies (Sousa et al., 2024). Students in technical fields, especially computer science, tend to hold more positive attitudes toward AI and to highly value the employment opportunities created by intelligent technologies. In contrast, tourism students often express uncertainty about AI's impact, particularly regarding the potential replacement of traditional roles with automated processes (Çolak, 2023).

These perceptual differences are particularly relevant in the Albanian labor market, where students at “Luigj Gurakuqi” University represent an important group for understanding the career orientation of the new generation.

The literature suggests that positive perception of AI is strongly associated with labor market readiness and career intentions. Siddik et al. (2025) highlight that AI not only transforms economic structures but also motivates students to develop new competencies demanded by the job market.

Wang et al. (2025) argue that the tourism industry increasingly requires professionals skilled in the use of AI tools, including data analysis, management of intelligent platforms, and the development of personalized communication strategies. Albanian studies support this perspective. Godolja et al. (2025) indicate that readiness to adopt AI in tourism in Albania is influenced by perceptions of technological benefits and by the technical competencies of employees. Aliti et al. (2025) argue that AI integration in tourism enhances personalization, increases customer engagement, and promotes sustainable practices—requiring a qualified and innovation-oriented workforce. Banushaj et al. (2025) emphasize the importance of developing new skills in the tourism sector, arguing that students and employees must possess technological competencies to contribute to sustainable tourism development in Albania.

Globally, AI adoption is also influencing students' career directions. AI applications in

tourism businesses are creating new job positions related to the management of intelligent systems, data analysis, and personalized service development. Students exposed to AI technologies are more likely to develop career aspirations in fields linked to digital transformation. Furthermore, Tong et al. (2022) highlight that the development of work teams capable of utilizing AI is a key factor shaping organizational readiness to integrate new technologies. Overall, the literature suggests that students with positive perceptions of AI are more inclined to pursue careers oriented toward innovation and intelligent technologies. This trend is also evident in Albania, where the tourism industry is increasing its demand for professionals skilled in advanced technologies, although structural challenges such as inadequate infrastructure or lack of integrated educational programs still hinder the full development of AI potential (Ferhataj et al., 2024).

As a conclusion, the literature review clearly shows that AI is a transformative force in the tourism sector, reshaping the labor market and changing the way students prepare for their careers. Student perceptions and attitudes toward AI are closely linked to their field of study, technological knowledge, exposure to innovation, and expectations for the future labor market. For this reason, the integration of AI competencies into university programs, especially those related to tourism, is essential for the professional development of students at “Luigj Gurakuqi” University and for increasing their competitiveness in a rapidly digitalizing job market.

3. Methodology

This study is based on a quantitative approach to explore students’ perceptions of the impact of Artificial Intelligence (AI) on employment opportunities and the relationship of these perceptions with work readiness and career orientation. Data were collected from a sample of 150 students from the Tourism and Computer Science departments at “Luigj Gurakuqi” University, using Likert-scale questionnaires to measure AI perception, labor market readiness, and career intentions. To ensure the reliability of the scales, Cronbach’s Alpha analysis was applied.

The hypotheses formulated for this study are:

H1: There is a statistically significant difference in the perceived impact of Artificial Intelligence on employment opportunities between Tourism students and Computer Science students.

H2: There is a positive and statistically significant correlation between AI perception and work readiness in the age of AI (AI_Career_Perception / Work_Readiness_AI).

H3: A positive perception of Artificial Intelligence significantly predicts students’ intentions to pursue an AI-oriented career in the tourism industry.

To test H1, an Independent Samples T-Test was used on a composite variable (AI_Career_Perception) created from five Likert items. For H2, the relationship between AI perception and work readiness was analyzed using Pearson correlation, while for H3, simple linear regression was used to assess whether positive perception of AI predicts students’ intentions to pursue careers oriented toward intelligent technologies. All analyses were conducted using SPSS software, ensuring systematic and reliable hypothesis testing.

4. Results

Item (Question)	Short Description	Role in the Scale	Assessment of Contribution
P1	AI offers career opportunities	Positive perception of AI	Strong theoretical contribution
P3	AI changes job roles	Technological transformation	Direct contribution
P5	The labor market requires AI skills	Labor market perspective	Strategic importance
P7	Readiness to use AI platforms for employment	Digital adaptation	Motivational contribution
P8	Optimistic about an AI-driven future	Positive attitude toward innovation	Strengthens the perceptual dimension

Table 1 presents a group of the most important questions included in the study.

Table 1. Key Items Included in the Study

H1: There is a statistically significant difference in the perception of the impact of Artificial Intelligence on employment opportunities between Tourism students and Computer Science students.

To determine whether the items measuring students' perceptions of the role of AI are consistent and measure the same construct, Cronbach's Alpha analysis was conducted. The result was $\alpha = 0.733$, which is above the minimum acceptable threshold (0.70), indicating that the items are reliable and form a consistent scale for measurement. The results after statistical processing are presented in **Table 2 below**:

	department	N	Mean	Std. Deviation	Std. Error Mean
AI_Career_Perception	tourism	107	3.6766	.93391	.09028
	informatics	43	3.1860	.47689	.07272

Table 2. Group Statistics for AI_Career_Perception

	Levene's Test for Equality of Variances					t-test for Equality of Means			
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	lower	upper
Equal variances assumed	27.694	.000	3.273	148	0.001	0.49	0.15	0.19	0.78
Equal variances not assumed			4.232	139.7	0.000	0.49	0.12	0.26	0.72

Tabela 3. AI_Career_Perception with some independent study tests

To investigate whether there is a significant difference in the perception of the impact of

Artificial Intelligence (AI) on career opportunities between Tourism students and Computer Science students, an Independent Samples T-Test was conducted using the composite variable *AI_Career_Perception*, created from five Likert-scale items. As shown in Table 3, the results of Levene's Test for equality of variances indicated $F = 27.694$, $\text{Sig.} = 0.000$, confirming that the variances between the two groups are not equal. Therefore, the statistical interpretation was based on the row "Equal variances not assumed."

The T-Test yielded a statistically significant result at the level of $t(139.723) = 4.232$, $\text{Sig. (2-tailed)} = 0.000 < 0.05$, indicating a significant mean difference in AI perception between the two student groups. The mean difference (Mean Difference = 0.49059) was positive, suggesting that Computer Science students exhibit a noticeably more positive and optimistic perception of AI's role in future employment opportunities compared to Tourism students. The 95% confidence interval (CI [0.26138, 0.71980]) does not include zero, further strengthening the statistical validity of the result.

Therefore, the alternative hypothesis (H1) is accepted, confirming that the field of study significantly influences students' perceptions of AI's transformative impact on the labor market within the tourism industry.

H2: *There is a positive and statistically significant relationship between AI perception (AI_Career_Perception) and work readiness in the age of AI (Work_Readiness_AI).*

To measure students' readiness for the labor market in the age of Artificial Intelligence, a composite index was created using three Likert-scale items. The reliability analysis showed a Cronbach's Alpha value of 0.846, indicating a very high level of internal consistency. This value exceeds the commonly accepted minimum threshold of 0.70 (Nunnally & Bernstein, 1994), confirming that the scale is statistically reliable and suitable for inferential analysis.

Reliability Statistics

Cronbach's Alpha	N of Items
.846	3

Tabela 4. Correlations

		AI Career Perception	Work Readiness AI
AI_Career_Perception	Pearson Correlation	1	.380**
	Sig. (2-tailed)		.000
	N	150	150
Work_Readiness_AI	Pearson Correlation	.380**	1
	Sig. (2-tailed)	.000	
	N	150	189

**. Correlation is significant at the 0.01 level (2-tailed).

To test the hypothesis that there is a positive relationship between students' perceptions of the impact of Artificial Intelligence (AI) on the tourism industry and their readiness for the

labor market in the age of AI, a Pearson correlation analysis was conducted. The results, shown in Table 4 above, revealed a positive and statistically significant correlation between the two variables ($r = 0.380$, $p < 0.001$). This indicates that students who hold more positive and optimistic perceptions of AI's impact on the tourism industry are also more likely to feel prepared and career-oriented toward a labor market transformed by intelligent technologies. Since $p < 0.01$, the research hypothesis (H2) is accepted, confirming that AI perception is an important predictor of work readiness.

H3: *A positive perception of Artificial Intelligence significantly predicts students' intentions to pursue an AI-oriented career in the tourism industry.*

To test whether students' perception of Artificial Intelligence (AI_Career_Perception) predicts their career intentions within the tourism industry, a simple linear regression analysis was conducted as follows.

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	AI_Career_Perception ^b	.	Enter

a. Dependent Variable: Plan te qarte per hapat ne punesim

b. All requested variables entered.

The value shown in Table 5 below, $R^2 = 0.117$, indicates that **11.7% of the variance in career planning can be explained by students' perceptions of the role of AI.**

Table 5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.342 ^a	.117	.111	.88263

a. Predictors: (Constant), AI_Career_Perception

The results in **Table 6 (ANOVA)** show that the model was statistically significant ($F(1,148) = 19.565$, $p < 0.001$), indicating that students' perception of AI has a significant impact on their career orientation.

Tabela 6. ANOVA model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.242	1	15.242	19.565	.000 ^b
	Residual	115.298	148	.779		
	Total	130.540	149			

a. Dependent Variable: Plan te qarte per hapat ne punesim

b. Predictors: (Constant), AI_Career_Perception

The standardized Beta coefficient ($\beta = 0.342$, $p < 0.001$), shown in Table 7, confirms that the higher the positive perception of AI, the stronger the students' intention to pursue a career oriented toward intelligent technologies and digital transformations in the tourism

industry. These results support the alternative hypothesis (H3), highlighting the importance of AI as a motivational factor in the professional choices of the new generation.

Table 7. Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.100	.307		10.098	.000
	AI_Career_Perception	.373	.084	.342	4.423	.000

a. Dependent Variable: A Clear Plan for Employment Steps

4. Conclusions

This study revealed that students' perceptions of the impact of Artificial Intelligence (AI) on employment opportunities significantly differ depending on their field of study, indicating that Computer Science students hold a more positive and optimistic attitude toward the role of AI compared to Tourism students. This difference is linked to the technological nature of the Computer Science field and the greater opportunity for engagement and deeper understanding of AI applications in their professions. On the other hand, Tourism students, although they also recognize the importance of AI, show less optimism, possibly due to the challenges of adapting new technologies in a traditional and often less technologically oriented industry.

Furthermore, the study confirmed a positive and statistically significant relationship between AI perception and students' readiness for the labor market in the digital age. This suggests that a positive attitude toward AI is associated with a stronger sense of preparedness for the emerging demands of the labor market. In other words, students who perceive the role of AI as both an opportunity and a challenge are better prepared to face the changes that technology brings to the employment sector.

Moreover, a positive perception of AI is an important predictor of career intentions, explaining a considerable portion of students' orientation toward careers related to intelligent technologies and digital innovation. This highlights the importance of education and awareness of AI within university curricula, where the integration of digital competencies can help prepare the new generation for the challenges and opportunities of an increasingly transformed labor market.

This study emphasizes the key role that perception and attitudes toward Artificial Intelligence play in students' professional preparation and career orientation in the digital era.

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CHANGES AND ADAPTATIONS IN THE TOURISM SECTOR: THE CASE OF ALBANIA

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Abstract

The global tourism industry is experiencing a profound and rapid transformation, driven by technological advances, socio-cultural changes, and the lingering effects of the COVID-19 pandemic. These changes have also significantly impacted the development of tourism in Albania, a sector that has gained increasing importance in the national economy. Using a qualitative research approach, this study synthesizes data from scientific literature, international policy documents, and industry reports from recent years to examine the impact of tourism on the country's economic development. The results of the analysis show a strong link between tourism development and Albania's economic prosperity, positioning this sector as one of the main drivers of national growth. Before the COVID-19 pandemic, tourism contributed to the Gross Domestic Product (GDP) by providing direct and indirect jobs. After the global health crisis hit, the sector suffered a significant decline due to travel restrictions and economic uncertainty. However, since 2021 we have had a gradual recovery, culminating in 2022 with record numbers of domestic and foreign visitors. The analysis is based on data from sources such as INSTAT, the Ministry of Tourism and Environment, UNDP, UNWTO and WTTC, which highlight the positive trends of the post-pandemic period. However, the tourism sector in Albania continues to face significant challenges, such as high seasonality, the dominance of regional tourism, the lack of diversification of the offer and the high level of economic informality. The study suggests that to ensure sustainable, competitive and long-term development, a comprehensive strategy is needed that promotes the diversification of tourism products, improving infrastructure, digitalizing services and promoting green tourism. Only through such an integrated approach can tourism continue to be a strong pillar of Albania's economic and social development.

Keywords: *tourism, economic development, GDP, recovery.*

1. Introduction

The tourism sector plays an important role in the economy, contributing to employment growth, job security, wage growth and the creation of a market for local products and services. Tourism is considered to be one of the largest industries in the world, which is expanding at a rapid pace and with an efficient use of information technology. In addition, it provides a broad overview of how travel is perceived, as a form of personal growth and intercultural exchange and not simply leisure consumption. Tourism, being one of the most dynamic and rapidly growing industries in the world, makes a significant contribution to GDP and global employment (Kulak, N. V. (2019)).

The tourism industry as one of the most dynamic and multifaceted sectors in the world continues to play an important role in global economic growth, employment generation and cultural exchange (Song, H., Athanasopoulos, G., & Sun, J. A. (2018). Albania, faced

with significant challenges, has skillfully overcome obstacles such as the 2019 earthquake and the devastating COVID-19 pandemic, demonstrating an impressive capacity for recovery. The country experienced a remarkable economic revival driven in particular by a strong recovery in tourism resulting in an increase of almost 5% in GDP in 2022. As of 2023, GDP at current prices reached 23.5 billion US dollars, compared to 12.3 billion US dollars in 2012, affirming Albania's economic vitality and untapped potential (Investing in Albania 2024).

The pandemic exposed the sector's vulnerability to global shocks resulting in unprecedented disruptions in travel and tourism-related services (Sigala, M. (2020)). This crisis has necessitated a rethinking of traditional tourism paradigms and catalyzed transformation across the industry. Recent developments have highlighted the importance of adaptability, sustainability and digitalization in tourism governance and practice. The COVID-19 pandemic acted as a factor that disrupted and accelerated existing tourism flows by driving the adoption of contactless technologies, strengthening health protocols and increasing preferences for local travel. These changes have prompted stakeholders to reassess business models, rethink destination management strategies, and promote long-term sustainability (Gössling, S., Scott, D., & Hall, C. M. (2020). Furthermore, socio-cultural changes, especially among young travelers, have driven the growth of experiential and transformative travel (Cetin, G., & Pala, T. (2022)). In this context, the purpose of this paper is to analyze the impact of the tourism sector on the economic development of Albania during the period 2012–2024, with a particular focus on the impact of International Tourism Revenue on GDP.

2. Literature review

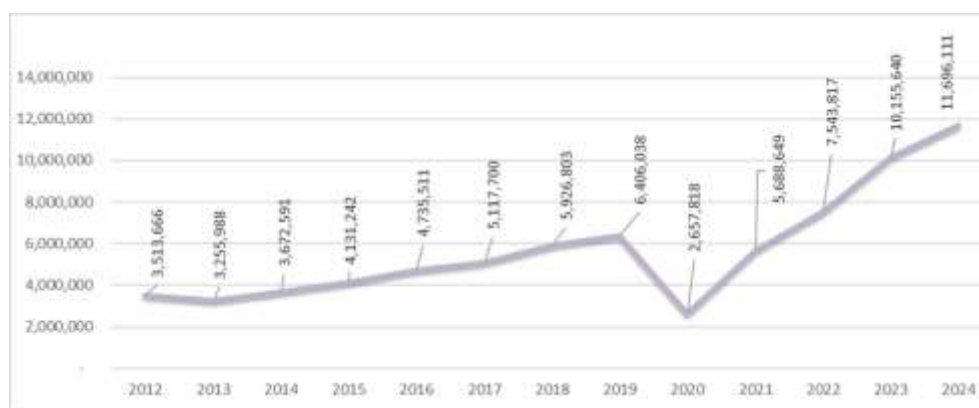
Tourism is today considered one of the most important sectors of the global economy due to its role in economic growth, employment and social development. Contemporary literature treats tourism not only as a recreational activity but as a complex economic system that includes services, infrastructure, technology, human capital and natural resources (Song et al., 2018). According to the definition of the World Tourism Organization, tourism includes travel and stay of individuals outside their usual environment for recreational, business or other reasons not related to employment at the destination (UNWTO, 2014). Various researchers describe tourism as an interaction between tourism demand, service supply and the territory where the activity takes place (Mathieson & Wall, 1982; Cooper et al., 2008). This interaction makes tourism a sector with a direct impact on many other branches of the economy, such as transport, hospitality, gastronomy, construction and trade. As a result, tourism is increasingly seen as an important engine of economic development, especially in countries with natural and cultural potential.

A central place in contemporary literature is occupied by the concept of sustainable tourism, which aims to balance economic growth, environmental protection and the well-being of local communities (Bramwell & Lane, 2012).

Many authors emphasize that uncontrolled tourism development can bring short-term economic benefits, but at the same time significant long-term risks to the environment and social structure of destinations. The COVID-19 pandemic constitutes a strong turning point in the development and study of tourism. Numerous studies highlight the deep decline in tourism demand at the global level and the exposure of this sector's high sensitivity to external shocks (Gössling et al., 2020). At the same time, the pandemic also served as a catalyst for structural transformations in the industry, promoting the

digitalization of tourism services, the use of contactless technologies, and the increase in interest in local and nature-based tourism (Sigala, 2020).

In this context, Albania represents a significant case study where despite the sharp decline in tourism activity during 2020, the sector experienced a rapid recovery after 2021, surpassing pre-pandemic levels in some indicators (UNWTO, 2023; Tourism Doing Business – Investing in Albania, 2024). Institutional reports show that the growth of tourism in Albania has been linked to the improvement of the country's international image, increased investments in infrastructure and the expansion of accommodation capacities. As shown in the graph below, the number of incoming tourists has increased significantly in the period 2012–2019, increasing from around 3.5 million in 2012 to 6.4 million in 2019.



Graph nr.1: Entry of foreign citizens into Albania, Source: Instat 2025

The 2019 was a record year for Albanian tourism, with 6.4 million international visitors and around 2.3 billion USD in tourism receipts.

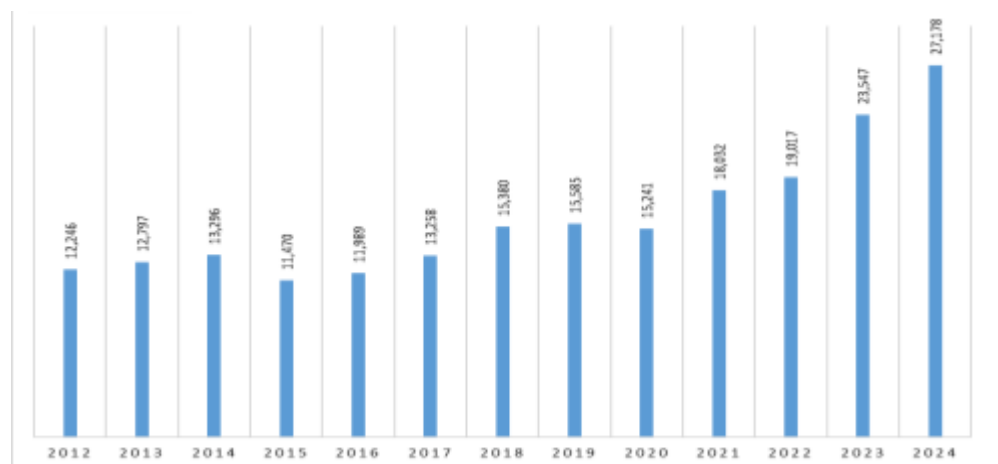
The recovery after the pandemic was also impressive, with 7.5 million international visitors and a GDP growth of around 5% in 2022, strongly supported by the resurgence of the tourism sector, which testifies to the sensitivity and high development potential of this sector. Various studies show that tourism in Albania has taken on an increasingly important role in the country's economic structure, contributing significantly to GDP growth, employment and foreign exchange earnings (WTTC & Oxford Economics, 2025).

The literature also highlights structural problems that remain present, such as high seasonality, informality, lack of diversification of the tourism offer and dependence on limited regional markets. In conclusion, the literature review confirms the existence of a strong link between tourism development and economic growth, but at the same time underlines that this growth must be based on sustainable policies and long-term strategies, so that the economic benefits are sustainable and balanced over time, especially for developing economies like Albania..

2.1 Economic outlook of albania

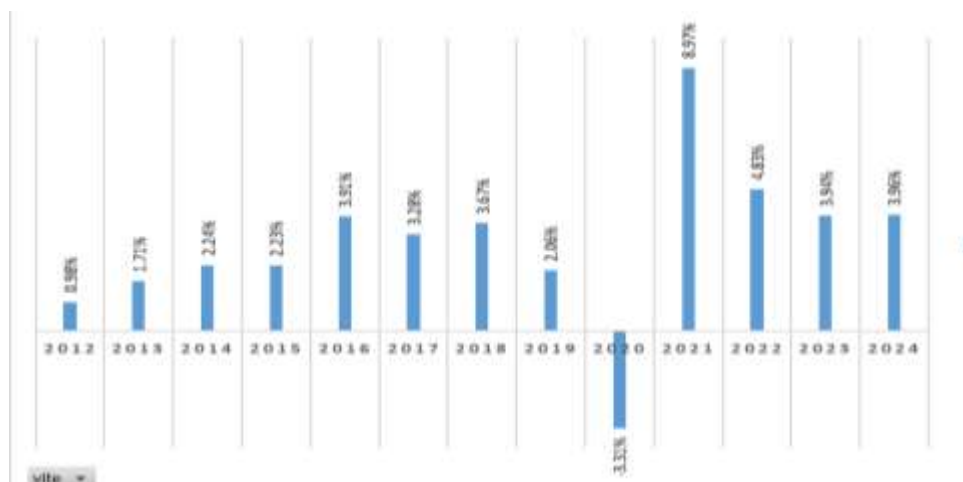
Albania over the last decade has experienced rapid economic growth, unforeseen challenges and promising recovery, making its economic journey interesting (Natalia Bayona Executive Director UN Tourism 2024). Albania, in addition to its liberal and reformist investment climate, as well as its optimal geographical location, is also known

for its economic growth and stability. GDP reflects the total income earned through the production of goods and services in the economic territory during an accounting period. Therefore, through this study we will see the changes that GDP has undergone during the period 2012–2024. This change is presented in the form of a graph of GDP (current US\$), and of the annual GDP growth rate (%). In general terms, Albania's GDP has followed a clear upward trend during the analyzed period, despite some moderate fluctuations in certain years. During the period 2012–2020, GDP dynamics are characterized by low to medium variability, suggesting relatively stable growth, albeit slow and influenced by structural factors of the economy. Meanwhile, the period 2021–2024 presents stronger growth and significantly higher variability, which is mainly related to the post-pandemic recovery, increased investments and the expansion of key sectors such as tourism and construction.



Graph nr.2: Albania's GDP over the years expressed in USD (1.000.000), Source: World Bank

Through GDP values, several key points are identified that represent significant changes in the country's economic trend. The year 2015 turns out to be the GDP with the lowest value in terms of the period under review, with a value of 11.47 billion USD, reflecting a period of internal economic pressures, slow growth and structural challenges in the market. This year serves as the end point of the first growth cycle from which a gradual upward trend then begins. On the other hand, the maximum is reached in 2024, where GDP marks 27.177 billion USD, representing the highest level of the decade and the peak of economic recovery and expansion after the pandemic. This level highlights a significant increase in economic activity, increased consumption, investment and especially the impact of service-oriented sectors such as tourism. Also, the annual growth of GDP (%) shows a fluctuating dynamic, but with a general positive trend that reflects domestic economic developments and global influences.



Graph nr. 3: Annual GDP growth (%) of Albania, Source: World Bank

Such was the year 2019 where annual GDP growth (%) reached 2.06%, reflecting a stable economic performance supported by domestic consumption, investments and a relatively strong tourist season. However, this positive trend was interrupted in 2020, when the growth rate fell to -3.31%. This sharp economic contraction represents one of the strongest shocks of the decade and is directly related to the impact of the COVID-19 pandemic, the closure of economic activities, restrictions on movement, the decline in tourism and high uncertainty in domestic and international markets. This decline clearly shows that the Albanian economy faced an immediate shock in demand and supply, bringing a significant deviation from the growth trajectory that had characterized previous years. One of the most critical moments of the time series is the main positive turning point during 2021, which marks a significant change in the GDP trajectory. This year represents a break from the moderate trend of 2016–2020, reflecting a strong recovery after the impact of the COVID-19 pandemic.

In economic terms, this turning point indicates the beginning of an expansionary phase where the economy enters a more dynamic growth cycle. While analyzing the annual growth rates, the strongest change is recorded between 2022 → 2023, indicating a significant acceleration of economic activity. Annual GDP growth (%) in 2021 reached 8.97%, representing the peak of the entire time series and the highest growth rate recorded in more than a decade. This interval represents the most intense growth of the decade, suggesting that economic stimulus factors, such as increased external demand, expansion of tourism capacities and increased private investment have produced the strongest effect precisely during this period. Overall, the analysis of turning points shows that the Albanian economy has moved from a phase of slow and stable growth (2012–2020) to a phase of accelerated and strong growth (2021–2024), with clear positive deviations suggesting a new development dynamic.

3. Methodology

For the realization of this study, secondary data collected as a result of the review of contemporary literature regarding sustainable tourism, the services it offers, international reports on the economy in Albania, as well as economic information obtained from certified websites were used. This paper is based on a broad descriptive overview of the

dynamics of tourism development and the income that this sector has generated in the country's economy over the years. The analysis focuses on identifying the main trends in the growth of tourist flows, the growth of income from international tourism, as well as the increasingly important role that this sector has acquired in the overall economic structure of Albania. We used a quantitative research in order to analyze the impact of the tourism sector on the economic development of Albania, which was applied through statistical analysis of economic data. Aiming not only to describe economic dynamics, but also to empirically assess the relationship between tourism and economic growth, testing whether the growth of income from tourism is associated with a statistically significant increase in GDP. The results are interpreted in the context of macroeconomic developments, the impact of the COVID-19 pandemic and the recovery phase after 2021, with the aim of drawing conclusions and recommendations for sustainable development policies.

4. The impact of the tourism sector on albania

The tourism industry, as one of the most dynamic and multifaceted sectors in the world, continues to play an important role in global economic growth, employment generation and cultural exchange (Song et al., 2018). With the global health crisis, tourists have become more cautious about their safety while traveling, setting higher expectations from destinations to provide contactless services, health certifications and flexible booking policies. The following graphs present data regarding International tourism receipts in Albania.



Graph nr.4: Revenue from international tourism in Albania

Source : (2012-2020) World Bank; (2021-2022): UNWTO (2023).

Albania has experienced a decade of steady growth in international tourist arrivals and tourism receipts between 2012 and 2019. The World Travel and Tourism Council estimates that one in five jobs in Albania is linked to tourism, travel and related activities. This includes employment by hotels, travel agencies, airlines and other passenger transport services (excluding passenger services), as well as restaurant activities and leisure industries directly supported by tourists. Tourism receipts are expenditures by incoming international visitors, including payments to national carriers for international transport. These receipts include any other prepayments made for goods or services received in the destination country. The performance of international tourism receipts clearly reflects the growing role of this sector in the country's economic development. The progressive

growth of the period 2012–2019 suggests an expansion of tourism capacities, improvement of infrastructure, increase of the competitiveness of the destination and intensification of international demand. In 2012, tourism revenues were recorded at around 1.62 billion USD, marking a stable initial base for the sector. During the years 2013–2014, a gradual increase to around 1.85 billion USD is observed, which indicates an expansion of tourism activity. In 2015, a slight decrease to 1.61 billion USD is observed, but this is followed by a stable recovery during the period 2016–2019, where revenues increase from 1.82 billion USD to 2.46 billion USD.

The year 2020 represents a strong structural break in the time series of international tourism receipts, with receipts falling sharply to around 1.24 billion USD, marking the lowest level of the decade. This drastic decline directly reflects the almost total interruption of international tourist flows, as a result of the isolation imposed on a global scale. From an economic point of view, this development represents a negative asymmetric shock originating outside the national economic system, which simultaneously hit both the supply and demand for tourism services. After this deep decline, the year 2021 marks a clear phase of economic recovery with tourism receipts increasing significantly to around 2.26 billion USD.

This recovery from a macroeconomic perspective indicates that tourism demand had a pent-up demand character, which was activated immediately after the normalization of travel conditions. In 2022, the historical maximum level of tourism revenues is reached, around 2.99 billion USD, clearly exceeding pre-pandemic values, which signaled not only a full recovery of the sector, but also a new phase of structural expansion of tourism. Moreover, this dynamic also reflects the relative effectiveness of supporting policies for the sector, continuous investments in infrastructure and the expansion of accommodation capacities.

5. Interaction between tourism revenues and GDP

Tourism is considered to be one of the largest industries in the world, which is expanding at a rapid pace and with an efficient use of information technology. Given that the tourism sector has an increasingly important contribution to economic growth, there is a need for an in-depth and scientifically supported analysis of its impact. In this context, through the use of IBM SPSS Statistics, it will be possible to process and analyze empirical data in a structured, accurate and methodologically stable manner. This program enables the application of descriptive analyses that explain the relationships between economic variables. The use of this system guarantees methodological accuracy, reliability of results and scientific validity of the analysis. For the statistical analysis of Albania's economic data, data for the period 2012–2022, International Tourism Revenue and GDP will be used, as International Tourism Revenue data are missing for 2023 and 2024. Our analysis focuses on descriptive analysis of variables, correlation analysis (pearson correlation), linear regression analysis, and economic structure analysis.

Data description

The data is obtained from the World Bank and the Bank of Albania, and includes two main variables:

- ✓ GDP (dependent variable): nominal value in USD
- ✓ International tourism revenue (independent variable): value in USD

Year	GDP (current US\$)	International tourism, receipts for travel items (current US\$)
2012	12,246,499,748	1,463,000,000
2013	12,796,985,886	1,473,000,000
2014	13,296,322,588	1,700,000,000
2015	11,470,171,827	1,499,000,000
2016	11,988,668,785	1,693,000,000
2017	13,258,268,436	1,943,000,000
2018	15,379,508,330	2,186,000,000
2019	15,585,111,614	2,329,000,000
2020	15,241,455,556	1,134,000,000
2021	18,032,009,220	2,262,000,000
2022	19,017,244,117	2,990,000,000

Table 1. Albania data for 2012–2022

Descriptive analysis of variables**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
PBB	11	11470171827	19017244117	14392022373	2484129454
TeArdhurat	11	1134000000	2990000000	1879272727	527807557.9
Valid N (listwise)	11				

The results of the descriptive analysis show that GDP has a minimum of 11.47 billion USD and a maximum of 19.02 billion USD, with an average of 14.39 billion USD, while the standard deviation of 2.48 billion USD indicates that fluctuations around the average have been relatively moderate. This indicates that the economy has followed a gradual and stable growth trajectory, despite temporary shocks. The relatively low ratio between the standard deviation and the average (moderate coefficient of variation) signals a satisfactory level of macroeconomic stability during the analyzed decade. On the other hand, tourism revenues represent an average of 1.87 billion USD, with a minimum of 1.13 billion USD and a maximum of 2.99 billion USD, while the standard deviation of 0.52 billion USD is proportionally higher compared to the average than in the case of GDP. This shows that the tourism sector is characterized by greater variability and higher sensitivity to external factors, such as economic crises, geopolitical situations and especially global health shocks. In particular, the sharp decline in tourism revenues during 2020 is directly related to the impact of COVID-19, which caused drastic disruptions to international travel, border closures and restrictions on economic activity. This episode significantly increased the statistical variability of tourism and shows that this sector is much more vulnerable to crises than the economy as a whole. From a structural point of view, the difference between the minimum and maximum GDP (7.55 billion USD) indicates a real expansion of the productive capacities of the economy, while the difference for tourism (1.86 billion USD) confirms that this sector has had significant growth potential, but also strong cyclical declines. These results suggest that, although tourism has become one of the main

contributors to economic growth, it remains a sector with high cyclical risk.

Table 3. Correlation Analysis (Pearson Correlation)

Correlations		PBB	TeArdhurat
PBB	Pearson Correlation	1	.760**
	Sig. (2-tailed)		.007
	N	11	11
TeArdhurat	Pearson Correlation	.760**	1
	Sig. (2-tailed)	.007	
	N	11	11

**. Correlation is significant at the 0.01 level (2-tailed).

The SPSS results show:

- ✓ Correlation coefficient ($r \approx 0.76$)
- ✓ Level of significance $p < 0.007$

The Pearson correlation coefficient was applied to assess the relationship between international tourism receipts and Gross Domestic Product (GDP). The results showed a positive and statistically significant relationship ($r \approx 0.76$; $p < 0.007$). This indicates that during the period 2012–2022, both variables tend to move in the same direction: growth in tourism receipts is associated with growth in GDP and vice versa. However, it should be noted that correlation does not determine causality. A high value of r does not mean that tourism “causes” economic growth. The relationship found is a linear co-moving relationship and does not necessarily indicate that one variable is the direct cause of the other.

Linear Regression Analysis

To further explore the linear relationship between the two variables, a simple linear regression was applied, with GDP serving as the dependent variable and international tourism receipts as the independent variable. The results showed:

- The value of the multiple correlation coefficient $R = 0.7597$
- Coefficient of determination $R^2 = 0.5772$
- Adjusted $R^2 = 0.5302$

Model Summary

Model	R	R Square	Adjusted R Square
1	.760 ^a	.577	.530

a. Predictors: (Constant), TeArdhurat

Although the relationship is obvious, the fact that R is less than 0.80 indicates that GDP is also affected by other factors (FDI investments, exports, industrial production, remittances, etc.). The value $R \approx 0.76$ indicates a medium-strong positive correlation, which suggests that the increase in international tourism revenues is related to the increase in GDP.

This relationship is linear and straight (positive), so when tourism revenues increase, GDP tends to increase. About 57.7% of the variation in GDP is explained by changes in international tourism revenues. This is a significant value considering that the model includes only one explanatory variable. Adjusted R^2 corrects for the effect of sample size,

being especially valid when the number of observations is small (as in our case). The value 0.53 indicates that even after correction, the model remains solid and reliable. In our data, even if we were to add more variables, it is expected that the current model would remain valid. An adjusted R^2 slightly lower than R^2 is normal and signals that the model is not overfitting. These values suggest that there is a moderately strong positive linear relationship between the variables. However, since the model includes only one explanatory variable and the sample consists of only 11 observations, R^2 should not be interpreted as a complete explanation of the variation in GDP.

Economic Structure Analysis

The economic structure of a country reflects the relationships between the main sectors of the economy and the role that each of them plays in creating the overall value of national production. Based on the well-known hypothesis in the literature Tourism-Led Growth Hypothesis (TLGH), which suggests that tourism can act as a driving force for economic growth, we can say that tourism has become one of the most dynamic sectors with a direct impact on economic development, especially in countries with high natural and cultural potential. One of the most significant indicators for measuring the real weight of this sector in the economy is the ratio of tourism revenues to GDP.

Through this analysis, the role that tourism plays in the overall economic structure is identified, treating it in direct relation to GDP.

Year	Tourism in % of GDP
2012	11.95 %
2013	11.51 %
2014	12.79 %
2015	13.07 %
2016	14.12 %
2017	14.66 %
2018	14.21 %
2019	14.94 %
2020	7.44 % ↓ (<i>COVID-19 crisis</i>)
2021	12.54 %
2022	15.72 % ↑ (<i>historical rekord</i>)

Albania's data on the share of tourism revenues in GDP, for the years 2012 (11.95%), 2019 (14.94%) and 2022 (15.72%), testify to a clear and sustainable increase in the structural role of tourism in the economy. The increase from 11.95% in 2012 to 14.94% in 2019 reflects a phase of intensive expansion of the tourism sector, which is directly related to the increase in international tourist flows, investments in hotel infrastructure and supporting services, as well as the improvement of the country's tourist image in international markets. The year 2020 represents a strong structural break in the time series of international tourism revenues, with revenues falling significantly to around 1.24 billion USD, marking the lowest level of the decade. From an economic point of view, this

development represents a negative asymmetric shock originating outside the national economic system, which simultaneously hit both the supply and demand for tourism services. As a result, the tourism sector was exposed to an immediate contraction of activity, affecting not only direct revenues, but also the wide chain of related sectors, such as transport, hospitality, gastronomy and commercial services. In 2022, the weight of tourism reaches 15.72% of GDP, exceeding the level before the pandemic crisis.

In conclusion, the results suggest that the Tourism-Led Growth hypothesis is partially supported for Albania, indicating that tourism has a positive and significant impact on economic growth. However, the lack of evidence of direct causality makes it necessary to use more advanced research methods to fully verify the validity of this hypothesis in the Albanian context.

6. Conclusions

The results of the study clearly show that the tourism sector has played an important and growing role in the economic development of Albania during the period 2012–2024. The empirical analysis confirms the existence of a strong positive relationship between international tourism revenues and Gross Domestic Product, with a correlation coefficient of $r \approx 0.76$, statistically significant ($p < 0.007$). This result shows that the growth of tourism activity is associated with a significant increase in macroeconomic performance.

During the analyzed period, the share of tourism in GDP has increased significantly, going from 11.95% in 2012 to 15.72% in 2022, marking the highest historical level. This increase reflects the expansion of accommodation capacities, the improvement of infrastructure and the intensification of international tourist flows. However, the study highlights that tourism remains a highly volatile sector and exposed to external shocks, as was proven during the 2020 pandemic crisis, where revenues fell to a decade-low.

The strong recovery after 2021, which culminated in a record increase in tourism revenues in 2022, confirms the sector's resilience and its high development potential. Accelerated GDP growth in the period 2021–2024, reaching the historic value of 2024, proves that the tourism sector has been one of the main contributors to economic expansion.

Although the results are optimistic, significant challenges continue to remain present, including high seasonality, limited diversification of supply, informality and the lack of full digitalization. These elements require well-structured policies and long-term measures to guarantee sustainable development and competitive growth in the coming decades.

Improving the statistical data system in line with Eurostat and UNWTO standards, ensuring continuous monitoring and evidence-based assessment of the economic impact of tourism.

One of the most important limitations of the study is related to the lack of standardized and verified data on international tourism receipts for the years 2023–2024. This lack creates a significant gap in the full analysis of post-pandemic dynamics, especially considering that these years represent the period with the strongest tourism growth in the history of Albania.

Formalizing the sector and standardizing quality, by increasing inspections, certifications and transparency of the tourism market, in line with EU best practices and UNWTO guidelines.

Promoting green tourism and environmental sustainability, through the promotion of environmentally friendly investments, waste management, the use of renewable energy and the protection of special natural areas.

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SOCIAL ENTREPRENEURSHIP AND INNOVATION IN TOURISM

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Abstract

This study examines social entrepreneurship as a sustainable and innovative approach within the tourism sector, focusing on its potential to address social, economic, and environmental challenges in the Northern Region of Albania. Although social entrepreneurship has experienced substantial global development over recent decades, in Albania it remains a relatively new and not yet fully developed concept that holds significant potential to contribute to sustainable tourism development. This work aims to analyze how a tourism enterprise can be structured as a social enterprise, as well as to identify the innovations how such a business model can introduce within the local context. The study seeks to fill the existing gaps in both literature and practice by developing a clear conceptual framework on social entrepreneurship and the characteristics that distinguish it from traditional business models. Drawing on contemporary literature on social entrepreneurship, sustainable development, and hybrid enterprises, the research evaluates the processes, motivations, and mechanisms that enable the functioning of a social tourism enterprise, emphasizing the role of the community as a key actor in identifying challenges and co-creating solutions. The methodology of the study is designed in alignment with the interdisciplinary nature of the topic. The expected results include: clearly defining the concept of social entrepreneurship, identifying ways to build social, economic and environmental sustainability, analyzing the match between social business objectives and consumer expectations, and providing concrete recommendations for the transformation of existing tourism businesses towards more social and sustainable models. The study also aims to assess the potential impact of social enterprises on the development of ecological and social tourism in the Northern Region and to propose ways to measure this impact. Overall, the research contributes to filling the scientific and practical gap on the role of social entrepreneurship in tourism, providing a clear analytical and practical framework for academic actors, local institutions and entrepreneurs interested in developing a tourism model that generates economic, social and environmental value for the community.

Keywords: *sustainable tourism, social innovation, hybrid models, community.*

1. Introduction

Social entrepreneurship has become a widely discussed construct in recent years. This growing attention is often fueled by numerous global success stories across various

sectors, including health, education, finance and culture. The concept has gained increasing visibility within business markets, academic debates and policymaking spheres (Boschee, 2006; Nicholls, 2006; Light, 2008). Social entrepreneurs operate in environments characterized by complex problems and rising inequalities that contribute to persistent social and environmental challenges. Social problems refer to long-standing societal concerns such as poverty eradication, access to healthcare, adequate hygiene and quality education that result from developmental neglect in certain areas, both in industrialized and developing nations. Despite a general consensus on the importance of social entrepreneurship, the concept continues to be interpreted differently across local and regional contexts (Borzaga and Defourny 2001; Dacanay 2004; Defourny and Nyssens 2008, 2010; Nyssens 2006; Galera and Borzaga 2009; Kerlin 2006, 2009, 2017; Bacq and Janssen 2011; Kerlin et al. 2016; Young et al. 2016).

The global trend toward sustainable tourism presents a significant challenge for integrating economic, social and environmental considerations into tourism planning. This transition requires shifts in the thinking, attitudes and behaviours of diverse stakeholders within the tourism industry. The rising awareness of sustainability creates multiple incentives for tourism enterprises to adopt these principles and incorporate them into their business concepts, marketing strategies, management practices and daily operations. Although the roots of social entrepreneurship can be traced back to the 1980s, the field is still considered relatively new and continuously evolving. Early examples and practices existed, but only in recent years has social entrepreneurship received substantial attention from governments, non-profit organizations, businesses, financial institutions, universities and civil society. Three main factors have driven its emergence and development: a) the growing interest of various actors in addressing social problems and the consequent need for innovative, sustainable solutions; b) the increasing number of services that public institutions are unable to provide, but which, at the same time, are not attractive to private businesses; c) the recognition and rising engagement of private businesses in addressing social issues. In the case of Albania, and particularly in the Shkodra region, social entrepreneurship remains a relatively new concept, despite the presence of numerous pressing social problems requiring solutions. Therefore, identifying innovative approaches to address these challenges becomes a necessity one, that this field of study aims to explore and support.

Research Question, Research Purpose and Objectives

The main purpose of this scientific paper is to describe and analyze the concept of social entrepreneurship, to present a model of social entrepreneurship within the tourism sector, and to examine the innovations that such a model can introduce. This study is designed to be carried out based on a set of specific research objectives and guiding research questions.

Objectives of the Study

- To provide a clear and comprehensive definition of the concept of social entrepreneurship.
- To identify and analyze the processes involved in social entrepreneurship.
- To examine sustainable and ecological forms of entrepreneurship within the tourism sector.
- To identify the role of the community as a starting point for understanding the social challenges faced by different groups, as well as the ways in which each group interacts with these challenges. In this context, the social entrepreneur functions as a bridge between diverse stakeholders, connecting resources, opportunities and existing gaps within the community, and finding ways to bring them together (Chahine, 2016).
- To assess whether proposed solutions are achievable, affordable and acceptable to the community, and to establish measurable objectives for monitoring and evaluating social or environmental impact (Chahine, 2016).

Research Questions

- What are the main characteristics of the enterprise that allow it to be classified as a sustainable tourism organization or as a social enterprise?
- How does the enterprise achieve economic, social and environmental sustainability?
- How does the enterprise ensure its financial sustainability over the long term?
- To what extent do the objectives of a social enterprise align with the profile and expectations of consumers in the Northern Region?
- What activities and projects should a social tourism enterprise undertake to address the current and potential needs and expectations of consumers in the Northern Region?
- Can this enterprise contribute to the development of ecological and social tourism in the Northern Region, and how can its impact be measured?

2. Literature Review

The literature indicates that social entrepreneurship has emerged as a relatively new field within entrepreneurial research and is still in its early stages of development (Mair and Marti, 2006; Zahra et al., 2012). Progress has been made on various fronts as scholars have begun to explore new research avenues derived from mainstream entrepreneurship theories and have subsequently applied these frameworks to the context of social entrepreneurship (Antonioli et al., 2016). Research in social entrepreneurship is situated within a broader academic domain that examines a specific form of entrepreneurship in which enterprises employ commercial business models while using the outcomes of their activities to generate social value (Frederick, 2007). These new types of enterprises have been described in the literature as “dual-purpose” ventures (Dees, 1998; Frederick et al., 2006), “hybrid organizations”

(Haugh, 2005), or simply “social enterprises” (Mair and Marti, 2006).

In traditional entrepreneurship, business models are primarily oriented toward achieving “economic goals” and maximizing profit. In contrast, social entrepreneurs employ business models designed to create “moral” or social value. Martin and Osberg (2007) argue that while traditional entrepreneurs are driven largely by external motivations such as financial gain, social entrepreneurs tend to be motivated by internal factors, such as community well-being and philanthropy leading them toward a more altruistic approach. However, this does not eliminate the economic dimension of their activities, which remains essential for supporting and sustaining their social mission (Dees and Elias, 1998; Dees and Anderson, 2004). Globally, social enterprises pursue a wide range of social, environmental and cultural objectives, reflecting the diverse needs and priorities of the communities in which they operate (Chahine, 2016). Achieving sustainability requires active participation, interaction and cooperation among all stakeholders, including the tourism industry, consumers (tourists), governmental institutions, NGOs, local authorities and society at large (Kernel, 2005).

3. Methodology

The methodology has been selected in alignment with the purpose of the study and incorporates a variety of approaches and instruments for collecting the required information. To address the research questions outlined above, both organizational and country-specific data are necessary. For this reason, appropriate modeling techniques will be employed to assess the likelihood that a social enterprise will be innovative within a given country, based on country-level characteristics. In addition, extensive secondary data will be gathered from a range of relevant sources within the field of study. A general population survey targeting adults aged 18 to 64 will also be administered. This survey is designed to capture national entrepreneurship rates, as well as individual-level characteristics of nascent and existing entrepreneurs, the need for tourism-related innovations, and the expected impact of social entrepreneurship on tourism development.

4. Results and Innovations of the Project Proposal

1. A clear definition and accurate assessment of the concept and key characteristics of social entrepreneurship.
2. Identification of the ways in which an enterprise can build and enhance its social, economic and environmental sustainability.
3. Recognition of the need for current tourism businesses to adapt to the principles of social entrepreneurship and to align with the needs and expectations of consumers within a sustainable business context.
4. Development of proposals for modifying the tourism business model in order to make it more socially oriented and sustainable.
5. Assessment of the extent to which social enterprises contribute to the sustainable development of tourism in the Northern Region.

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THE IMPACT OF STRATEGIC COMMUNICATION AND DIGITAL INNOVATION ON THE PROMOTION OF TOURIST DESTINATIONS: PRACTICES, CHALLENGES AND INNOVATIONS

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Abstract

Purpose: This study examines the impact of strategic communication and digital innovation on the promotion of tourist destinations in Albania, with particular emphasis on sustainable tourism development. It compares traditional and digital communication strategies while analyzing their influence on tourists' perceptions and experiences.

Adopting an interdisciplinary framework, this research employs mixed methods combining qualitative and quantitative approaches. The methodology includes a comprehensive literature review spanning tourism, marketing, communication studies, and digitalization; analysis of case studies from countries with successful sustainable tourism models; examination of data from digital platforms (Airbnb, Google Analytics, TripAdvisor, Meta); and field research incorporating surveys and semi-structured interviews with domestic and international tourists, as well as tourism industry professionals.

The research identifies that while Albania demonstrates positive trends in adopting online digital services and booking platforms, significant gaps remain—particularly among micro, small, and medium-sized tourism enterprises (MSMEs). The study proposes three concrete outcomes: (1) expansion of virtual marketing space through a strategic communication guide for MSMEs and the introduction of e-tourism platforms and applications promoting sustainable practices; (2) increased visibility of tourism structures through multilingual promotional videos and tourist interviews in Shkodër; and (3) content contribution to the PLACOD digital platform hosted by the University of Shkodër.

This research addresses a critical gap in interdisciplinary studies that integrate strategic communication, digital innovation, and sustainable tourism within the Albanian context. It positions the university as an active agent in regional tourism development and provides actionable frameworks for tourism stakeholders to develop distinctive destination branding through strategic communication and technological innovation.

Keywords: *Strategic communication, digital innovation, sustainable tourism, tourism marketing, digital platforms, e-tourism, destination promotion, Albania.*

1. Introduction

In contemporary Albania, tourism development has emerged as a catalytic force driving economic, political, social, and academic transformations. This dynamic sector presents diverse stakeholders with multifaceted challenges encompassing policymaking, environmental sustainability, digital transformation, and research innovation. Sustainable tourism has, over recent years, established itself as one of the most extensively investigated domains within scientific inquiry, positioning universities as pivotal actors in

regional development through research-driven products emerging from numerous often interdisciplinary projects.

As both a conscious citizen and an active participant in two scientific projects within the Department of Romance Studies at the Faculty of Foreign Languages, University of Shkodër initiatives focused on territorial promotion in foreign languages through digital platforms the author's scholarly attention has increasingly focused on tourism communication. This field is progressively recognized as decisive in constructing destination images, particularly when augmented by digital innovations. The National Tourism Strategy 2024–2030 explicitly acknowledges that *"...there is a positive trend toward the use of online digital services and online booking platforms. However, there is still significant room for improvement, particularly within the sector of MSMEs (micro, small, and medium-sized tourism enterprises)"* (Ministry of Tourism and Environment, 2024, p. 67).

Strategic communication and digital innovation thus constitute fundamental vectors for transforming destinations and tourism practices, enabling enhanced stakeholder awareness regarding destination image cultivation, attractiveness improvement, traveler experience enrichment, and environmentally responsible behavior encouragement.

While abundant scholarship exists within the discrete domains of tourism, linguistics, technology, and innovation, limited research integrates these fields synergistically positioning one at the service of another. Such interdisciplinary approaches are increasingly recognized as decisive within strategic communication, tourism, and technology, domains that organically interact and generate innovation. Interdisciplinary research examining strategic communication within tourism and technology is essential for comprehending and developing novel destination promotion and management methodologies. Technology offers myriad opportunities for enhancing tourist experiences, while strategic communication ensures these innovations achieve efficacy and reach appropriate audiences. This knowledge convergence contributes to constructing a more intelligent, sustainable, and personalized tourism industry for the future. Tourism sector professionals must continuously monitor technological innovation to maintain competitiveness and respond to contemporary traveler expectations.

Through this investigation, the author aims to analyze strategic communication's impact on tourist destination promotion by comparing traditional and digital communication strategies while examining their influence on tourist perceptions and experiences. Through systematic analysis, the effectiveness of diverse methods will be assessed, and concrete innovative solutions will be proposed—grounded in personal and institutional experiences, particularly at the University of Shkodër—to promote and expand tourist destinations. The proposed concrete outcomes aim to enable every tourism stakeholder to create and enhance distinctive original branding that differentiates them and stimulates each site or destination's potential through strategic communication and technological innovation.

2. Literature Review

2.1 Strategic Communication in Tourism

Communication constitutes an essential element of human interaction. Through words, gestures, writing, images, and other modalities, the communication process enables information, ideas, thoughts, and emotions exchange among individuals. Within tourism, communication's role is equally fundamental. To address competitive pressures and evolving traveler behavior, attract visitors, construct destination image, and create positive tourist experiences, success hinges upon adopting strategic communication approaches.

Strategic communication in tourism encompasses all planned and coordinated communication actions designed to promote destinations, services, or tourism experiences. It is grounded in target audience analysis, identification of optimal distribution channels, and development of appropriate messages to optimize promotional campaign impact. The primary objective involves building awareness, enhancing brand image, and increasing traveler engagement (Kotler & Armstrong, 2017; Buhalis, 2020).

Boyer and Vaiaillon (1994, pp. 39-40) conceptualize tourism communication as a specialized discourse that constructs imaginary geographies and desire-inducing representations. This perspective acknowledges that tourism promotion operates not merely through information transmission but through the creation of aspirational narratives that position destinations within tourists' mental maps.

2.2 Digital Transformation and e-Tourism

The integration of information and communication technologies within tourism has fundamentally restructured the industry. Buhalis and Law (2008, p. 610) observe that technological evolution has not only empowered consumers with autonomy throughout all travel phases but has transformed them into genuine market actors. This paradigm shift from passive recipients to active co-creators of tourism experiences represents a fundamental reconceptualization of the tourist-industry relationship.

Buhalis (2003, p. 76) defines e-Tourism as "the digitalization of all processes and value chains in the tourism, travel, hospitality and catering industries." This digitalization enables organizations to maximize efficiency and effectiveness through tools that facilitate global interactivity, customization, and personalization. More recently, Buhalis (2020) advances this conceptualization toward ambient intelligence tourism, wherein ubiquitous computing environments anticipate tourist needs and proactively deliver personalized services.

Denouël and Granjon (2011) contend that technologies have fundamentally imposed themselves upon contemporary societies, transforming their structure and evolutionary trajectories. While technology constitutes a decisive success factor across numerous industries, the tourism industry is particularly profoundly marked by technological development (Buhalis & Schertler, 1999). Vial (2019, p. 118) defines digital transformation as "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies."

2.3 Sustainable Tourism and Communication

The National Tourism Strategy 2024–2030 articulates a vision positioning "Albania as the most exciting new destination in Europe, offering the best value based on quality, inclusiveness, and sustainability" (Ministry of Tourism and Environment, 2024, p. 12). Sustainable tourism aims "...not only for the preservation of natural and cultural heritage, but also for the promotion of responsible tourism development and practices that minimize environmental impact and support local communities" (Ministry of Tourism and Environment, 2024, p. 15).

Dewailly and Flament (2000, p. 23) argue that "tourism activity requires the interaction of a large number of elements and partners such as natural areas, climatic conditions, attractions and tourist facilities, accommodation, information, transport, marketing, various professionals, disposable income and customer choice, the socio-political situation of visited areas, environmental conditions, etc." This ecological perspective acknowledges tourism as a complex system wherein communication functions as both connective tissue and transformative mechanism.

Strategic communication for sustainable tourism extends beyond promotional objectives to encompass stakeholder education, behavior modification, and participatory governance. Minghetti and Buhalis (2010, p. 269) caution against the digital divide in tourism, wherein disparities in technology access and utilization may exacerbate existing inequalities between developed and developing destinations, as well as between large enterprises and MSMEs.

2.4 User-Generated Content and Destination Image

The emergence of Web 2.0 technologies has fundamentally altered destination image formation processes. User-Generated Content (UGC) platforms including TripAdvisor, Booking.com, Airbnb, and various social media channels have democratized destination discourse, enabling ordinary travelers to produce and disseminate representations that frequently achieve greater perceived authenticity than official promotional materials. Gretzel et al. (2014) characterize this phenomenon as the "travel democratization," wherein consumers simultaneously function as information consumers, producers, and distributors.

The credibility attributed to peer-generated content stems from perceived independence from commercial interests. Neuhofer et al. (2012) conceptualize the enhanced tourist experience as co-created through technology-mediated interactions occurring before, during, and after travel. This extended temporality of tourist experience necessitates reconceptualizing communication as continuous engagement rather than discrete promotional campaigns.

2.5 The Albanian Tourism Context

Albania's tourism sector has experienced remarkable growth over the past decade. INSTAT data indicate progressive increases in international arrivals, with particularly significant growth from European markets.

The UNDP Assessment of Tourism Trends and Performance (2022) identifies Albania's comparative advantages as including unspoiled natural landscapes, cultural heritage, archaeological sites, coastal resources, and authentic hospitality coupled with relative affordability compared to Mediterranean competitors.

However, significant structural challenges persist. The National Tourism Strategy acknowledges fragmented destination management, limited human resource capacities, inadequate tourism infrastructure in emerging destinations, and suboptimal utilization of digital technologies particularly among MSMEs constituting the sector's backbone. These challenges intersect with communication deficiencies, including inconsistent branding, insufficient multilingual content, limited social media engagement, and underutilization of data analytics for strategic decision-making.

2.6 Theoretical Framework

This research adopts an integrative theoretical framework synthesizing three interconnected conceptual domains: strategic communication theory, technology acceptance and diffusion models, and sustainable tourism development paradigms.

Strategic Communication Theory: Drawing upon Muchielli's (2005) communication models, this framework conceptualizes tourism communication as systemic, contextual, and interpretative. The transactional model emphasizing simultaneous encoding and decoding, feedback mechanisms, and shared meaning creation proves particularly germane for understanding contemporary digital tourism communication, wherein consumers actively interpret, evaluate, and redistribute promotional messages.

Technology Acceptance and Diffusion: Rogers' (1962) Diffusion of Innovations theory and Davis' (1989) Technology Acceptance Model provide analytical lenses for examining

technology adoption patterns among Albanian tourism enterprises and consumers. These frameworks illuminate how perceived usefulness, perceived ease of use, relative advantage, compatibility, and observability influence adoption decisions particularly relevant for understanding MSME digitalization patterns.

Sustainable Tourism Development Paradigm: Drawing upon the United Nations World Tourism Organization (UNWTO) conceptualization, sustainable tourism is operationalized as tourism that "takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities." This multidimensional conceptualization acknowledges that sustainability encompasses environmental integrity, social equity, and economic viability—domains wherein strategic communication and digital innovation may exert transformative influence.

3. Methodology

3.1 Research Questions and Objectives

This study addresses three primary research questions:

RQ1: What is the impact of strategic communication and technology on sustainable tourism development in Albania?

RQ2: Which digital platforms demonstrate greatest effectiveness in supporting sustainable tourism development in Albania?

RQ3: How important and effective are digital advertising campaigns for emerging Albanian destinations?

General Objectives:

- Evaluation of tourist destinations for sustainable tourism development
- Examination of technologies serving sustainable tourism development
- Strengthening the university's role in promoting the region and beyond

Specific Objectives:

1. To analyze strategic communication's impact on improving public and private institutional image, focusing on tourism and destination promotion
2. To analyze strategic communication's impact on tourist destination development
3. To examine social media and digital platforms' role in tourism promotion
4. To identify principal challenges in tourism communication and propose innovative solutions
5. To study User-Generated Content's impact on destination image
6. To explore artificial intelligence and emerging technologies' impact on tourism communication personalization

3.2 Methodological Approach

Given the interdisciplinary nature of this investigation, the research employs mixed methods, combining qualitative and quantitative approaches across a three-year timeframe. This longitudinal design enables realistic results assessment and evaluation of strategic communication and technology implementation effectiveness for sustainable tourism development.

Phase 1: Theoretical Foundation (Months 1–12)

- Systematic literature review spanning tourism, marketing, communication studies, digitalization, and sustainable development
- Analysis of international case studies from countries with successful sustainable tourism development models (e.g., Slovenia, Costa Rica, Estonia)

- Examination of official reports from INSTAT, UNWTO, Ministry of Tourism and Environment, and international organizations
- Critical analysis of digital platform data (Airbnb, Google Analytics, TripAdvisor, Meta)

Phase 2: Empirical Investigation (Months 13–30)

- **Quantitative Component:** Structured surveys administered to domestic and international tourists visiting Shkodër region and other Albanian destinations (target n=400). Sampling employs stratified random sampling based on origin, age, and travel purpose. Survey instruments measure communication channel exposure, perceived message effectiveness, destination image dimensions, sustainable practice adoption, and technology utilization patterns.
- **Qualitative Component:** Semi-structured interviews with tourism industry professionals (n=25) including hotel managers, tour operators, DMO representatives, ministry officials, and digital marketing practitioners. Additionally, 30 tourist interviews will capture experiential narratives and communication encounter evaluations.
- **Digital Analytics:** Web analytics from partner tourism enterprises and destination platforms will provide behavioral data complementing self-report measures.

Phase 3: Synthesis and Recommendations (Months 31–36)

- Data integration and triangulation
- Development of strategic communication guide for MSMEs
- Formulation of evidence-based recommendations for policy and practice
- Creation of multilingual promotional content
- Contribution to PLACOD digital platform

3.3 Data Analysis

Quantitative data will be analyzed using SPSS and AMOS, employing descriptive statistics, factor analysis, structural equation modeling, and comparative tests. Qualitative data will undergo thematic analysis following Braun and Clarke's (2006) six-phase framework, facilitated by NVivo software. Digital analytics will employ descriptive and predictive analytics techniques.

3.4 Ethical Considerations

The research adheres to established ethical protocols including informed consent, participant anonymity, data confidentiality, and right of withdrawal. Institutional ethics approval will be secured from the University of Shkodër Research Ethics Committee prior to data collection.

4. Results

This interdisciplinary research project anticipates delivering both theoretical contributions and practical innovations:

4.1 Expansion of Virtual Marketing Space

Strategic Communication Guide for MSMEs: A comprehensive, accessible guide enabling small and medium-sized tourism enterprises to develop and implement effective strategic communication. The guide addresses: destination branding fundamentals, target audience analysis, message development, channel selection, content creation, budget optimization, performance measurement, and sustainable practice communication. Particular emphasis is placed on low-cost, high-impact digital strategies appropriate for

resource-constrained enterprises.

E-Tourism Platform Recommendations: Evidence-based identification and evaluation of e-tourism platforms capable of supporting sustainable tourism development in Albania. Platform assessment criteria include: reach among target markets, alignment with sustainability objectives, cost-effectiveness, analytical capabilities, and integration potential with existing systems.

Sustainable Tourism Applications: Proposal and prototyping of mobile applications providing travelers with guidance and recommendations for sustainable practices adoption. Functionality includes: public transport navigation, waste reduction tips, ecosystem protection guidelines, sustainable accommodation identification, and low-impact activity recommendations. Applications will incorporate gamification elements to incentivize sustainable behavior.

4.2 Increasing Tourism Structure Visibility

Multilingual Promotional Videos: Production of promotional videos in multiple languages (Albanian, English, French, Italian, German) showcasing Shkodër region and other Albanian destinations. Production will involve collaboration between foreign language and tourism students, providing experiential learning opportunities while generating authentic, youth-oriented content.

Tourist Interview Series: Systematic collection and analysis of tourist interviews in Shkodër, generating rich qualitative data regarding visitor expectations, experiences, and perceptions. Findings will inform destination management and communication strategy refinement.

4.3 Digital Platform Contribution

PLACOD Platform Enrichment: Substantive content contribution to the PLACOD digital platform hosted by the University of Shkodër. This Francophonie University Agency-funded initiative provides an existing infrastructure for territorial promotion. Research outputs—including destination profiles, thematic itineraries, sustainable practice guides, and multilingual content—will enhance platform comprehensiveness and utility.

4.4 Advanced Analytics Integration

The research recognizes the transformative potential of artificial intelligence and big data analytics for understanding tourist behavior and minimizing environmental impact. Real data derived from visitor behavior, reaction, and interaction analysis enables:

- Tourist flow prediction and management
- Service improvement opportunity identification
- Natural resource pressure assessment
- Personalized communication optimization
- Real-time adaptive management

4.5 Theoretical Contributions

This research addresses a significant gap in interdisciplinary scholarship integrating strategic communication, digital innovation, and sustainable tourism—particularly within the Albanian and Western Balkan context. By synthesizing these traditionally discrete domains, the study advances theoretical understanding of how communication functions as both operational tool and strategic resource for sustainability transformation.

The research extends existing e-tourism frameworks (Buhalis, 2003, 2020) by explicitly incorporating sustainability as both objective and constraint shaping technological adoption and utilization patterns. Furthermore, it contributes to sustainable tourism communication scholarship by examining how digital platforms may function as behavior change mechanisms rather than merely promotional channels.

4.6 Practical Contributions

For tourism enterprises particularly MSMEs the research delivers actionable frameworks and tools for enhancing communication effectiveness while simultaneously advancing sustainability objectives. The strategic communication guide democratizes access to professional communication expertise, potentially reducing competitive disadvantages associated with limited marketing resources.

For destination management organizations and policymakers, evidence-based recommendations support informed strategy development and resource allocation. The identification of effective digital platforms and campaign approaches enables optimization of promotional investments.

For the academic community, the research demonstrates the university's potential as active regional development agent rather than passive observer. The PLACOD platform collaboration exemplifies how research outputs may be operationalized through existing institutional infrastructures, creating value beyond traditional publication metrics.

4.7 University-Industry Collaboration

This research is deliberately designed to foster sustainable collaboration between academic and professional environments. By engaging tourism industry professionals throughout the research process from problem identification through solution development the study aims to produce actionable knowledge addressing authentic practitioner challenges. Conversely, academic rigor ensures that recommendations are evidence-based and theoretically grounded rather than merely reflecting prevailing industry practices.

5. Conclusion

The tourism industry constitutes one of the fastest-growing global sectors and a significant contributor to both world and local economies. Consequently, this industry has attracted considerable scholarly attention, producing valuable reports, conclusions, and recommendations. Within the Albanian context, numerous studies and analyses have been conducted including the National Tourism Strategy 2024–2030, INSTAT's Tourism in Figures, the Albanian Professionals Network's Multidimensional Analysis of Tourism in Albania (2024), UNDP's Assessment of Tourism Trends and Performance (2022), and the University of Shkodër's scientific conference "Challenges of Sustainable Tourism Development" among others. These studies provide findings, information, and statistics regarding Albanian tourism development progress.

Through this investigation, the author presents an interdisciplinary research project, confident that its contribution will add value to the communication and sustainable tourism fields. This research not only complements existing studies within these domains but provides a rich theoretical and practical framework. Beyond addressing strategic communication and technology's importance for sustainable tourism development, it introduces new and critical perspectives aimed at identifying principal challenges in tourism communication and proposing innovative solutions.

As Albania continues its trajectory toward sustainable tourism development, the strategic integration of communication excellence and technological innovation will prove decisive. This research aspires to contribute meaningfully to that transformation.

Limitations and Future Research

Several limitations should be acknowledged. First, the geographic focus on Shkodër region, while enabling depth, may limit findings' generalizability to other Albanian regions with distinct characteristics. Future research should adopt multi-site designs encompassing

coastal, mountain, and urban destinations. Second, the three-year timeframe, while appropriate for doctoral research, constrains observation of long-term communication and technology adoption outcomes. Longitudinal research extending beyond this period would be valuable. Third, resource constraints limit sample size and technological tool access. Future investigations would benefit from larger-scale funding enabling expanded data collection and advanced analytics implementation.

Promising future research directions include: comparative studies examining strategic communication effectiveness across Balkan countries; investigation of artificial intelligence applications for sustainable tourism communication; examination of virtual and augmented reality technologies for destination promotion; longitudinal assessment of MSME digital transformation trajectories; and action research examining strategic communication guide implementation.

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DESTINATION SOCIAL RESPONSIBILITY AND ITS IMPACT ON DESTINATION IMAGE AND TOURIST LOYALTY

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Abstract

Tourism development in rural and mountainous areas has gained increasing attention in sustainability research, particularly in emerging destinations where rapid growth may generate both opportunities and risks. Theth, a protected national park in northern Albania, represents one of the country's most dynamic yet vulnerable rural destinations. Over the past decade, tourism has expanded intensively: accommodation capacity has multiplied, visitor numbers have risen, and more than 90% of local residents are now directly or indirectly engaged in tourism-related activities. While this transformation has strengthened local livelihoods, it has also raised concerns regarding environmental degradation, cultural change, and the long-term sustainability of the destination. These challenges underscore the need for a deeper understanding of Destination Social Responsibility (DSR) as a framework for ensuring that tourism growth is aligned with environmental protection, cultural preservation, and community well-being.

This research project aims to examine the influence of DSR on the formation of Theth's destination image and, subsequently, on tourist satisfaction and loyalty. Drawing on existing theories of motivation, destination image, and responsible tourism, the study conceptualizes DSR as a multidimensional construct—including economic, social, environmental, and legal dimensions—that may shape both cognitive and affective components of destination image. Furthermore, the study proposes to investigate the relationship between these image components and the development of an overall renewed destination image, which in turn influences satisfaction and loyalty intentions. A comparative perspective between domestic and international tourists will be integrated to explore the role of cultural differences in shaping perceptions and behavioral responses.

This constitutes merely an initial phase of the research, which must be followed by more comprehensive and rigorous studies to deepen the analysis and substantiate the findings within a broader framework of sustainable destination development. The expected contribution of these studies are manifold. They seek to provide empirical evidence on the role of DSR in shaping key determinants of tourist behavior in emerging rural destinations. They try to identify which dimensions of DSR most significantly influence cognitive and affective image formation and how these effects differ across visitor groups. Another important aspect of the research aims to fill a significant gap in the national academic literature, as it represents one of a very few scholarly attempts in Albania to operationalize and measure Destination Social Responsibility within a sustainable tourism framework. Practically, the findings are expected to support policymakers, tourism managers, and local stakeholders in designing targeted strategies that enhance sustainability, strengthen Theth's competitive positioning, and foster long-term tourist loyalty.

Keywords: *cultural difference; destination social responsibility; destination image; tourist loyalty.*

1. Introduction

Tourism, particularly in rural and extra-urban areas, has become a key driver of local development for the communities that embrace it. In recent years, mountain tourism in Albania has experienced significant growth, especially in the Shkodra region, where there has been a noticeable development, marked by a continuous increase in tourist arrivals, higher revenues, improved infrastructure, better accommodation facilities, enhanced services, and the diversification of tourism products.

The focus of this study is on the area of Theth, one of Albania's most unique tourist destinations. Designated as a National Park, Theth is highly valued for its natural landscape, cultural heritage, tourism resources, and the exceptional hospitality of its community. Recently, the region has seen a substantial increase in tourist numbers, alongside investments in tourism-related businesses and a growing involvement of the local community in tourism development. This growth has brought positive socio-economic impacts, but it also poses potential risks. Without responsible social practices from the key stakeholders involved in the development of tourism—particularly in protecting the region's natural and cultural heritage—there could be negative consequences that erode the area's attractiveness and jeopardize the future sustainability of tourism in the region. These risks affect not only the economic and social dimensions but also the environmental aspects.

The government has established regulations and guidelines to protect the area's heritage and natural resources, and all stakeholders are expected to adhere to these. The local community in Theth has developed a strong sense of attachment to their land, but tourism remains a non-traditional means of livelihood in the region. As a result, there is a potential lack of awareness regarding sustainable tourism practices. The tourism flow is predominantly driven by Western visitors, where the sense of social responsibility tends to be higher. In order to ensure the long-term success of tourism in Theth, it is crucial for the actors involved to exhibit social responsibility. From this perspective, Theth provides an excellent case study for examining the impacts of Corporate Social Responsibility (CSR) on the destination's image and tourist loyalty.

In 2005, thanks to a project by GIZ (German International Cooperation), five houses were adapted into guesthouses to accommodate visitors. This project was highly successful, and over the years, local residents began to convert their homes into tourist accommodations. Currently, Theth boasts 82 accommodation structures with 1,420 beds, hosting approximately 120,000 tourists annually, making it one of Albania's most important mountain tourist destinations. It is noteworthy that out of the 118 houses in the village today, 82 serve as guesthouses, with 90% of the population now involved in tourism or related activities. Despite the role of state institutions in improving services and infrastructure, and GIZ's contribution to promoting the destination, the local community has played a central role in developing Theth, with nearly 90% of its residents engaged in tourism-related activities.

However, this development also brings concerning impacts on the natural environment and the social fabric of the destination if sustainable tourism practices are not carefully applied. These negative effects range from environmental degradation and the erosion of cultural heritage to the potential loss of traditions, all of which can ultimately diminish the desire to visit such destinations. As the number of tourists increases, along with their length of stay and the return rate of visitors, factors such as the destination's image, emotional appeal, and consumer satisfaction play a central role.

Applying sustainable development principles, preserving the area's natural values and cultural heritage, and promoting social inclusion (through employment of women and youth) are crucial elements for improving the destination's image. This process requires the involvement of various actors, including local and national institutions focused on tourism development, local and international agencies, and most importantly, the community itself. The community plays a pivotal role through its social responsibility towards the destination, which is key to the type of tourism development in Theth. The interactions and relations among these actors form the basis of this research, aiming to understand the impact of these dynamics on the destination's sustainability and future success.

2. Theoretical Framework

2.1 Destination Social Responsibility (DSR)

Destination Social Responsibility (DSR) represents a holistic and collective approach to responsibility in tourism destinations, extending the principles of Corporate Social Responsibility (CSR) beyond individual firms to encompass all destination stakeholders, including tourism businesses, local communities, destination management organizations, and public authorities. In line with the sustainability challenges highlighted in the abstract and introduction, DSR is particularly relevant for emerging rural and mountain destinations experiencing rapid tourism growth, such as Theth.

Building on Carroll's (1991) CSR framework, DSR is commonly conceptualized as a multidimensional construct comprising economic, social, environmental, legal, and ethical responsibilities (Su, Huang, & Huang, 2018). From an economic perspective, DSR supports local livelihoods and inclusive development. Socially and culturally, it promotes community well-being and the preservation of local traditions. Environmentally, it emphasizes the protection of fragile ecosystems, while legally and ethically it ensures compliance with regulations and responsible behavior by all stakeholders.

In destinations where tourism has expanded intensively and where local communities are deeply involved—as evidenced by the high level of resident participation in tourism activities in Theth—DSR becomes a critical governance mechanism. It provides a framework through which tourism growth can be aligned with environmental protection, cultural preservation, and long-term destination sustainability.

2.2 Community-Based Tourism (CBT) and Local Engagement

Community-Based Tourism (CBT) places local communities at the center of tourism development, emphasizing participation, empowerment, and equitable benefit distribution (Goodwin & Santilli, 2009). The relevance of CBT to the Theth context is evident, given that more than 90% of residents are directly or indirectly engaged in tourism-related activities. Such a high level of involvement strengthens the link between DSR and sustainable tourism outcomes.

The literature suggests that destinations characterized by strong community engagement are better positioned to manage tourism growth responsibly and to mitigate negative environmental and socio-cultural impacts (Zapata et al., 2011; Dodds, Ali, & Galaski, 2018). Moreover, community participation enhances authenticity and ethical tourism practices, which are increasingly valued by tourists, particularly those from Western markets where norms of social responsibility tend to be more pronounced.

2.3 Stimulus–Organism–Response (S–O–R) Model

To explain how Destination Social Responsibility influences tourist perceptions and behaviors, this study draws on the Stimulus–Organism–Response (S–O–R) model

developed by Mehrabian and Russell (1974). Within this framework, stimuli refer to external environmental cues that influence individuals' internal evaluations and subsequent behavioral responses.

In the context of Theth, DSR-related practices—such as environmental protection initiatives, community involvement, and responsible destination governance—constitute key stimuli. These stimuli shape the organism component, which encompasses tourists' cognitive and affective evaluations of the destination, including destination image, emotional responses, and perceived value. These internal states subsequently influence responses in the form of tourist satisfaction, loyalty intentions, and word-of-mouth behavior.

The S–O–R model is particularly suitable for rural and nature-based destinations, where experiential, emotional, and ethical considerations play a central role in shaping tourist behavior.

2.4 Destination Image Formation

Destination image is a core construct in tourism research and a central element of this study. According to Baloglu and McCleary (1999), destination image consists of two main components: cognitive image, referring to tourists' knowledge and beliefs about destination attributes, and affective image, reflecting emotional responses toward the destination. Together, these components form the overall destination image. Consistent with the issues outlined in the Introduction, responsible destination practices are expected to influence both components of destination image. Environmental conservation and cultural preservation initiatives enhance cognitive evaluations of destination quality, while ethical conduct and community well-being foster positive emotional responses, such as trust, admiration, and emotional attachment (Martínez & del Bosque, 2013).

2.5 Perceived Value, Satisfaction, and Loyalty

Perceived value refers to tourists' overall assessment of the benefits received relative to the costs incurred (Zeithaml, 1988). In mountain and rural destinations, perceived value often derives from scenic beauty, authentic experiences, social interactions, and opportunities for cultural learning. Extensive research demonstrates that higher perceived value leads to greater tourist satisfaction, which in turn represents a key determinant of destination loyalty (Chen & Tsai, 2007; Chi & Qu, 2008).

Tourist satisfaction reflects a positive psychological state resulting from the comparison between expectations and actual experiences. Satisfied tourists are more likely to revisit the destination, recommend it to others, and develop long-term loyalty. In emerging destinations such as Theth, where destination image is still evolving, satisfaction and loyalty are particularly important for ensuring sustainable tourism development.

2.6 Conceptual Model

Grounded in the S–O–R framework and destination image theory, this study proposes a conceptual model in which Destination Social Responsibility acts as a central stimulus



influencing tourists' cognitive and affective destination image. These perceptions shape perceived value and overall tourist satisfaction, which subsequently influence loyalty-related outcomes, such as revisit intention and positive word-of-mouth.

At this stage, the model is presented as a conceptual and explanatory framework rather than a tested causal structure. It is intended to guide future empirical research and to provide a structured understanding of how responsible destination practices may contribute to sustainable tourism development in Theth and comparable rural destinations.

3. Literature Review

3.1 Destination Social Responsibility and Destination Image

Previous studies demonstrate that socially responsible practices at the destination level positively influence tourists' perceptions and destination image (Su et al., 2018; Martínez & del Bosque, 2013). Environmental responsibility, ethical governance, and initiatives aimed at community well-being enhance cognitive evaluations of destination attributes while simultaneously generating favorable affective responses.

3.2 Destination Image, Satisfaction, and Loyalty

A substantial body of literature confirms the pivotal role of destination image in shaping tourist satisfaction and loyalty (Baloglu & McCleary, 1999; Chen & Tsai, 2007). Tourists who hold favorable cognitive and affective images of a destination tend to report higher satisfaction levels and stronger loyalty intentions, including revisit behavior and positive word-of-mouth.

3.3 The Role of Community Involvement

Community involvement has been widely recognized as a key factor in achieving sustainable tourism development, particularly in rural destinations (Nunkoo & Gursoy, 2012). Active community participation strengthens destination governance, supports socially responsible practices, and enhances tourists' perceptions of authenticity and ethical tourism.

4. Conclusions

This conference paper highlights Destination Social Responsibility (DSR) as a key conceptual framework for managing tourism development in emerging rural and mountain destinations. By integrating DSR with destination image theory and the Stimulus–Organism–Response (S–O–R) model, the study provides a coherent explanation of how responsible destination practices influence tourists' cognitive and affective evaluations, overall destination image, satisfaction, and loyalty intentions.

In the specific context of Theth, rapid tourism growth, strong community involvement, and increasing environmental and socio-cultural pressures render DSR particularly relevant. The findings of the theoretical analysis suggest that the destination's competitiveness and long-term sustainability depend not only on its natural and cultural assets but also on how responsibly tourism development is perceived and managed by key stakeholders.

Environmentally responsible practices, community engagement, and compliance with legal and ethical standards contribute to a renewed and positive destination image, strengthening tourists' emotional attachment and trust.

As this study represents an initial conceptual phase, it does not aim to test causal relationships empirically. Instead, it provides a structured theoretical foundation that can guide future empirical research. Further studies should operationalize the proposed constructs, examine differences between domestic and international tourists, and assess the relative importance of different DSR dimensions. Nevertheless, the framework presented contributes to the limited academic literature on Destination Social Responsibility in Albania and offers a solid basis for advancing research on sustainable tourism development in similar emerging destinations.

5. Practical and Policy Implications

From a practical perspective, destination managers and tourism operators in Theth should actively integrate Destination Social Responsibility principles into tourism planning and daily operations. This includes adopting environmentally friendly practices, promoting cultural authenticity, and encouraging responsible behavior among visitors. Strengthening cooperation between accommodation providers, guides, local producers, and community representatives can enhance service quality while preserving the destination's natural and cultural values.

Capacity-building initiatives are particularly important in emerging rural destinations. Training programs focused on sustainable tourism practices, environmental awareness, and responsible service delivery can improve professionalism and ensure a more consistent visitor experience. Special attention should be given to empowering women and young people through employment opportunities and support for small, locally owned tourism enterprises, thereby reinforcing inclusive and community-based development.

From a policy perspective, public authorities should strengthen regulatory frameworks aimed at protecting fragile mountain ecosystems and cultural heritage. Clear land-use regulations, effective environmental monitoring systems, and consistent enforcement mechanisms are essential to prevent overdevelopment and resource degradation. In addition, incentive schemes for responsible tourism investments and stronger coordination among local, regional, and national institutions can support the long-term sustainability and competitiveness of destinations such as Theth.

Overall, embedding Destination Social Responsibility into both management practices and policy frameworks can help ensure that tourism development in Theth remains balanced, resilient, and beneficial for both visitors and the local community over the long term.

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ENFORCEMENT OF CONSUMER PROTECTION LAW IN TOURISM-NORTHERN ALBANIA CASE

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Abstract

Tourism in Albania, including the north, is experiencing significant growth. However, it faces different challenges related to infrastructure, investment, marketing, and sustainability. In this context, the protection of consumers' rights is essential for addressing these challenges, especially in smart tourism.

Despite adopting different consumer protection strategies, as stated by Nene in 2023 and Pasko in 2016, policy efforts are often hampered by fragmented implementation and limited stakeholder awareness. Also, the legal framework for consumer protection has not always been in line with the new development practices in smart tourism. Currently, the Albanian government has adopted a new inter-sectoral strategy on the protection of consumers, which sets a strategic objective to protect the economic interests of consumers in general, including those in the field of tourism. Also, a new draft law on consumer protection has been launched for public consultation.

This paper examines the actual legal framework and its implementation challenges. It provides a comparative overview of the policies and legislation in the Western Balkan countries (Montenegro, Serbia, Bosnia and Herzegovina, North Macedonia, and Kosovo) and EU consumer protection legislation. In this overview, the analysis aims to provide a clearer picture regarding the need for improvement of Albanian legislation within the framework of the European integration process, but also for an approach to this issue that supports the development of Albanian tourism in line with smart regional development.

Based on primary data collected through a questionnaire to the tourists from different countries that has visited at list once the north part of Albania, the paper analyses the level of information tourists have about their consumer rights and how is it connected with other characteristics or indicators like their country of origin, the age group, the length of their stay.

Keywords: *smart tourism, the rights of customers, the right to information of tourists, European integration.*

JEL classification: (D18, K23, L83, O52)

1. Introduction

Today, the tourism industry is developing rapidly, accompanied by major challenges, especially in the development of smart tourism. In this context, it is important to address tourism business models from the perspective of businesses aiming for sustainable smart tourism, which uses digital technology, data, and innovation to improve the tourist experience, destination management, and economic, social, and environmental

sustainability. Unlike traditional business models, sustainable and smart tourism businesses must build a proposition that creates value not only for their shareholders but also for all stakeholders, directly or indirectly, involved in the enterprises' activities. They include the value that tourism businesses offer to clients; in other words, meeting the expectations of tourists through quality experiences and authentic cultural connections that go beyond the sale of a service for payment.

Consequently, consumer protection becomes increasingly important, as it affects not only tourist expectations but also business performance. As the industry attracts more international and domestic tourists, the effectiveness of consumer protection laws and their enforcement becomes essential to ensure visitor satisfaction and the safety and competitiveness of Albania as a destination. (Nene; Zheku, 2023)

However, it must be said that this is often a difficult process to implement in practice, as it faces various challenges. Reality shows that implementing general consumer protection laws in tourism contexts is difficult: unstable environments, complex chains of travel services, information failures, changing consumer expectations, and technological changes (Verity and Dwyer, 2014)

Despite positive assessments by tourists regarding fair prices or quality assurance, there is still a lack of standards in some aspects of service provision, such as gaps in infrastructure and inconsistent service quality. A study has identified the low level of awareness of consumer rights among both providers and customers as one of the main gaps (Kosova, 2023). The development and increasing use of digital technologies have made the relationship between the tourism business as a service provider and the tourist as a consumer more complex. While the use of online bookings, artificial intelligence-driven services, and digital personalization increases convenience, it raises new challenges for consumer protection including data privacy and transparency in automated decision-making (Ferhataj, Memaj, 2024).

Various studies and papers have highlighted issues related to the ability to resolve disputes. Despite improvements, many tourists encounter difficulties, ranging from inconsistent accommodation quality to unclear complaint procedures and limited options for resolving disputes (Pjero; Gjermëni, 2019).

Another scientific paper highlights that the above problems are particularly prevalent outside large urban centers or in specialized fields such as adventure tourism (Rapi et al., 2018).

As mentioned above, we have focused our work on protecting the tourist as a consumer, an important element for any tourism business aiming to adopt a sustainable business model.

The hypotheses we raise are:

Hypothesis 1. Current legislation offers protection for tourists as consumers, but needs to be improved to reflect the changes in business models that have been brought to sustainable tourism.

Research questions:

1. What is the legislation in force for the protection of tourists as consumers, and does it provide sufficient guarantees for the protection of tourists/consumers in the context of the development of sustainable and smart tourism?
2. What are the state policies regarding consumer protection in the field of tourism?

Hypothesis 2. Tourists lack sufficient knowledge of their consumer rights.

Research questions:

1. What are the main violations of tourists' rights as consumers?

2. How informed are tourists about consumer protection legislation?

To arrive at the above hypotheses, we used a mix of qualitative and quantitative research methods. *The analytical method*, based on the analysis of previous studies (desk review) and the existing legal framework, has enabled us to understand, at a doctrinal level and legal analysis, the rights of the tourist/consumer and the possibilities of their protection by the current legislation, while also identifying the needs for intervention. We have analyzed several studies on this topic, state policies formalized through strategies and action plans for consumer protection and tourism, and existing legislation and government initiatives for drafting new legal acts in consumer protection. *The quantitative method*, through the analysis of primary data from a questionnaire, has enabled the recognition and implementation of Albanian consumer protection legislation, as perceived by tourists who received services from tourism businesses in northern Albania. To ensure methodological coherence, qualitative findings from the desk review helped design the questionnaire, creating a vicious circle in which qualitative findings and quantitative results mutually reinforce each other.

As mentioned above, this paper aims to contribute to existing studies by providing an integrated legal and empirical analysis of consumer protection in the context of sustainable and smart tourism. We also believe that the paper's values are related to its role in academic research on the protection of tourist/consumer rights in Northern Albania, an area that remains under-studied. Furthermore, the study fills the gap between legislative analysis and tourists' real consumer experience.

2. Legal and policy framework on consumer protection

2.1 Legal framework on consumer protection

Albania has taken significant steps to align its consumer protection frameworks with EU standards, particularly through legal reforms affecting tourism services, accommodation, and digital booking platforms (Teliti, 2013).

Consumer protection is regulated by a special law adopted in 2008. The law has undergone changes over time, but fundamental changes were made in 2018.

The Consumer Protection Law aims to safeguard consumers' interests in the market and to establish institutional mechanisms to protect consumer rights. The scope of application of this law is broad; it includes all types of relationships established between traders and consumers in the provision of services, except where special legislation provides greater protection.

For the purposes of this law, a '*consumer*' is any person who purchases or uses goods or services for personal needs, for purposes that are not related to commercial activity or the exercise of a profession. For the purposes of this law, non-profit organizations are also considered consumers.

The tourist/consumer has several rights expressly protected by Law 9902/2008, as amended. The protection of the tourist/consumer begins with respecting the right to receive information and education about his/her rights. Importance is given to both the right to protection of health, the environment, and the safety of life, as well as to economic interests. The tourist, in their capacity as a consumer, has the right to use public services. Likewise, the law protects several rights that enable the tourist/consumer to resolve disputes when the service is provided without standard, such as the right to complain, legal protection, or compensation.

In a separate section, the Consumer Protection Law regulates the obligations arising from

travel packages. Article 46 of the law provides its definition, defining two essential elements:

- a. the contracts provide or offer to provide the consumer, at an all-inclusive price, with a pre-arranged combination of at least two services; namely: transport; accommodation or other tourist services, not directly linked to transport or accommodation and constituting a significant part of the package.
- b. the contracts cover a period of time of at least 24 hours or include accommodation for at least one night

Through legal provisions, general and specific obligations are defined, which are closely linked to the right of the tourist in the capacity of consumer to be informed accurately and clearly, in a transparent manner, about the service that will be offered to him; therefore, it determines the qualities that the information provided must have. As above, the information the package provider provides to the tourist/consumer must not be misleading regarding the tourist package, its price, or any other conditions under the package travel contract.

Otherwise, misleading information would constitute unfair commercial practices that could harm specific groups of consumers, such as vulnerable groups, or involve inherently false or incomplete information (especially when communication means are limited).

In detail, the law establishes the obligation that when an information brochure regarding a travel package is made available to the tourist/consumer, it must contain legible, detailed and accurate information regarding: the price of the package, the amount or percentage of the price to be paid in advance and the calendar for payment of the remaining amount; the destination and itinerary; the means and categories of transport to be used; the type of accommodation, location and category; the meal plan; passport and visa requirements.

Guaranteeing consumer rights in the field of tourism, as in any other consumer sector, is closely linked to the effectiveness of existing legal mechanisms in addressing consumer rights violations specially, in the digital realm (Babayev, 2023). According the Albanian legislation, *competent bodies* aim to develop and implement consumer protection policies and protect the basic rights of consumers, especially groups of consumers who can be more easily violated (children, the elderly, the poor, the disabled, the sick, as well as people with mental and physical health problems).

The legislator has assigned as the responsible body the ministry whose area of responsibility includes trade issues, including consumer protection, which mainly has competencies and exercises functions related to the drafting of policies and legislation that guarantee a high level of consumer protection, but also encourages and enables cooperation between central and local consumer protection bodies.

The Coordinating Council is a broader mechanism established by a special law, mandated by the Prime Minister to review policies and organizational measures for consumer protection, and chaired by the ministry responsible for trade issues. The structure responsible for consumer protection within this ministry serves as the technical secretariat of this Council. The Coordinating Council is composed of representatives from state administration institutions directly or indirectly related to the protection of consumer interests; from non-profit consumer organizations; and from business associations.

Article 52 of the Consumer Protection Law establishes a Consumer Protection Commission (CPC) with powers to review complaints, monitor, and implement this law. The composition is determined by the Prime Minister upon proposal from the ministry responsible for trade issues, comprising 2 persons from this ministry, 2 from the Ministry of Justice, and representatives from civil society with experience in economics and

jurisprudence. Consumer associations constitute an important actor, both in their involvement in competent and responsible mechanisms to guarantee consumer protection and in their role in ensuring consumers' right to organize themselves in associations to protect their interests.

Referring to the decisions published by the CPC over the years, it does not appear that any of them have handled any case/complaint regarding the violation of the rights of the tourist/ consumer in Albania.

Despite the legal provision of this mechanism, it must be said that this Commission has not received due attention from the ministry under which it operates. There are difficulties in accessing the official website of this mechanism. After reviewing the CPC's annual reports, it appears there is no information on complaints or issues handled by the commission regarding violations of tourist/consumer rights.

Consumer protection legislation provides for the right to appeal, through individual complaints, a tool that can also be used by tourists, who can address their issue (complaint) to the following mechanisms:

- State administrative structures responsible for consumer protection and special structures in local self-government units;
- Consumer associations;
- Arbitration court or licensed mediator;
- Judicial bodies;
- Any responsible ADR structure (Alternative Dispute Resolution Offices), specifically created for the out-of-court resolution of disputes.

The law on consumer protection underwent significant changes in 2018 regarding the structures for addressing individual consumer complaints (including those from tourists). Licensed intermediaries and ZAMs have been included for the first time, and the Ombudsman has been removed from the list of mechanisms. The legal changes also include a provision regarding the role of local government units, both in educating and informing consumers/tourists and in collecting, selecting, and forwarding complaints to the responsible structure at the central level.

Regarding the practical aspects of implementing these legal provisions, studies highlight shortcomings in the enforcement of dispute-resolution procedures. In Albania, these institutions suffer from capacity constraints, fragmented authority, and inconsistent monitoring practices. As a result, tourists often encounter obstacles to exercising their rights, including delays in responses, limited enforcement of compensation, and limited legal remedies beyond formal court procedures (Abdurrahmani, 2024).

In July 2025, the Albanian government submitted a new draft consumer protection law for public consultation. It addresses issues arising from the digitalization of the market, developments in online commerce, the rise in environmental claims, and the need to strengthen the consumer's position in a sustainable and fair economy. According to the accompanying report, the draft law has been drafted in full compliance with 13 EU directives directly or indirectly related to consumer rights, and partly in compliance with a regulation in this area. The draft law does not include specific provisions (as in the current law) on the rights of tourists/consumers in travel packages, but it addresses the current law "On Tourism". On the other hand, the latter itself provides that for issues related to the rights of the tourist as a consumer, the provisions of the law on consumer protection should apply. This may lead to uncertainty in adequately addressing cases in which the rights of tourists/consumers are violated.

Meanwhile, Law No. 93/2015 “On Tourism” determines the basic data that must be contained in the contract between the tourist/consumer and the tourist operator or travel agency. It also provides for the guarantees of the tourist operator in order to protect the consumer in the event of non-fulfillment of obligations.

A comparative look at Albania with other Western Balkan countries reveals that tourism businesses face similar challenges in harmonizing domestic laws with EU consumer protection directives, while ensuring practical implementation. Studies show that, while EU candidacy or membership drives formal legal reforms - such as approximation with Directive 90/314/EEC and EC Regulation 261/2004 - the quality of implementation varies greatly, constrained by political, infrastructural, and economic factors (Hydyma, 2025).

According to the 2025 reports of the European Commission, some Western Balkan countries such as Albania have taken positive steps in public policy for consumer protection through the adoption of specific strategies. Meanwhile, other countries such as Montenegro have made faster progress in aligning their domestic legislation with the latest changes in EU law in this area and in strengthening the capacities of mechanisms for dealing with cases of violations of consumer rights. The European Commission recommends the implementation and approximation of domestic legislation with the latest changes in EU law, not only for the Western Balkan countries that are in the early stages of this process (Bosnia and Herzegovina and Kosovo*), but also for other countries such as Albania or Serbia.

The 2025 European Commission's Report on Albania, while assessing the drafting of the Consumer Protection Strategy for the years 2023-2030, expresses concern that there is no clear information on how the Consumer Protection Body (CPC) has handled complaints, and no development is evidenced in the implementation of the relevant legislation and compensation for consumers for the damage caused. (European Commission; 2025).

2.2 Consumer protection policies in the field of tourism

In terms of the policies that the Albanian state has drafted regarding the development of sustainable tourism, it is clearly evident that we cannot see this development except as linked to efforts to empower consumers through the improvement and implementation of the legal framework, the establishment of standards in every field, and the respect of the principles of sustainable development. The Intersectional Strategy for Consumer Protection and Market Surveillance 2024-2030 has included, among its strategic objectives, consumer protection issues unrelated to security, including tourism, the environment, and digitalization. Another of its objectives addresses consumer information and awareness among service providers.

In 2025, the Albanian government adopted a new tourism strategy. The National Strategy for Tourism Development 2025–2030 defines several objectives and emphasizes the need for a clear definition of the rights and responsibilities of providers and consumers.

The main objective remains the implementation of efficient consumer complaint resolution systems, through the clear identification of mechanisms and procedures for submitting complaints and respecting the deadlines for receiving responses, as well as the imposition of sanctions in cases of violations to maintain the quality of service and protect the interests of consumers. The strategy aims, through the measures envisaged, to prepare tourism professionals to comply with EU regulations, including those related to consumer protection.

In line with the requirements of the European integration process, policies that support and promote sustainable and smart tourism should keep pace with those of other EU member states. We draw attention to the fact that in November 2025, the European Commission

adopted the Consumer Agenda 2030, which aims to take a new step in consumer protection, competitiveness, and sustainable growth. The focus is also on the rights of consumers who, for various reasons, receive services as tourists/consumers, including accommodation, transport, and financial services (2030 Consumer Agenda, 2025).

3. Methodology

The data were collected through questionnaires distributed to 164 tourists from different countries who had visited northern Albania at least once. The complete anonymity of all tourists who participated in the study and completed the questionnaires was maintained. Google Forms were used to collect the questionnaires, and processing was done in Excel.

The questionnaires consist of 6 sessions, with structured questions and fewer unstructured ones, aimed at collecting as much data and opinions as possible that will be valuable for this study. Most of the questionnaires were distributed online via a link and a QR code, and a smaller number were completed in printed questionnaires distributed manually to tourists. To ensure comprehensiveness, the questionnaires were distributed through tourist agencies, hosting structures listed on Airbnb and Booking, road and water transport companies, hotels, restaurants, bars, and directly to individual tourists.

The first session of the questionnaire aims to collect general data on tourists, including age, country of origin, length of stay, purpose of visit, and average daily spending.

The second session aims to collect data on possible violations of consumer rights under Law 9902/2008, such as providing the tourist consumer with a tax coupon, displaying prices in ALL, changing prices without prior notice, and failing to match advertising with reality.

The third session aims to collect consumers' impressions on the quality of service and their negative experiences.

The fourth and fifth sessions focus on identifying how informed consumers are about their rights under consumer protection law, how safe tourists felt during their stay, and how they reacted to their problems or negative experiences.

The questionnaire concludes with *the sixth session*, which, through open-ended questions, aims to collect suggestions that will be summarized at the end of this analysis.

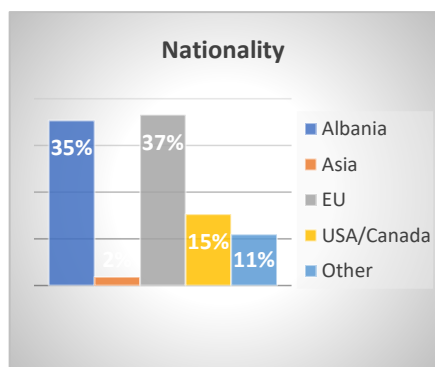
3.1 Study limitations

During the process, there was reluctance to complete the questionnaire, especially among foreigners who were asked to do so via the questionnaire link, due to the uncertainty they felt. Although the online questionnaire was distributed to a sample of more than 1000 tourists, only 164 of them completed it.

Another limitation concerns the timing of the questionnaire completion. The questionnaire data were collected during September-November, when the number of tourists is also steadily decreasing as the summer season comes to an end. This has made it difficult, especially to reach foreign tourists.

3.2 Findings from data analysis

From the data collected, it results that 37% of tourists are from European Union countries, 35% are Albanian tourists, 15% are from the USA/Canada, 2% are Asian, and 11% are from other countries worldwide. This distribution will give this study a well-balanced perspective on the customers of one of the most focused and developing industries in Albania, tourism.



Nationality	
Albania	35%
Asia	2%
EU	37%
USA/Canada	15%
Other	11%

Fig. 1 The Nationality

The age distribution of participants in this study is as follows: 38% are 26-40 years old, 31% are 18-25 years old, 23% are 41-60 years old, and 8% are over 60 years old. This distribution shows that Northern Albania attracts people of all ages who have the opportunity to explore the country, regardless of the purpose of their trip. The data shows that 58% of the participants in this study have visited Northern Albania for vacation, and 27% for adventure.



Age group	
18-25	30%
26-40	38%
41-60	23%
over 60	9%

Fig. 2 The Age Group

Regarding the length of stay in the north of the country, the majority of tourists stay for 1-3 days, 26% for 4-7 days, and 29% for more than 1 week. Tourists who choose the north of the country are mostly tourists who do not spend much money, about 69% have spent up to \$ 100 per day, while 27% of them have spent \$ 101-200 per day.



Average daily expenses	
up to 100\$	69%
101-200\$	27%
over 200\$	4%

Fig. 3 Daily expenses

Tourists choose various accommodation options, including guesthouses (38%), houses listed on platforms such as Airbnb and Booking.com (32%), and hotels (28%).



Accommodation	
Hotel	28%
Short-term rental	32%
Guesthouse	38%
Camping	2%

Fig. 4 Accommodation

The data shows a high level of informality in the tourism sector. Only 1 in 3 tourists received an invoice for the service they received. However, 69% of tourists were clear about the monetary value of the service received, while 31% were unsure or unclear.

Regarding unannounced price changes, only 11% of tourists have experienced them, while 17% of cases show inconsistency between the published description of the accommodation structure and what is in reality.



Match with description	
No	4%
Somehow	13%
Yes	82%

Fig. 5 Match with the description

Also, 12% of tourists had disagreements regarding the deposit and terms of service. The main services tourists received were restaurants, bars/lounges, transportation, and tour guides.

Based on the questionnaire data, tourists' level of knowledge of consumer protection law was very low. Only 10% of tourists were aware of this law in detail; 25% had general information about it; and 65% had no idea about the law that protects their rights as consumers of tourist services.



Information about the Law	
Not informed	65%
Somehow informed	25%
informed in detail	10%

Fig. 6 The General Information About the Law.

119 persons or 73% of all respondents had no negative experiences during their stay, while the remaining part (27%) had experiences such as: unprofessional service around 11%,

hidden costs 7%, misleading information around 2% and only 3 cases had experienced refusal to reimburse the cost of a poor or canceled service, all of which were related to public transport service.

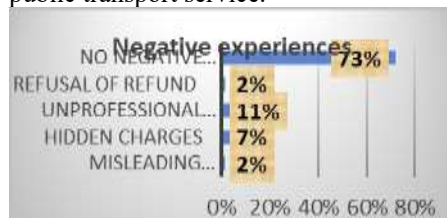


Fig. 7 Negative Experiences

Negative experiences	
misleading information	2%
Hidden charges	7%
unprofessional services	11%
Refusal of refund	2%
no negative experience	73%

Regarding the way tourists reacted to negative experiences, the data shows the following: the reaction of dissatisfied customers was passive (they took no action) in 34% of cases, 45% complained to the service provider, and 19% reacted by leaving a negative impression on the business's online platform. Only in 2 cases do tourists report the violation of their rights to the consumer protection authority.



Fig. 8 Reaction to Negative Experiences

Reaction	
Complained to the host	38%
Negative review	17%
Report to the institutions	1%
Passive	30%
No answer	11%

Regarding their perception of safety, 71% of tourists felt safe, while 28% felt moderately or very unsafe. Only in 2 cases (Albanian) tourists did not feel safe at all.



Fig. 9 The Safety Perception

The safety feeling	
Not at all	1%
A little	10%
Moderately	18%
Quite	41%
Very	30%

For a more in-depth analysis of consumer behavior when experiencing a violation of their rights, 2 dependent variables, "hidden costs" and "unprofessional service," were analyzed, and several factors were identified as independent variables.

3.2.1 Analysis of the behavior of tourists who have had cases of "hidden costs"

This analysis focuses on:

- The dependent variable “hidden costs”;
- Independent variables factors: the service used, the accommodation facility chosen, the provision of a receipt, age group, nationality, length of stay, average daily expenditure, display of prices in ALL, reaction to the violation, level of information regarding the consumer protection law, and the perceived sense of security.

Only 7% of the tourists surveyed encountered hidden costs during their stay. 67% of them had these experiences while using local transport, and 33% in bars and restaurants.

The majority of them stayed in hotels (75%), while the rest stayed in short-term rental accommodation and hostels. A very high level of tax evasion was observed; 83% of tourists were not provided with an invoice for the services received. The age group of tourists who had these experiences is almost equally distributed between 18-25 and 26-40. In terms of nationality, half of those who had experienced hidden costs were Albanian, all aged 18-25, while 33% were from EU countries. 58% had a 1-3-day stay, while 42% had more than 3 days.

Their average daily spending falls between \$100 and \$ 200 per day. They testify that in 58% of cases, prices were not clearly displayed in the local currency.

In 17% of cases, tourists' response to the violation of their rights was passive, taking no action; in 42% of cases, they left a negative impression on the business's website, a behavior that avoids direct confrontation with the service provider. 33% complained directly to the service provider, and only 8% complained to consumer protection authorities.

The level of tourists' knowledge of consumer protection law was quite low. 67% of them knew nothing about this law, while 33% were somewhat informed. After this experience, half of the tourists felt quite safe during their stay in northern Albania, while 25% felt somewhat safe and 25% felt a little safe.

3.3.2 Analysis of the behavior of tourists who have experienced unprofessional service.

This analysis focuses on:

- The dependent variable “unprofessional service”;
- Independent variables factors: the service used, the accommodation facility chosen, the provision of a receipt, age group, nationality, length of stay, average daily expenditure, display of prices in ALL, reaction to the violation, level of information regarding the consumer protection law, and the perceived sense of security.

We find that 41% of tourists have encountered unprofessional service during transportation, and 59% have encountered it in bars and restaurants.



Fig. 10 Service Used

The data collected from the questionnaires show that 71% of tourists were accommodated

in houses/apartments, while 29% of them were in hotels. Even in this case, 82% of tourists did not receive an invoice for their service, which once again confirms the high level of informality and/or tax evasion.



Fig. 11 Bill Issuing and Accommodation

Age does not appear to be directly related to this factor, as there is an equal distribution across the 3 age groups in the study (18-25, 26-40, 41-60). Regarding nationality, 47% of tourists who have received unprofessional service are Albanian. This may be a consequence of the differentiation service providers make between Albanian clients and foreigners. But it may also be related to increased awareness among Albanian consumers of the level of service they deserve. Meanwhile, 35% of tourists came from EU countries, while 12% came from the USA.

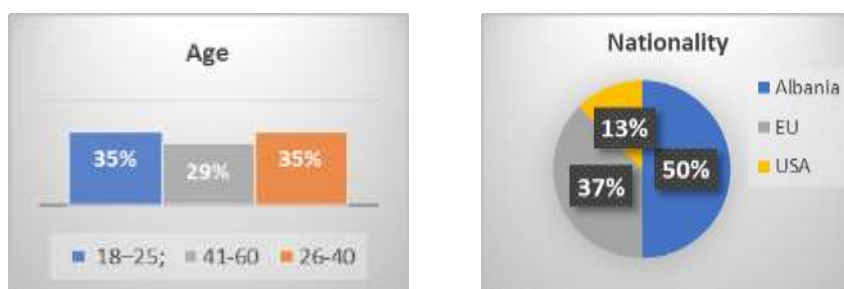


Fig. 12 Age and Nationality

Regarding the length of stay, 47% of tourists stayed in the country for 1-3 days, while the rest stayed longer, thus having more time to be exposed to these unprofessional services. The majority (65%) of tourists who experienced unprofessional service spent up to \$100 per day, while the rest spent more than \$100 per day. This seems to be related to the total number of tourists visiting the north of the country, most of whom spend an average of up to \$100 per day.

Regarding the display of prices, almost half of the customers who experienced unprofessional service say prices were clearly displayed in ALL, while the other half deny this.

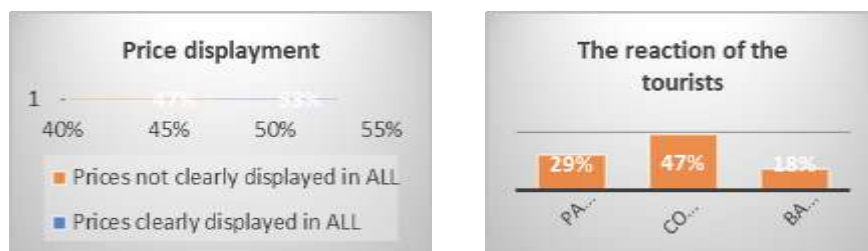


Fig. 13 Price Displayment and Tourist Reaction

The reaction to this unprofessional service was passive in 29% of cases, 47% complained to the service provider, while 18% left a note about the unprofessional service through 1 negative impression on the service provider's online platform. The level of information these tourists have about consumer protection law is very low. 47% have no information at all about this law, 41% are somewhat informed, while 12% were well informed.

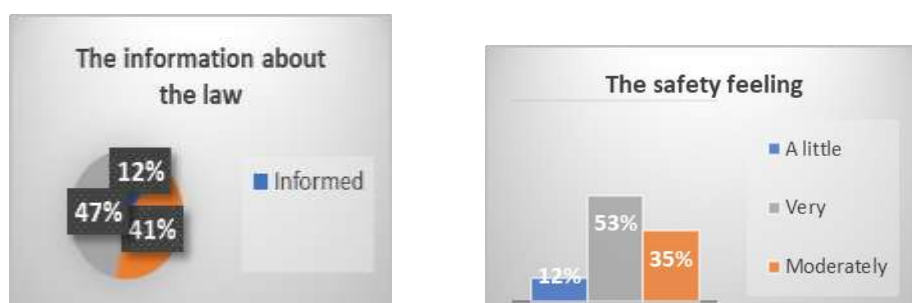


Fig. 14 The Information about the Law and The Safety Perception

Finally, the perception of safety among these tourist consumers was high in 53% of cases, moderate in 35%, and low in 12%.

4. Conclusions

Despite the continuous improvements of the specific legislation, the Albanian legislation offers formal but insufficient guarantees for the protection of tourists/consumers in the new reality faced by sustainable tourism, especially with regard to protection mechanisms, complaint review procedures, and compensation and sanctions mechanisms.

The legislation is not in line with the recent changes that European law has undergone in the field of consumer protection.

Tourist/consumer protection is a necessity and also a tripartite relationship. On the one hand, there is the tourist service provider who is obliged to respect the rights of the tourist/consumer; on the other hand, there is the tourist as a consumer, who must be informed about his/her rights; between these parties, there are law enforcement agencies, which must ensure that consumer rights are being implemented. The tourist/consumer, in most cases, is not informed or is somewhat informed about

the law on consumer protection, thus confirming both hypotheses of this paper.

Legislative and institutional recommendations:

- Approximation of consumer protection legislation with the latest EU law directives, avoiding its fragmentation and establishing and consolidating more efficient and easily accessible mechanisms to guarantee consumer/tourist protection, through transparent procedures for handling cases (complaints) for the violation of their rights.
- Strengthening compensation mechanisms and effective implementation of sanctions.
 - Raising awareness among businesses and tourists/consumers regarding their rights and the manner of their legal protection, especially through increasing the role of local self-government institutions in this process.

Recommendations in line with the characteristics of sustainable and smart tourism

- Creation of a digital platform to inform tourists about their rights, report violations, and guide them to properly address these cases; notification in cases of emergencies, as well as information about possible risks they may encounter during their adventures in Albania.
- Digital price transparency, through the display of price lists in visible places as well as on online business platforms; use of a currency for payment or avoidance of cash payments in order to avoid abuse of the exchange rate or unfair payments.
- Automation of transport services and control of standards of public and private transport vehicles, as well as the display of travel schedules and itineraries at stations.

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Sitography

<https://www.konsultimipublik.gov.al/>

Pamja e dokumentit - Qendra e Botimeve Zyrtare

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THE EUROPEAN LEGAL FRAMEWORK ON PRIVACY AND PERSONAL DATA SECURITY IN THE DIGITAL INFORMATION SYSTEMS OF THE TOURISM SECTOR

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Abstract

The rapid growth of digitalization in the tourism sector has created new opportunities for improving service quality, managing tourist flows, and enhancing operational efficiency. However, these technological developments also introduce significant challenges related to privacy and the security of personal data, particularly due to the use of online booking systems, artificial intelligence, IoT devices, PMS systems, and international accommodation platforms. This study analyzes the national and European legal framework for the protection of personal data, assessing Albania's level of harmonization with the requirements of the GDPR, Convention 108+, and new regulatory instruments such as NIS2, the Digital Services Act (DSA), and the Data Governance Act, all of which directly impact tourism activities. The primary aim is to identify the gaps between Albanian legislation and European standards by examining institutional and technical challenges, as well as the current practices of tourism operators. The methodology combines legal analysis of normative acts with the empirical component of the study on awareness and implementation of protective measures, in order to identify critical points where individuals' privacy is at risk. The expected results suggest the need to strengthen control mechanisms, increase institutional capacities, adopt cybersecurity standards, and establish unified protocols for data processing in the tourism sector. This research project contributes to enhancing transparency, building tourist trust, and improving operator compliance with European standards, providing practical recommendations for adopting advanced privacy and digital security policies in Albania's tourism sector.

Keywords: *GDPR, Convention 108+, Personal Data Protection, Privacy, Cybersecurity*

JEL Classification: *K24, L83, O33*

1. Introduction

The digital transformation of the past decade has significantly influenced the way economic sectors operate and provide services, turning technology into a fundamental element of global market development. Among these sectors, tourism is one of the most affected by digitalization, due to its interactive nature, reliance on real-time information, and the use of international platforms operating through digital networks [1]. The European Commission emphasizes that digitalization is one of the key drivers of modernization in the tourism industry, contributing to increased competitiveness, efficiency, and improved user experience [1].

The widespread use of online booking systems (booking engines), international platforms such as Booking, Airbnb and Expedia, hotel management systems (PMS), channel managers, mobile applications, and the integration of Internet of Things (IoT) devices in accommodation facilities has made the processing of personal data a continuous and complex activity.

These systems continuously collect and process sensitive visitor information, such as: identification data (e.g., passport or ID number) [2], financial data and payment card details, personal, dietary or health-related preferences, location data, and biometric information used by smart access devices in hotels.

According to the GDPR, all these categories of information are classified as “personal data,” while some of them, such as health-related and biometric data, are considered “special categories,” requiring higher protection standards and strong legal justification for their processing [2]. Furthermore, the tourism sector faces increased risks because the collected data are often processed and transferred outside national jurisdictions, either by international companies or by global cloud systems [3]. In this context, the General Data Protection Regulation (GDPR) establishes a clear regulatory framework for ensuring privacy, setting out fundamental principles such as lawfulness of processing, transparency, data minimization, proportionality, and technical security [2]. The GDPR also requires the adoption of advanced protective mechanisms such as privacy by design, privacy by default, the conduct of Data Protection Impact Assessments (DPIA), and reporting of security incidents within 72 hours.

The expansion of these technologies and the globalization of accommodation platforms have introduced new challenges for countries such as Albania, which must harmonize national legislation with EU standards by reforming their legal framework and strengthening the institutional capacities of supervisory authorities. Reports from the Albanian Commissioner for the Right to Information and Personal Data Protection indicate that tourism operators often fail to implement even the minimum privacy measures, including the absence of a DPO, the lack of DPIAs, and the absence of security protocols in compliance with the GDPR [4].

Consequently, a deeper understanding of privacy and personal data security challenges in the tourism sector becomes essential in order to guarantee visitors’ rights, prevent violations, and enhance trust in digital services. This study contributes to this goal by analyzing the legal framework, implementation gaps, and the necessary steps toward full alignment with EU requirements.

2. The GDPR and its Application in the Tourism Sector

The General Data Protection Regulation (GDPR), adopted in 2016, represents the most advanced European and global standard for the protection of personal data, establishing clear and mandatory obligations for data controllers and processors [2]. Its purpose is to ensure the privacy of individuals in an increasingly interconnected digital market and to create a unified system of protection across the European Union. Due to its international nature and heavy reliance on digital technology, the tourism sector is classified among the most sensitive sectors in terms of GDPR requirements.

Every operator offering accommodation, booking, travel, transportation, or tourism-related services processes a significant amount of personal data, often including special categories of data, which require a higher level of security and transparency [2].

The GDPR introduces several key requirements that directly affect the operations of tourism service providers:

a) Privacy by design and privacy by default:

This principle requires that data protection be integrated into the design phase of technological systems and processes, while ensuring that processing is limited only to the data necessary for providing the service [2]. For hotels, travel

agencies, and booking platforms, this means designing systems that collect only essential information and avoid storing unnecessary data for prolonged periods.

- b) **DPIA – Data Protection Impact Assessment:**
The GDPR obliges operators to conduct a DPIA when new technologies, large-scale processing activities, profiling, smart surveillance systems, or IoT devices may affect the rights and freedoms of individuals [2]. The tourism sector, particularly hospitality, uses technologies such as smart locks (electronic room access), intelligent CCTV, IoT sensors in rooms and common areas, and customer-profiling platforms for personalized marketing. For this reason, the EDPB emphasizes that tourism operators fall among high-risk data processors, and DPIAs are considered mandatory in most cases [3].
- c) **Incident reporting within 72 hours:**
The GDPR requires that any security incident likely to compromise personal data be reported to the competent authority within 72 hours [2]. Tourism operators are frequently targeted by cyber-attacks, especially hotels and booking platforms, where well-known data breaches have occurred—serving as illustrative examples of the sector’s vulnerability [5][11].
- d) **Technical and organizational measures:**
The GDPR requires the implementation of measures such as: data encryption, access control for PMS systems, internal policies for data governance, staff training, and procedures for data retention and minimization. Hotels and agencies often rely on cloud-based systems, which increases the need for robust technical safeguards and processing agreements with third-party providers (data processors) [3].
- e) **International data transfers:**
Tourism is inherently international; therefore, tourist data are often processed and stored in jurisdictions outside the EU. According to the EDPB, international data transfers require specific safeguards such as Standard Contractual Clauses, adequacy decisions, or additional technical measures [3].
- f) **Profiling and personalized marketing:**
Tourism platforms use profiling algorithms to predict preferences, offer tailored services, and segment customers. The GDPR requires full transparency for such processing activities, representing one of the sector’s most significant compliance challenges [2].

Overall, these obligations aim to ensure a stable and trustworthy data-protection ecosystem within the tourism sector, reducing the risk of violations and improving service quality through a balanced approach between innovation and privacy.

2.2. Convention 108+

The modernised Convention 108+ ensures international protection of privacy and has been ratified by Albania [6]. Its core principles include proportionality, transparency, and the prohibition of unlawful processing, thereby establishing an international minimum standard for the protection of personal data, which complements and reinforces the implementation of the GDPR.

2.3. The NIS2 Directive

The NIS2 Directive sets mandatory cybersecurity standards for critical sectors and essential service providers. Hotels and booking platforms, as providers of highly sensitive services, are classified as “important entities” under NIS2, for which advanced measures are required regarding cyber risk management, incident reporting, and security auditing [7].

2.4. Other European Acts: DSA, Data Governance Act, Data Act

The Digital Services Act (DSA) aims to enhance transparency and accountability of online platforms, including those operating in the accommodation and tourism-booking markets [8].

The Data Governance Act regulates the sharing, access, and reuse of data by promoting new models of “data intermediaries” and trust mechanisms [9].

The Data Act governs the use of data generated by IoT devices and interconnected systems, which is particularly relevant for “smart hotels” and intelligent accommodation environments [10].

3. National Legal Framework

3.1. Albanian Legislation

The Albanian legal framework for the protection of personal data is primarily based on Law no. 9887, dated 10.3.2008, “On the Protection of Personal Data,” as amended, which has served as the first regulatory foundation to guarantee privacy and the fundamental rights of individuals regarding the processing of personal data. However, despite multiple updates, the law is not fully harmonized with GDPR standards, as many of the advanced concepts introduced by the Regulation have not been entirely transposed into national legislation [4]. The Albanian law categorizes data processing activities and includes provisions on the collection, storage, processing, and disclosure of personal data. Nevertheless, several key elements that the GDPR considers mandatory such as privacy by design, privacy by default, the obligation to conduct a Data Protection Impact Assessment (DPIA), and the requirement to appoint a Data Protection Officer (DPO) in the cases stipulated by the Regulation are not mandatory in Albania in the same form or at the same level [2][4].

This creates significant gaps in data protection, especially in sectors exposed to high technological risks such as tourism.

One of the main shortcomings is the lack of clear rules on international data transfers a very common practice among tourism operators who rely on cloud services and global booking platforms. Unlike the GDPR, which provides specific mechanisms (standard contractual clauses, adequacy decisions, additional technical measures) [3], the Albanian law does not provide detailed guidance nor does it establish harmonized standards for ensuring the security of such transfers.

Furthermore, Law no. 9887/2008 does not include extensive provisions on profiling, automated decision-making, or the use of artificial intelligence algorithms issues that are especially relevant in the tourism sector, where operators frequently use systems for analyzing customer behavior and personalized marketing [2].

According to the 2023 Annual Report of the Albanian Commissioner for Personal Data Protection, the primary challenge lies not only in the lack of alignment with European standards but also in the insufficient practical implementation of the law. The report highlights that most economic operators, including hotels and travel agencies, do not conduct DPIAs, do not appoint DPOs, and lack internal privacy procedures, exposing them

to high risks of data breaches [4]. Limited institutional resources and insufficient professional expertise further hinder the harmonization of the legal framework with EU requirements.

In summary, although the Albanian legislation includes important elements for data protection, it requires comprehensive reform to reflect the mechanisms, concepts, and standards of the GDPR and to ensure effective and practical protection of personal data in high-risk sectors such as tourism.

3.2. The Institution of the Commissioner

The Office of the Commissioner for the Right to Information and Protection of Personal Data represents the supervisory authority in Albania, responsible for enforcing Law no. 9887/2008 and the standards related to the protection of personal data. Its role includes monitoring data processing by controllers and processors, issuing guidelines, conducting administrative inspections, imposing corrective and punitive measures, and raising public awareness regarding data protection.

However, as highlighted in the 2023 Annual Report, the institution faces significant challenges related to limited human and technical resources, which constrain its ability to conduct wide-ranging and in-depth monitoring across various economic sectors, including the tourism sector—considered one of the most exposed to large-scale and sensitive data processing [4].

The report emphasizes that the rapid growth of digital technologies, particularly in tourism (e.g., booking platforms, IoT in hotels, intelligent CCTV systems, and profiling-based marketing), requires a new level of expertise and inspection capacity, which is currently insufficient to meet market needs. This creates a gap between increasing legal requirements and the institutional ability to oversee their practical implementation.

Another challenge identified relates to the limited number of sector-specific audits, which are essential for ensuring consistent application of privacy standards. Despite the high risk and significant volume of data processed in tourism, the sector has not been subject to regular audits in recent years due to the lack of specialized staff and high institutional workload [4]. This makes the sector more vulnerable to privacy violations and security incidents.

Furthermore, the Commissioner has stressed the need to modernize the legal framework and increase internal resources, including continuous training, technical equipment, electronic monitoring systems, and analytical platforms, which would enable more effective oversight of digital operators. The report also highlights the necessity of full harmonization with the GDPR so that the supervisory authority can obtain powers comparable to those of EU member-state authorities [4].

3.3. Challenges Faced by Tourism Operators

Tourism operators in Albania including hotels, resorts, travel agencies, local booking platforms, and providers of tourism transport services—face a range of structural and technological challenges in achieving compliance with EU data-protection standards. Among the most significant challenges is the absence of mandatory privacy and security mechanisms required by the GDPR and EDPB guidelines, which are essential for managing visitor data [2][3].

a) Lack of DPIA (Data Protection Impact Assessment)

Most tourism operators in Albania do not conduct DPIAs, despite their activities falling under high-risk processing due to the use of advanced technological systems such as PMS, intelligent CCTV, IoT devices in rooms, automated check-in systems, and mobile reservation applications [3][5]. According to ENISA, the hospitality sector

is among the most cyber-attacked sectors in Europe, making the DPIA not only necessary but indispensable [5].

- b) Lack of a DPO (Data Protection Officer)
Appointing a Data Protection Officer is a key GDPR requirement for organizations that conduct large-scale data processing or systematically monitor individuals [2]. In Albania, the majority of hotels—especially medium and small establishments—do not appoint a DPO due to a lack of professional expertise, financial constraints, and the absence of a clear institutional model for implementing this requirement [4][12].
- c) Lack of cybersecurity protocols
Most operators lack essential internal security policies such as incident-management procedures, encryption standards, PMS access controls, system activity logs, regular technical controls (penetration testing), and data-retention/minimization policies. According to ENISA and OECD, the absence of such policies exposes hotels and tourism platforms to ransomware attacks, data breaches, and unauthorized access to cloud systems [5][11].
- d) Lack of Data Processing Agreements (DPAs)
Many operators use international platforms such as Booking, Airbnb, Expedia, Cloudbeds, Opera PMS, and various channel managers without signing the mandatory Data Processing Agreements with these third parties [3].
This violates Article 28 of the GDPR and increases the risk of unauthorized transfers of personal data to jurisdictions outside the EU.
- e) Lack of staff training
OECD studies show that the tourism sector has one of the lowest levels of awareness regarding privacy and data security, particularly among SMEs, which constitute the majority of tourism businesses in Albania [11]. Most security incidents stem from human error, lack of knowledge, and unsafe practices in the use of mobile devices and reservation systems.
- f) Use of outdated and insecure technologies
A large number of tourism businesses rely on legacy booking systems, local servers without encryption, outdated software versions, or insecure communication tools—all of which pose a high risk of data leakage [5].
- g) Lack of transparency toward clients
Many operators do not update their privacy policies, fail to explain the purposes of data processing, and do not inform clients of their rights, thereby violating Articles 12–14 of the GDPR [2].
- g) In summary, the primary challenges encountered by tourism operators in Albania derive from the incomplete harmonization of national legislation with GDPR standards, limited investment in modern technological infrastructures, insufficiently trained human resources, and constrained institutional oversight capacities. These structural weaknesses collectively render the sector highly vulnerable to personal data breaches and cybersecurity incidents.

4. Methodology

The methodology of this study is designed as a combined approach, integrating legal analysis, practical assessment of the tourism sector, and the collection of empirical data. This multidisciplinary approach enables a comprehensive evaluation of the legal framework and the real challenges faced by operators regarding privacy and data security.

First, the study includes a comparative legal analysis that examines the main European and international instruments—such as the GDPR, Convention 108+, the NIS2 Directive, the Digital Services Act (DSA), and the Data Act—with the aim of identifying the core legal requirements and the gaps that exist within Albanian legislation.

Second, an analysis of current practices in the Albanian tourism sector is conducted, assessing the level of compliance with legal obligations by operators (hotels, agencies, booking platforms), the use of digital technologies, security measures, and their alignment with EU standards. This phase is supported by institutional reports, guidelines issued by supervisory authorities, and international studies in the fields of tourism and cybersecurity [4][11][12].

Third, an empirical phase is foreseen, which will be carried out through questionnaires and interviews with sector representatives (hotel managers, IT service providers, travel agencies, and public institutions). This approach aims to identify perceptions, challenges, levels of awareness, and privacy practices, complementing the legal analysis with field-based data.

This combined methodology ensures a comprehensive assessment of the legal framework and the actual state of compliance with personal-data protection standards in the tourism sector.

Based on the analysis of the legal framework and the practices of tourism operators in Albania, the following key recommendations are presented to ensure a higher level of personal-data protection and digital security:

- Full harmonization of Albanian legislation with the GDPR.
- Implementation of the NIS2 Directive for tourism operators.
- Strengthening the role and capacities of the Commissioner.
- Legal obligation to appoint a DPO and conduct DPIAs.
- Certification of IoT devices in accordance with the Data Act.
- Drafting a national privacy guideline for the tourism sector.

5. Conclusions

The digital transformation of the tourism sector has created significant opportunities for enhancing service quality and operational efficiency, while simultaneously highlighting the need for a robust legal and institutional framework that ensures the protection of personal data. The analysis indicates that Albania is in an important transitional phase, where the adoption of European Union standards on privacy and information security is essential for strengthening the competitiveness and reliability of the tourism industry.

Full alignment with the GDPR, Convention 108+, the NIS2 Directive, as well as with new European acts such as the DSA, the Data Governance Act, and the Data Act, is fundamental for ensuring the integrity, transparency, and security of visitor data [2][6][7][8][9][10]. Meanwhile, challenges such as the lack of DPIAs, DPOs, cybersecurity protocols, and third-party processing agreements demonstrate that tourism operators still require increased awareness and institutional support [4][5][11].

Improving national legislation, strengthening the supervisory role of the Commissioner, and adopting advanced technological practices are strategic steps toward creating a secure and trustworthy digital ecosystem. Only through harmonization with European standards and their effective implementation can Albania enhance tourist trust, safeguard individual rights, and develop a modern, sustainable, and competitive tourism industry in the international market.

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APICULTURE AND ITS POTENCIAL FOR ECONOMIC DEVELOPMENT AND SUSTAINABLE TOURISM IN THE NORTHERN REGION OF ALBANIA

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Abstract

The Northern Region of Albania represents an favorable environment with high potential in the development of apiculture. The climatic conditions, hydrography, high biodiversity and early tradition play an important role in the development of this activity. Apiculture, the economy and sustainable tourism are closely linked with each other, by contributing to the development of local economy and in the same time, maintain an ecological balance and protect the environment. Regardless of the role that apiculture plays in these field, previous studies, ignore the microzones of this area, where the quality of bee products, are transformed into regional and tourist development of the area. Considering this synergy, would influence local policies, that result in economic growth and tourist development of the area. The methodology used in this study, includes; interviews with beekeepers (conducted face-to- face, through the online survey platform google forms), adapted according to the study categories, as well as an assessment to the touristic potential of the area. The methodological analysis was performed using Python and GIS software as tools for graphic visualization, statistical data processing, and for the construction and interpretation of the study area maps. The interviewees' data were collected while ensuring their privacy and maintaining confidentiality. Local beekeepers, rural development officials, tour operators, and policy experts all contributed to this data, sharing their information along with comments, analyses, and suggestions on household income, work distribution within families, and the effects of beekeeping on the local economy and touristic of the area. Data statistical analysis, assesses the impact on the rural economy and in the opportunity of its integration into the sustainable tourism sector, creating the possibility to create microzoning maps, where the potencial is highest regarding the quality of honey bees and bee by- products, compared to international standards. This study aims to promote a model of microzones with highest potential for successful beekeeping development and emphasizing the impact of environmental factors, the vegetation of these microzones in honey quality, recommending quality certification of honey, educational activities related to beekeeping. Based on this approach, are suggested supportive policies for the development of apiculture in the northern region of Albania, that would help to increase income opportunities and the development of tourism of the area. This is the first study in its type in Northern Albania that clearly confirms the impact of apiculture in regional development, by creating strategies for local development, preserving the biodiversity of the area, particularly of bee populations, as well as of the development of agritourism.

Keywords: *Apiculture, Biodiversity, Economic Development, Honey quality, Sustainable Tourism.*

JEL classification: *Q11, Q13, Q50, R10, R11, Z32*

1. Introduction

The study area is the north Albania, which represents a region with remarkable potential for development of apiculture. This area has abundant natural resources, with extensive coastline and a variety of relief forms (field, hilly, paramountainous and mountainous relief) a hydrographic network of considerable density [1]. The geographical position of northern Albania has impact on the conservation and development of bee biodiversity, using the richness of local vegetation and the untouched nature of the region. [2] Plants and insects, are in right symbiosis with each other. Insects are an important component of biocenoses, representing about 4/5 of all animal species in the planet. They have an exceptional plasticity to adapt various environments and they are able to reproduce abundantly. Insects remain a subject of study and control for the benefit of the economy, health, and the environment in general. Each flowering plant has its own group of pollinating insects. [3] The main group is the group of membranous-winged insects, where predominates *Apis mellifera*. They pollinate about 85 % of flowering plants and flowering trees. [4] The environmental conditions effect on the activity of honeybee, considering their ecological and economic importance. These conditions provide the opportunity to produce honey of varying quality. [5] [6] Bees have a great contribute to climatic changes and environmental conservation. In general, bees' behaviors make social insects and fascinating creature on earth. [7] Natural attraction of the area also includes the opportunity for tasting bee products, which have an impact on increasing the tourism potential (promotional activities conducted from time to time, as local product fairs, educational activities, and becoming tourism development models. [8] [9] For all these reasons, apiculture represents an important vector in protecting biodiversity and, at the same time, contributes to the sustainable development of the area. In sync with these favorable conditions is the rich tradition of the area in the practice of this activity. Here, beekeeping is an ancient practice and an important source of income for rural communities. [10] This impact creates opportunities for the development of sustainable tourism, which relies on ecological experiences, authentic beekeeping products, and education on the importance of ecosystems. [11] Beekeeping and tourism are connected in promoting local development and environmental conservation. Honeybees pollinate 2/3 of fruit trees, influencing the dynamics of the natural food chain. In this way, the potential to increase the bees' food supply is enhanced across seasons, which supports sustainable beekeeping and contributes to the stability of local ecosystems. [12] Northern Albania's honey is known, not only in Albania but also internationally [13].

Tourism develops through the attractions that this area offers, but also with visits to the shopping centers of the northern region, stimulating their curiosity, but especially by using bee products and apitherapy as forms of health care. Apitourism is expanding more and more in this region, connecting nature with human, based on the traditional practices of beekeeping, which contribute to the country's economy. [14] Producer-to-consumer chain is a long chain where the agricultural practices followed are closely linked. The dominant species of bees "*Apis mellifera*" and other local subspecies, have been specifically adapted to the climatic conditions and vegetation of the region.

Despite population changes, hybridization with non-native species has increased resistance to these conditions. [15] The conservation of this biodiversity has also faced challenges as loss of natural habitat, use of pesticides, climate change, and the appearance of diseases, which have which have affected bees and their overall biodiversity. [16] The positive role in maintaining balances in nature and the agricultural economy, as well as bee population management policies and tolerance to local environmental conditions, are also key

elements that influence the creation of parameters for sustainable tourism. [17] In fact, there are few studies on the spatial distribution of bees in Northern Albania or on identifying areas and microzones with high-quality honey, pollen, or nectar, in order to assess the impact of this biodiversity and beekeeping on the development of sustainable tourism in the region. None of these studies addresses the close connection between beekeeping, the economy, and tourism, and their combined effect on regional and wider development. This encourages us to undertake an in-depth study in the field of beekeeping for the area of Northern Albania, to come to the aid not only of beekeepers but also of all those who want to live and develop a safe tourism in our country, especially in the North of Albania. [18] Despite these favorable factors, the development of beekeeping in the northern region of Albania does not meet the required standard. Despite these favorable factors, the development of the northern region of Albania, it is not at the required level. [19] This happens because, in addition to the absence of infrastructure, insufficient monitoring of local biodiversity, fragmented farms, unfair competition, pesticide use, logging, wood burning, climate change, and the absence of specialized laboratories to certify honey quality, there are also no associations to support beekeepers and insufficient supportive policies from local and central authorities. [20] By analysing the current situation of this sector, this study aims to contribute to identifying the value of apiculture for economic development and to create favorable conditions for its growth, through continuous biomonitoring of the region and the promotion of policies that would result in the management and integration of the impacts of these favorable factors (environmental, tourism, economic), this approach would contribute to the creation of models for sustainable tourism microzones. [21] [22]

1.1 Purpose and objectives

The purpose of this study is to analyse the cooperation between bees and the output of common plant cultivations, by identifying the most important bee types for pollination in the northern region of Albania, reviewing the ecological factors of the area that affect the activity and pollination in agriculture, influencing the economic and tourist development of the area. The research aims to determine the role of apiculture in the economy and sustainable tourism of the northern region of Albania, contributing to the field of beekeeping research, but also to the determination of microzones in the northern region of Albania where apiculture has the highest potential in the quality of bee products as well as in the development of sustainable ecotourism.

The objectives of the study are:

- To identify the diversity of bee species that contribute to the pollination of specific cultures in the study area, evaluating their role in supporting local agriculture.
- To analyse and compare between the qualitative composition of honey and flora of the area, to understand the impact of plants and flowers in the characteristics of the produced honey.
- To study the impact of honey components of the same type in different microzones, analysing the differences in honey quality as a result of ecological conditions.
- To evaluate the ecological factors that affect the behavior and activity of bees during different pollination periods, such as temperature, humidity and availability of food sources, to understand the impact of environment in bee productivity.

- To analyse the role of bees in preserving the biodiversity of the area in honey production and their impact on the development of sustainable tourism, linking these with beekeeping activities with economic and ecological benefits of tourism.
- To propose a beekeeping management model and improvement of their protection strategies, to ensure the sustainability of bee populations and increase production of quality honey.

1.2 Conceptual model and hypotheses

Question 1: Is the geographical position and climate of the northern region of Albania suitable for beekeeping and tourism?

H1- *The geographical position of northern Albania is favorable for the development of apiculture and tourism, which also influences the economy of the area.*

Question 2: Does the vegetation of the area play a role in increasing the potential of beekeeping, economy, and sustainable tourism in the northern region of Albania?

H2a – Plant diversity, especially of pollinator plants in the northern region, influences in the potential of the area.

H2b- The flight paths of bees toward plants, of the area, according to the flowering periods of pollinator plants influence potential growth.

Question 3: Do honeybees adapt well to the conditions of the area?

H3a – Honeybee species are adapted to the natural conditions of the northern region of Albania

H3b – Usually, beekeepers use the same bee species. generation after generation.

Question 4: Is there a microzonal differentiation in the quality and in the yield of honey production, influencing the economy and sustainable tourism?

H4 –The Northern region of Albania has microzonal where the honey quality, bee products yield, differ and are reflected in economic development and tourism of the area.

2. Literature review

The proposed topic for this doctoral study requires a wide review of the literature of apiculture, beekeeping economy, and its impact in sustainable tourism. This section summarises major studies of this field and highlights the research areas for further research. The review of the literature relies on 2 major points: a- the albanian literature and b-the international literature. Albanian literature is focused on beekeeping manuals and advice on raising and caring for bees. Queen rearing, from the preparatory phase until the final phase depends on the practices that beekeepers undertake. [23] The technics of raising bees in the 70's ,especially queens, studying the northern areas of Albania like Puke, Tropoje, but also taking into account the areas of Myzeqe,Korce,etc. [24] Their works are still limited in time and space, leaving us the possibility of updating and expanding knowledge and study areas. [25] combines apiculture with the climate of the area. The analysis that he makes is based on the general practices, but above all, on the flora of the area, explaining the characteristics of these pollinating plants spread throughout Albania, without specifications and microzoning. In recent years, books and publications have addressed apiculture from a historical perspective, where the northern region is described as one of the regions where apiculture is transmitted from generation to generation considered a family asset, and more. [26]

The book by Arifaj .A et., al 2018 was interesting and innovative, discussing not only beekeeping practices but also the pollination and diseases of bees, as well as a form of

health therapy, based on the air they breathe during normal bee activity or the consumption of their products, known as Apitherapy. [27] Again, here are the beginnings of this health practice without its analysis and description, where the last years is expanding more and more. The international literature is generally characterised in 3 basic directions. According AGT et al., 2021, apiculture's economic role in rural areas, indicates an inaccurate analysis, and insufficient data to assess apiculture's economic contributions. [28] According to Prodanović et al., 2024, apiculture brings regional economic benefits initially based on the family's economic growth. Initial expenses to establish beekeeping are not high. [29] [30] This leads to activity expansion with less expenses and establishing new working fronts. Despite the challenges, apiculture workforce inclusion brings the growth of the potential of the area, also based on interactions between each other through knowledge exchange. [31] A crucial role in the economy also plays the involvement of women in beekeeping, as a support, but also in fixing gender relations and society. Women except a key role in the family in raising and educating children or caring for family members, and they also affect the economic growth of the family, although they may still be subject to gender biases and limitations [32] [33] The connection of beekeeping with sustainable tourism: While agrotourism develops in Albania, the role of apiculture in this field is not enough explored. [34] Beekeeping may attract tourism through bee products such as honey, royal jelly, pollen, bee venom, etc. [35] Apiculture is used as a form of tourist attraction, but at the same time impacts on preservation and regeneration of the environment as well as establishment of supportive policies towards them. [36] It contributes to the preservation of biodiversity and ecosystems, playing a crucial role in the rural economy, sustainable tourism and environment.

Apiculture is the science and practice of beekeeping, which includes the management of bees for the production of honey and other products, to keep them healthy and their role in pollination. [37] Traditional practices of beekeeping in northern Albania are essential for the maintenance of rural communities and the economic development of the area. In recent years, in the northern region of Albania, a form of tourism has emerged through the use of health therapy-apitherapy. Where bee products like royal jelly, honey, etc. are used for chronic respiratory illnesses, gastrointestinal, cardiac, or boost immunity. [38]

Deficiency of studies in honey quality: The quality and security of Albanian honey, are still limited, meanwhile, improvement of the quality of the honey can increase the tourist attraction of the area. [39] Generally, local beekeepers avoid professional biochemical analyses. They are inclined towards artisanal sightings and analyses, having a quality that could be very near the international standards. [40]

A few biochemical or antibacterial analyses are done. The presence of pollen in honey is an indicator of characteristics, types of plants, area, and quality of honey and its originality. Even the publications on the influence of temperature or other environmental parameters remain limited. [41] Honey maturation period, and its effect on the quality of honey, represents another research gap in the Northern Albania region. [42]

3. Methodology

3.1 Study design

In the aim of achieving the goals and the objectives of this study, I am based on field observations and analyses, especially in the mountainous terrain of northern Albania, where the apiculture has a higher development potential. The selected zones were chosen based on prior knowledge of the development area and in a review of the literature, in order to identify research gaps and address areas that have not been studied previously. The

study areas are zones with higher potential, based on the characteristics of the region where beekeeping has developed. The study areas, such as Theth, vermosh, Nderlysaj, Fushw -Arrws, Kosmac, Bajram Curri, Dedaj- Prekal, Koplik- Bajze, Mertur, Kukws, Velipojw, Zagorw, are zones where beekeeping affects the development of tourism and economy of the region. In addition to observations, I have been part of the conversations and the activity of beekeepers' network, including the beekeepers' families in the study area. At the same time, I have used an online survey, according to the possibility and the education of the "study actors".



Figure 1. Microzonat e marra në studim në rajonin verior të Shqipërisë

3.2 Description of the questionnaire and data collection process

My study data have been collected, by utilizing the questions which are classified in four data groups

Questionnaire addressed to the beekeepers of the study areas with different numbers of hives.

- The nature of the questions used is related to;
- Beekeepers practices,
- Engagement of families in beekeeping activities
- Honey yield, potential, and changes across different periods and years
- Incomes from this activity
- Interests and familiarizing tourists with Albanian beekeeping
- Roles and supports of local policies in this activity

Questionnaire addressed to Hotels and Guesthouses

- The nature of the questions used is related to;
- Interests and honey variety preferred by tourists.
- The region where they get bee products
- The differences in price and quality of honey that they use

Questionnaire addressed to foreign tourists, who frequent the zones and consume bee products

- The nature of the questions used is related to;
- Familiarity with Albanian bee products
- The type of bee products preferred by them
- How much do they spend on honey bees or apitherapy?
- Would they recommend it to their friend group, Albanian bee product?

Questionnaire addressed to domestics tourists, who frequent the zones and consume bee products

- The nature of the questions used is related to;
- The type of bee products preferred by them
- How much do they spend on honey bees or apitherapy?
- How much honey do they consume during the year?
- The region where they buy the honey bees and other bee products

3.3. Description of the study and statistical techniques

After a preliminary study to know the region where is the higher potential for apiculture and the literature review to research gaps, we analyze the quality of honey bees according to the international parameters of quality. At the same time, we study the economic impact and tourist affect of apiculture to value the potential of beekeeping in sustainable tourism development. The collected data was analysed using SPSS programme to detect the reliability and accuracy of factors that could influence these results. The visualisation and data processing will be made through computer programmes, which finds the conclusion and priority recommendations.

4. Conclusions and Recommendations

Bee habitat zoning.

Creating a map of zones of northern Albania where apiculture has higher potential for the development of the area, by identifying the microzones with the best potential.

The improvement of honey quality.

Identification of the relationship between local vegetation and the composition of honey, helping the improvement of bee products according standards and market competition. Certify in the zones where the quality is better and guaranteed through parameters.

The detection of the chain and the bee flight route network around the area, increasing the potential of the region.

The detection of typical species honey bee of the region.

Identification of the typical species honey bee of the region, which is adopted generation by generation with the terrain conditions and shows potential and higher resistance in this area.

The economic and touristic impact .

Analysis of the role of beekeeping in the renovation of incomes in rural community and their potential for sustainable tourism.

The conservation of biodiversity.

Study the impact of beekeeping on the ecological balance and its importance in the conservation of household species of plants and honey bees.

The strategic plan for the development of tourism through apiculture.

Proposal of an integrated model for sustainable tourism, that included educative experiences for beekeeping and bee products.

Research Contributions

Relationship between apiculture and tourism.

This is the first study of its kind which analyzes the impact of apiculture on sustainable tourism and economic development.

Zoning the microzones with potential beekeeping.

Creating accurate maps for suitable beekeeping based on ecological factors and climatic elements, contributing to bee management.

Comperative analysis of honey quality

Evaluation of changes in honey quality in different areas and its relationship with the biodiversity and vegetation of the region

The proposal of the apitherapy as a model that increases the potential of tourism and the economy of the region by contributing for a healthy population of the region and beyond.

Management model for the apiculture and for the rural tourism

Drafting a strategy for the conservation of the bee population and for the development of agritourism as an opportunity for attracting tourists.

The impact of local policies

This research can serve as a basis for the creation of new supportive policies in apiculture and ecotourism in Northern Albania.

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FROM VIRTUAL SIMULATIONS TO REAL EXPERIENCES: AI'S CONTRIBUTION TO SUSTAINABLE TOURISM

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Abstract

Tourism in Shkodër has great potential for development thanks to the combination of natural, historical and cultural assets. However, challenges such as seasonality, infrastructure and management of tourist flows require innovative solutions. Physical simulations for destination management can help analyze tourist flows and predict impacts on infrastructure, enabling better management of public spaces and attractions. AI models can help optimize transportation and access to tourist areas, reducing congestion and environmental impact. Climate and pollution simulations can help protect natural and cultural heritage.

This paper aims to explore and evaluate the impact of artificial intelligence and physical simulations in improving tourist experiences and sustainable management of tourist destinations in Shkodër. The goal is to propose an innovative model that can help local actors in planning, promoting and optimizing tourism through advanced technologies. It will also contribute to understanding new opportunities for the transformation of tourism in Shkodër and will help policymakers and businesses in adopting new technologies for more efficient and sustainable management of tourist destinations. Mixed methods will be used, combining qualitative and quantitative methods to provide a complete and comprehensive analysis. Qualitative method: It will be used to understand the perceptions of key stakeholders in tourism on the application of AI and physical simulations.

Quantitative method: It will be used to analyze data on tourist flows, the impact of AI on improving the experience and the effects of simulations on infrastructure management.

Based on the planned methodology and analysis, the research results are expected to contribute to: optimizing the Tourist Experience through AI: Identifying effective ways to personalize the tourist experience through intelligent recommendations and chatbots. Demonstrating the benefits of AI in analyzing tourist behavior data to predict demand and improve the tourist offer. Through Physical Simulations, to model the flow of tourists in real time to help prevent congestion in the most visited areas (e.g., Shiroka, Thethi, Rozafa Castle).

This paper will not only help improve the tourist experience in Shkodër, but also in developing sustainable strategies for tourist destinations, establishing this city as an innovative model for technology-based tourism management in Albania and the region.

Keywords: *Artificial Intelligence, Physical Simulations; Sustainable Tourism; Destination Management; Tourist Experience Optimization; Smart Tourism.*

JEL classification: (Z32, L83, Q56, O33, R58)

1. Introduction

Current Situation of AI and Physical Simulations in Shkodër's Tourism. Tourism in Shkodër has significant development potential due to its rich natural, historical, and cultural assets. Nevertheless, challenges such as seasonality, infrastructure constraints, and tourist flow management require innovative solutions. The use of artificial intelligence (AI) and physical simulations can help address these challenges in several ways:

- Optimization of tourist experiences: AI can personalize visitor experiences through intelligent recommendations based on preferences and historical behavior. Chatbots and virtual assistants can provide real-time information about attractions, schedules, and events. Augmented Reality (AR) and Virtual Reality (VR) can create interactive experiences related to Shkodër's history and culture.
- Physical simulations for destination management: Simulations can analyze tourist flows and predict infrastructure impacts, enabling better management of public spaces and attractions. AI models can optimize transportation and access to tourist areas, reducing congestion and environmental impact. Climate and pollution simulations support the protection of natural and cultural heritage.

AI assists in developing sustainable tourism strategies by analyzing data on energy, water, and resource consumption. Economic simulations can model the impacts of tourism policies on local businesses. Although AI and physical simulations are still in early stages of implementation in Shkodër's tourism sector, their transformative potential is substantial. The main challenge remains awareness and investment by local and national stakeholders.

2. Literature Review

The use of technology in tourism has evolved significantly with advances in artificial intelligence (AI) and physical simulations. These technologies have transformed the way tourists experience destinations and how tourism resources are managed. In the literature, AI is mainly used for the personalization of tourism services, while physical simulations help model tourist behavior and manage tourism infrastructure. Studies on the application of AI in tourism (Buhalis & Sinarta, 2019) show that AI has significantly improved visitor experiences through:

- Intelligent recommendations based on data analysis and machine learning algorithms;
- Virtual assistants and chatbots that support tourists in real time;
- Analysis of visitor behavior data, enabling personalized predictions of their preferences.

AI chatbots have increased tourist engagement and helped reduce operational costs in the tourism sector. Physical simulations and numerical models have been applied to the analysis of tourist flows and environmental impacts (Law et al., 2019). These technologies help with:

- Predicting tourist behavior in different destinations through agent-based simulations;
- Managing infrastructure by optimizing the flow of people and preventing overcrowding at popular attractions;
- Analyzing the environmental impact of tourism by creating different scenarios related to natural resource consumption and pollution.

A study by Baggio and Scaglione (2022) emphasizes the importance of simulation models in optimizing transportation and urban infrastructure in tourist areas. Buhalis et al. (2022) argue that AI and simulations can support the development of sustainable tourism

strategies through:

- Monitoring the impact of tourism on natural and cultural resources;
- Modeling development scenarios to balance economic growth with heritage preservation;
- Forecasting tourist behavior across different periods of the year for improved tourism capacity management.

A case study on Venice (Seraphin et al., 2020) shows that AI-based simulations have helped mitigate tourist overcrowding and improve visitor experiences. Although AI and physical simulations have been applied in many well-known tourist destinations, Shkodër has not yet fully benefited from these technologies. Recent studies on Albania (Duro & Myftaraj, 2023) suggest that the potential for implementing AI in tourism is high, particularly for service personalization and the promotion of attractions through technology.

Based on the reviewed literature, it is clear that AI and physical simulations have great potential to transform tourism management. However, more studies are needed on the applicability of these technologies in specific contexts such as Shkodër. Future research should focus on:

- a. Integrating AI into existing tourism management systems;
- b. Assessing the impact of physical simulations on infrastructure optimization and tourist experience;
- c. Conducting empirical studies on tourists' and businesses' perceptions of these technologies.

3. Methodology

This study adopts a mixed-methods approach, combining qualitative and quantitative methods to ensure a comprehensive and in-depth analysis.

- Qualitative method: Used to understand the perceptions of key tourism stakeholders regarding the application of artificial intelligence (AI) and physical simulations.
- Quantitative method: Used to analyze data on tourist flows, the impact of AI on experience enhancement, and the effects of simulations on infrastructure management. The research is based on two main data sources:
 - Primary Data: Semi - structured interviews with tourism experts, tour operators, and representatives of public institutions in Shkodër. Surveys administered to tourists and residents to assess the impact of technology on their experiences. Experiments and simulations conducted to test the effectiveness of AI and simulation models in managing tourist flows.
 - Secondary Data: Analysis of existing literature on AI, simulations, and sustainable tourism. Statistical data obtained from institutions such as INSTAT, the Ministry of Tourism, and international organizations. Reports on the use of technology in the tourism sector in other countries for comparative purposes.

Data Analysis Methods

Thematic Analysis for qualitative data obtained from interviews, identifying key themes related to the impact of AI and simulations.

Statistical Analysis for quantitative data from surveys and tourist flow statistics, using tools such as SPSS or Python for advanced analyses. Computational modeling and simulations, using software such as AnyLogic, MATLAB, or Unity to analyze different tourism management scenarios.

Research Limitations and Challenges

These include the lack of detailed data on AI usage in Albanian tourism, resistance from certain stakeholders to technology adoption, and the need for technical and infrastructural resources to conduct simulations.

Research Aim

The aim of this study is to explore and evaluate the impact of artificial intelligence and physical simulations on improving tourist experiences and the sustainable management of tourist destinations in Shkodër. The study seeks to propose an innovative model that can support local stakeholders in planning, promoting, and optimizing tourism through advanced technologies.

Research Objectives

- To analyze the role of AI in personalizing tourist experiences through intelligent recommendations, chatbots, and interactive platforms;
- To assess the use of physical simulations in managing tourist flows, reducing congestion, and preserving natural and cultural resources;
- To identify the benefits and challenges of implementing these technologies within the context of tourism in Shkodër;
- To develop a strategic model for integrating AI and physical simulations into sustainable destination management;
- To test and simulate different scenarios to predict the impact of AI and simulations on visitor experience enhancement and sustainable tourism development.

Conceptual Model

The proposed conceptual model is based on four constructs:

- AI Use (AI-USE): Personalization, virtual assistants, AR/VR applications;
- Simulation Use (SIM-USE): Flow simulations, climate models, pollution forecasting;
- Tourism Outcomes: Satisfaction, perceived service quality, revisit intention;
- Sustainability Outcomes: Perceived environmental protection, resource efficiency.

Hypothesis:

H1: AI-USE positively influences tourist satisfaction.

Tourists visiting Shkodër (target sample size: $n = 70$);

Stakeholders including tour guides, hotels, municipality representatives, and NGOs ($n = 15$ interviews).

Instruments Qualitative: Semi-structured interviews focusing on technological adaptation, challenges, and perceptions of sustainability impacts.

Instruments Quantitative: Likert-scale questionnaire measuring AI-USE, SIM-USE, satisfaction (SAT), perceived sustainability (SUS), and visit intention/loyalty (LOY).

Data Collection and Analysis Procedures:

- Descriptive statistics of tourist demographics;
- Reliability testing (expected Cronbach's $\alpha > 0.80$);
- Exploratory Factor Analysis for construct validation.

Regression Models:

Model 1 : $SAT = \beta_0 + \beta_1 \text{AI-USE} + \beta_2 \text{SIM-USE}$

Model 2 : $SUS = \beta_0 + \beta_1 \text{SIM-USE}$

Model3 3: $LOY = \beta_0 + \beta_1 \text{AI-USE} + \beta_2 \text{SAT}$

4. Results

The data indicate a slight dominance of male respondents in the sample (approximately 57%) compared to female respondents (around 43%), suggesting a marginally higher presence of male tourists visiting Shkodër. In terms of age distribution, the 26–40 age group represents the largest segment of tourists, followed by young visitors aged 18–25, while the 41+ age group accounts for a smaller proportion of the sample. This finding suggests that Shkodër is particularly attractive to young and young adult tourists, who are generally more open to the adoption and use of new technologies such as artificial intelligence (AI), mobile applications, and AR/VR solutions. Furthermore, the majority of visitors are domestic tourists, whereas foreign tourists constitute approximately one third of the sample. This distinction is important for the subsequent interpretation of differences in perceptions between domestic and international visitors regarding the use of AI and simulation technologies at the destination.

Relationship between AI-USE and Tourist Satisfaction

An increasing trend is observed between AI usage and tourist satisfaction: as the level of AI use increases (from lower to higher values on the Likert scale), the mean level of satisfaction also rises. From an interpretative perspective, this indicates that tourists who more frequently use intelligent applications—such as itinerary recommendation systems, navigation apps, informational chatbots, and AR/VR applications for attractions—tend to report a more satisfying experience in Shkodër. This result supports Hypothesis H1, which posits that AI-USE has a positive effect on tourist satisfaction.

Tab. 1 Regression Coefficients

Variable	Beta	Std. Error	t-value	p-value
Constant	1.20	0.22	5.45	0.000
AI_INDEX	0.35	0.05	7.00	0.000
SIM_INDEX	0.22	0.04	5.50	0.000
AGE	-0.01	0.003	-3.33	0.001
FOREIGN	0.10	0.04	2.50	0.013

Overall, the model explains a substantial proportion of the variance in satisfaction (a relatively high R^2), indicating that AI-USE and SIM-USE are key determinants of tourist experience satisfaction in Shkodra.

Integrated Model for Shkodra

The document proposes an integrated digital model that includes:

- AI-based tools for tourist guidance, personalization, and destination marketing
- Simulations for flow management, climate risk assessment, and pollution monitoring

- A combined decision-making dashboard for policymakers
- A feedback loop among tourists, institutions, and data systems

This model aligns with sustainable development goals and enhances coordination among institutions. The integration of artificial intelligence and physical simulations offers a transformative opportunity for Shkodra. These technologies can:

- Reduce congestion in high-traffic areas
- Improve infrastructure investment planning
- Enhance visitor experiences through personalization
- Protect natural and cultural heritage
- Support data-driven tourism strategies

Challenges include data availability, digital skills, and financing. Partnerships with universities and technology companies are essential.

Discussion

- a) Use of AI for Personalized Tourism in Shkodra
The development of an AI-based platform that provides intelligent recommendations to tourists based on their behavior and preferences. The exploration of virtual assistants and chatbots as tools to enhance interaction and tourist support.
- b) Use of Simulations for Modeling Tourist Behavior
The integration of agent-based simulation models to analyze and optimize tourist flow management. The creation of various scenarios for sustainable tourism infrastructure development, based on accurate data and advanced analytics.
- c) Innovation in Destination Management Strategies
The proposal of a new methodology to measure the impact of technology on tourism by combining AI data and physical simulations. The development of a new model for predicting tourist behavior, helping policymakers and businesses make more informed decisions.

5. Conclusions

Interviews with stakeholders indicate that:

- AI is perceived as a strategic tool for promotion and visitor support
- AR/VR applications are promising but underutilized
- Simulation tools for traffic and visitor flows are highly needed in areas such as Theth, Shiroka, and Rozafa Castle
- Institutional capacity, funding constraints, and technical expertise remain major barriers
- Stakeholders believe simulations can help reduce seasonal overcrowding and support long-term planning

Expected Results

Based on the planned methodology and analysis, the research is expected to contribute to:

- a) Optimization of the Tourist Experience through AI Identifying effective ways to personalize tourist experiences through intelligent recommendations and chatbots. Evaluating the impact of augmented reality (AR) and virtual reality (VR) on visitor engagement and the promotion of Shkodra's attractions Demonstrating the benefits of AI in analyzing tourist behavior data to forecast demand and improve tourism offerings
- b) Sustainable Destination Development through Physical Simulations. Real-time modeling of tourist flows to help prevent overcrowding in highly visited areas (e.g., Shiroka, Theth, Rozafa Castle) Using simulations to assess the environmental impact of tourism and propose strategies to reduce pollution and resource consumption Creating infrastructure optimization scenarios based on dynamic data and predictive models for sustainable development
- c) Policy Recommendations for Tourism Proposing a strategic model for integrating AI and physical simulations into Shkodra's tourism management Identifying key challenges in implementing new technologies and providing recommendations for government and local businesses Suggesting the creation of public-private partnerships to invest in advanced tourism technologies

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INTERNAL ORGANIZATIONAL FACTORS AND PUBLIC OPERATOR ENGAGEMENT AS DETERMINANTS OF TOURISM ENTERPRISE PERFORMANCE IN SHKODRA

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Abstract

This paper examines how a set of internal organizational factors influence the performance of tourism enterprises operating in the Shkodra region, with particular emphasis on the role of the public operator in supporting and strengthening these factors. The study focuses on four elements that are commonly considered crucial in the functioning of service-oriented businesses: staff motivation, training and development, internal control mechanisms, and the degree of managerial involvement in day-to-day operations. Although these factors, they have been frequently addressed in the literature; however, in the tourism sector of the Shkodër Region, they appear under specific conditions due to the seasonal nature of the activity and its dependence on public policies and regulations.

Primary data were collected through structured questionnaires administered to employees and managers of tourism enterprises. The analysis was conducted using SPSS, applying descriptive statistics and multiple regression in order to understand how each factor contributes to organizational performance. The results indicate that training and development, as well as internal control practices, show a clear and statistically significant relationship with performance indicators. These findings suggest that enterprises that invest in staff skills and establish clearer procedures of control tend to operate in a more stable and productive manner.

On the other hand, staff motivation and managerial involvement did not show significant statistical weight. This outcome reflects a situation frequently encountered in small tourism enterprises in the region, where motivation practices are informal, and managerial involvement is often limited to routine decision-making without structured performance evaluation systems. The absence of such mechanisms limits the potential impact of these factors on the overall performance of the enterprise.

Given these findings, the paper highlights the growing importance of the public operator in strengthening the organizational capacities of tourism businesses. Public institutions can contribute through accredited training programs, standardized guidelines for internal control, and support instruments that encourage the formalization of management practices. In a sector where many enterprises operate with limited resources, institutional support can play a decisive role in improving service quality and long-term performance. The study therefore provides evidence-based arguments for the need to integrate public-sector interventions with the internal development strategies of tourism enterprises in the Shkodra region.

Keywords: *Capacity building, internal control, public operator, tourism enterprises, training programs.*

JEL classification: *L83, M12, M53, H75*

1. Introduction

Tourism plays a central role in the economic development of Albania and is especially important in regions such as Shkodra, where natural landscapes, cultural heritage, and geographic proximity to regional markets create favorable conditions for tourism growth.

Although the sector has expanded significantly over the past decade, many tourism enterprises continue to face persistent challenges related to internal organizational capacities, workforce development, financial access, and institutional support.

Enterprise performance is influenced not only by market factors but also by internal organizational practices. Elements such as staff motivation, the quality of training and development, internal control systems, and managerial involvement can strengthen or weaken an enterprise's ability to operate efficiently. At the same time, the broader institutional environment, particularly the role of the public operator in regulation, training, and destination management, can directly shape enterprise outcomes.

This study focuses on understanding how internal organizational factors affect the performance of tourism enterprises in the Shkodra region, while examining the extent to which public operator engagement can support these internal mechanisms. The findings aim to enrich the discussion on tourism performance, particularly in contexts dominated by small and medium-sized enterprises.

2. Literature Review

A substantial body of research supports the argument that firm performance is shaped by both external conditions and internal organizational structures. Hansen and Wernerfelt (1989) highlight the interplay between economic and organizational factors, while Ferreira and Otley (2009) emphasize the importance of performance management systems as a tool for organizational alignment and strategic coherence. Motivation has traditionally been seen as an important predictor of job engagement and productivity. Smith and Blum (2000) argue that motivated employees demonstrate higher organizational commitment, although the effects may vary depending on the nature of the work environment. Morosan-Danila et al. (2020) support the positive association between motivation and business performance in the tourism and services sectors.

Training and development represent one of the most frequently identified determinants of organizational performance. Zwick (2006) demonstrates that investment in training leads to measurable gains in productivity. Khan (2010) highlights the role of training in improving not only employee skills but also work attitudes, adaptability, and professional maturity.

Internal control, based on the COSO framework (Janvrin et al., 2012), is central to ensuring accountability, risk management, and process reliability. In small enterprises, internal control is often informal, but its presence can significantly reduce operational vulnerabilities and strengthen organizational stability.

Public operator involvement has been studied in the context of tourism planning, regulatory frameworks, and destination management. Fewer studies examine how public-sector interventions interact with internal organizational factors to influence enterprise performance, especially in developing economies or tourism-dependent regions.

3. The Role of the Public Operator in Tourism Development

Public institutions play a multidimensional role in tourism development. In regions such as Shkodra, where tourism potential is high but enterprise structures remain fragile, the public

operator becomes an essential partner in shaping the business environment.

3.1 Regulatory Function

The public operator acts as a regulator by setting operational standards, issuing licenses, and enforcing quality and safety requirements. Classification systems for accommodation businesses, hygiene standards, and administrative inspections contribute to the professionalization of the tourism sector. Regulations serve as both a compliance tool and a mechanism to encourage enterprises to adopt more structured internal procedures.

3.2 Facilitator of Tourism Development

Public institutions also contribute as facilitators by investing in infrastructure, promoting destinations, organizing cultural events, and engaging in cross-border cooperation. These activities expand market visibility and create more favorable external conditions for tourism businesses.

3.3 Capacity-building Role

Capacity building is one of the most critical contributions of the public operator. Many tourism enterprises in Shkodra lack structured training programs, clear internal management procedures, or standardized service quality practices. Public-sector actors, often in collaboration with universities or international partners, can fill this gap through:

- Professional training sessions
- Certification programs
- Advisory services and mentorship
- Standardized internal control templates

3.4 Limitations and Challenges

Despite these contributions, public-sector support is often fragmented, project-based, or insufficiently institutionalized. Many initiatives depend on donor funding or political cycles, which reduces continuity. Addressing these structural gaps is vital for building long-term regional competitiveness.

4. Methodology

The methodology combines quantitative techniques with structured survey instruments designed to capture the internal organizational dynamics of tourism enterprises in the Shkodra region.

4.1 Sampling and Data Collection

The sample includes hotels, guesthouses, and small accommodation enterprises. Random sampling ensured representativeness within the region. Two questionnaires were used:

- One for employees, focusing on motivation, training, internal control, and managerial involvement
- One for managers/owners, focusing on performance indicators

Self-administered questionnaires were chosen to reduce interviewer bias and encourage honesty.

4.2 Measurement Instruments

Variables were measured using validated scales from the literature:

- Motivation (Kumar & Singh, 2011)
- Internal control (Janvrin et al., 2012)

- Training and development (Khan, 2010)
- Managerial involvement (Universal Management Competencies, 2000)
- Organizational performance (Smith & Blum, 2000)

Responses were recorded on a five-point Likert scale.

4.3 Data Analysis

SPSS version 25 was used for:

- Descriptive statistics
- Cronbach's Alpha reliability analysis
- Pearson correlation
- Multiple regression

Diagnostics ensured model robustness and statistical validity.

5. Results

5.1 Reliability and Descriptive Patterns

Cronbach's Alpha values ranged from 0.77 to 0.96, indicating strong internal consistency. Descriptive analysis showed relatively high recognition of the importance of training and internal control, while motivation and managerial involvement received lower mean scores, reflecting informal management styles typical of small enterprises.

5.2 Correlation Results

Training and development and internal control displayed significant positive correlations with organizational performance. Motivation and managerial involvement did not demonstrate statistically significant relationships, likely due to the informal, non-incentive-based nature of most local enterprises.

5.3 Regression Analysis

Regression results showed that, Training and development, Internal control are the only significant predictors of performance. The model explains **54.8% of performance variance ($R^2 = 0.548$)**.

This indicates that structured operational systems and human capital investments yield measurable performance benefits.

5.4 Interpretation

The absence of significance for motivation and managerial involvement reflects a lack of formalized incentive structures and strategic leadership practices in the regional tourism sector. Strengthening these areas requires institutional support and managerial training.

The empirical findings of this study provide several important implications for public policy, particularly in the context of regional tourism development and the strengthening of organizational capacities within small and medium-sized tourism enterprises. Since tourism in the Shkodra region is characterized by small-scale operators, limited managerial formality, and seasonal fluctuations, the need for targeted public-sector policies becomes even more substantial.

Strengthening Training and Qualification Systems

Given that training and development emerged as the strongest predictor of organizational performance, public institutions should prioritize the establishment of continuous, certified

training programs tailored to the needs of tourism enterprises. Current training opportunities tend to be sporadic, donor-driven, or non-standardized. A more structured approach, possibly through a regional tourism training center or partnerships with universities and vocational schools, would greatly enhance human capital in the sector.

Public policy could support:

- Annual mandatory training cycles for licensed tourism enterprises
- Subsidized training programs for small family-run businesses
- Certification schemes in hospitality management, customer service, and digital marketing
- Training-of-trainers models to build local capacity

Such interventions would not only improve service quality but also help create a more professional and competitive tourism workforce.

Institutionalizing Internal Control Standards

Internal control was found to be a significant determinant of organizational performance, which suggests that businesses benefit from clearer operational procedures and improved accountability mechanisms. However, most tourism enterprises in Shkodra lack formal internal control systems or documentation processes.

Public institutions can address this gap by:

- Developing standardized internal control guidelines for small tourism enterprises
- Providing templates for financial documentation, risk management, and service protocols
- Offering advisory services through municipal or regional tourism offices
- Encouraging compliance through inspections and periodic evaluations

These tools would help enterprises transition from informal to more structured operational models, thereby improving efficiency and reducing risk.

Enhancing the Supporting Role of the Public Operator

The study confirms that public operator engagement can amplify the impact of internal organizational factors. Tourism enterprises, particularly small ones, often lack the managerial experience or resources needed to implement effective training or internal control systems. This strengthens the argument for a more proactive public-sector role.

Potential policy measures include:

- Establishing a one-stop tourism development office offering advisory and administrative support
- Creating local networks and clusters for knowledge exchange among businesses
- Facilitating public–private partnerships for tourism promotion and joint marketing
- Introducing incentive schemes for enterprises that adopt formal training or internal control systems

Through such mechanisms, the public operator would not merely regulate but actively support enterprise development, creating a more resilient and professional tourism ecosystem.

Improving Access to Finance

Although not directly measured in the empirical model, the lack of access to finance is a well-documented barrier in tourism development. Public policy could complement internal organizational improvements by:

- Supporting low-interest credit lines for tourism investments
 - Facilitating guarantee schemes to reduce collateral requirements
 - Promoting public–private cooperation on infrastructure and innovation projects
- Improved access to financial resources would allow enterprises to invest more in human capital, technology, and facility upgrades, further enhancing their performance.

6. Conclusions

This study set out to investigate how internal organizational factors influence the performance of tourism enterprises in the Shkodra region, while also exploring the strategic role of the public operator in supporting these enterprises. The findings offer a coherent picture of the internal mechanisms that drive performance and the types of public-sector interventions that could make these mechanisms more effective.

The results demonstrate that **training and development** and **internal control systems** are the primary determinants of organizational performance. These findings confirm that skill-building, clarity of procedures, and operational discipline are essential components of a successful tourism enterprise. In contrast, **staff motivation** and **managerial involvement** did not show statistically significant effects.

This does not imply that these factors are unimportant; rather, it reflects the informal management structures that dominate the sector, where motivation is unstructured and managerial practices are often intuitive rather than strategic.

A key conclusion emerging from this study is that **public institutions have an important, yet underutilized, role in strengthening the internal capacities of tourism enterprises**. Through targeted interventions—such as certified training programs, standardized internal control frameworks, and structured support services—the public operator can substantially enhance the long-term competitiveness and sustainability of the local tourism sector.

The study also highlights the need for a shift from fragmented, short-term interventions to a **more institutionalized and strategic approach** to tourism development. Integrating tourism policy with education, economic development, and regional planning would allow for a more coherent and sustainable model of growth.

Limitations and Directions for Future Research

While the findings provide valuable insights, the study is limited by sample size and its focus on a single region. Future research could expand the geographic scope, include more diverse enterprise types, and incorporate financial performance indicators to complement perceptual measures. Longitudinal studies would also be beneficial to capture seasonal effects and long-term performance trends.

Final Remarks

Overall, the study underscores that improving organizational performance in the Shkodra tourism sector requires a dual approach: strengthening internal mechanisms within enterprises and enhancing the supporting role of public institutions. When these two dimensions function in harmony, tourism enterprises are better positioned to deliver higher quality services, attract investment, and contribute to sustainable regional development.

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IMPACTS OF MACROPLASTIC AND MICROPLASTIC POLLUTION ON TOURISM AND HUMAN HEALTH IN THE SHKODER REGION

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Abstract

Macroplastic and microplastic pollution today represents a major challenge for humanity, as it directly affects the environment in which we live. The damage that this pollution causes to biodiversity, as well as the changes in tourist landscapes including coastal areas, may lead to a decrease in the number of tourists. Likewise, the presence of this pollution in the environment may pose a risk both to wildlife and to human population. The aim of this study is the mapping of hot spots of plastic and microplastic pollution along the Velipoja and Shëngjin coasts, in Lake Shkodra and the Buna River. Sampling of marine litter was carried out following careful field observation and monitoring. Marine litter sampling took place during April and May 2025, prior to the start of the tourist season. The second assessment was conducted in November, after the end of the tourist season. The density of marine litter was calculated as the number of items per square meter (items/m²), while the Clean Coast Index (CCI) was determined using a constant value of $K = 20$. For the assessment of the impact of plastic pollution on coastal tourism development, as well as the effects of tourism development on plastic pollution, a standardized questionnaire was administered, and the data were processed using SPSS and MINITAB 22. The statistical assessment of morbidity associated with the accumulation of microplastics, plasticizing additives, and chemicals in the human body was conducted using data obtained from the Shkodra Regional Hospital over the past ten years. Plastics comprised an average of 90.01% of total marine litter, with the highest proportion observed in the peripheral section of the Velipoja coast (92.03%) and the lowest in Shëngjin coast (86.09%).

Keywords: *ecosystems, health, monitoring, plastic pollution, tourism.*

JEL classification: *Q53, Q56, Q57, L83, I18*

1. Introduction

With the expansion of the global economy, plastic consumption has significantly increased. The production of resins and plastic fibers in 1950 was estimated at 2 Mt (1), whereas in 2013, global production reached approximately 300 Mt, and in 2015 it rose to 380 Mt (2). Plastic production in 2024 was 413.8 Mt and is projected to reach 500 Mt by 2025 (3). This production growth has led to an exponential increase in plastic waste generation (4). Geyer estimate that of the 8.3 billion tons of plastic produced between 1950 and 2015, only 9% has been recycled, while 80% has accumulated as waste in the environment (5).

Globally, around 57 million tons of plastic waste are generated each year, of which 8 million tons enter the oceans. It is further estimated that 80% of this oceanic waste is

composed of plastics (6). Rivers are responsible for transporting nearly 0.5 million tons of plastic waste to the oceans each year (7), making them major pathways through which litter enters the marine environment (8). The quantity of plastic waste found in the Mediterranean Sea is comparable to that of the world's four major oceans (9). The density of marine debris in the Mediterranean has been estimated at 0.67 items/m², corresponding to approximately 658 items per 100 meters, which is considered relatively high, although still lower compared to some neighbouring regions (10).

2. Literature Review

Plastic and microplastic waste infiltrate ecosystems through water, soil, and air, disrupting natural ecological balances (11). Approximately 1300 aquatic species have been documented to ingest plastic (12), and microplastics have been detected in 60% of fish species examined (13). Their presence in these organisms leads to physical damage, toxic effects from components such as phthalates, and long-term endocrine disruption, ultimately contributing to a decline in species populations (14,15).

The harmful impacts of plastic and microplastic pollution extend beyond aquatic life, affecting wildlife, birds, and marine mammals (16). Through bioaccumulation and biomagnification, these pollutants move directly into the food chain, ultimately posing risks to human health (17,18). Human exposure to microplastics occurs primarily through ingestion of contaminated food and through the potential toxicity of phthalates associated with certain microplastics (19).

Plastic and microplastic pollution also carry significant implications for tourism, particularly through the degradation of coastlines, natural habitats, and biodiversity (20). Contaminated beaches, rivers, and tourist sites diminish the aesthetic and ecological value of destinations, thereby reducing their attractiveness and negatively impacting local economies (21). At the same time, tourism activities themselves contribute to increased macroplastic and microplastic pollution, especially during peak tourist seasons (22, 23).

Today, macroplastic and microplastic pollution pose a major global environmental challenge with extensive consequences for ecosystems, biodiversity, and human health. The ecological degradation they trigger, including the transformation of coastal landscapes and the decline of wildlife populations can diminish tourism potential and increase risks for both animals and people. Addressing plastic pollution demands coordinated international action focused on improving plastic production practices, enhancing waste management, and advancing processing technologies. Such interventions are crucial for conserving biodiversity, protecting public health, and ensuring the long-term development of safe and sustainable tourism.

3. Methodology

The study area comprises three main zones, the Velipoja and Shëngjin coastline, the Buna River, and Lake Shkodra, each influenced by different levels of human activities.

The monitoring of plastic pollution in this study was carried out across the three main regions of the study area and included three size categories of plastic debris: macroplastics (≥ 2.5 cm), mesoplastics (≥ 5 mm and < 2.5 cm), and microplastics (< 5 mm). It should be emphasized that, while macro- and mesoplastics were assessed in the current phase, the analysis of microplastics will be undertaken in a subsequent stage of the study (24).

The first region includes part of the northern Adriatic coastline, specifically the beaches of Velipoja and Shëngjin in northwestern Albania. Sampling of marine litter was carried out following careful field observation and monitoring. Marine litter sampling took place

during April and May 2025, prior to the start of the tourist season. The second assessment was conducted in the beginning of November, after the end of the tourist season.

Table 1. Characteristics of Selected Beaches in Northern Albania

Area	Coordinates (N, E)	Beach Type	Main Use	Distance to Nearest Town (km)	Distance to Nearest Harbor (km)	Beach Cleaning	Distance to Nearest River Mouth (km)
Central Velipoja Coast	41° 86'14.32" N 19° 42'74.9" E	Semi-urban	Tourism and recreation	23.1 (Shkoder)	2–3 (tourist pier)	Seasonal	4.47 (Buna River)
Peripheral Velipoja Coast	41° 86'08.21" N 19° 40'90.4" E	Semi-urban	Tourism and recreation	24.5 (Shkoder)	2–3 (tourist pier)	Seasonal	3.04 (Buna River)
Shëngjin Coast	41° 81'20.95" N 19° 59'26.15" E	Urban	Tourism and recreation	0.5 (city center)	0.2 (Shëngjin port)	Seasonal	7.23 (Drini River branch)



Figure. 1. Map of the monitoring sites of marine litter in Velipoja and Shëngjin coastlines

At each of the three study sites, sampling was conducted using coastal transects measuring 100 m in length and 10 m in width, in accordance with the guidelines of the EU MSFD Technical Group on Marine Litter, as described by Galgani (25). In each site, three consecutive transects were established, spaced 50 m apart, covering a total of 900 m of coastline in the study. Both macro and mesoplastics were collected to assess the impact of tourism and coastal activities. Data were documented through photographs, and litter typologies were recorded following OSPAR monitoring guidelines OSPAR Commission. Plastic litters were further classified according to resin codes based on ASTM International (26).

Due to the massive increase in tourism in recent years, these beaches and areas are facing growing challenges in marine litter management.

The second region covers the Buna River, where sampling was carried out at both its inlet and its river mouth.

Table 2. Sampling Sites and Characteristics of Buna River

Nr	Sampling Site	Shore Location	Level of Human Impact	Latitude (°N)	Longitude (°E)
1	Buna River Mouth	Western	High	42,059026	19,459023
2	Buna River Estuary	Western	Moderate	41,848135	19,379470



Figure. 2. Map of the monitoring sites of plastic litter in Buna River

The third region encompasses Lake Shkodra, with plastic pollution assessed at three shoreline sites: Shiroka, Zogaj, and Kalldrini. Selection of all sampling locations was guided by the degree of anthropogenic influence, considering proximity to urban settlements, tourism intensity, and shoreline usage intensity.

Table 3. Sampling Sites and Characteristics of Lake Shkodra

Nr	Sampling Site	Shore Location	Level of Human Impact	Latitude (°N)	Longitude (°E)
1	Shiroka	Western	High	4,372,640.47	4,659,416.35
2	Zogaj	Western	Moderate	4,367,784.07	4,660,915.79
3	Kalldrini	Eastern	Low	4,369,566.20	4,673,708.60

Figure. 3. Map of the monitoring sites of plastic litter in Shkodra Lake



Sampling of plastic waste in the Buna River and at the three Lake Shkodra sites was conducted in March - April 2025, while the second monitoring was carried out in October – in the beginning of November 2025. Macroplastics were collected manually, while microplastics will be sampled using grab - method (27).

Data Analysis and Processing

In this study, the quantity of marine litter per 100 meters was determined to calculate density. The density of marine litter was calculated according to Lippiat as follows (28):

$$CM = n / (wl)$$

To assess beach cleanliness, the Clean Coast Index (CCI) proposed by Alkalay was applied (29): $CCI = CM \times K$

According to the CCI scale, values 0-2 indicate very clean beaches, 2-5 indicate clean beaches, 5-10 indicate moderately clean beaches, 10-20 indicate dirty beaches, and values ≥ 20 indicate very dirty beaches.

The same methodology was used to quantify plastic pollution, expressed as Lake Plastic Density (LPD) for Lake Shkodra and River Plastic Density (RPD) for the Buna River.

The impact of plastic pollution on tourism development in the three study areas.

In the second phase, the study will assess the impact of plastic pollution from the perspective of tourists who frequent the beaches of Shëngjin and Velipoja, Lake Shkodra and Buna River, using a standardized questionnaire that has been partially adapted to the needs of this research (30). Another objective of the study is to estimate the economic impact of plastic pollution on tourism development (31,32). The processing and statistical analysis of the questionnaire data will be carried out using the SPSS software package. The study will also assess the impact of tourism on macroplastic and microplastic pollution, along with the evaluation of tourist pressure through the Tourist Pressure Index (TPI). This index will account for visitor numbers, seasonal intensity, and related environmental impacts in the Velipoja and Shëngjin coastline, the Buna River, and Lake Shkodra.

The prevalence of diseases potentially linked to exposure to microplastics and plastic additives, collected at the Shkodra Regional Hospital

In this phase of the study, the effects of macroplastic and microplastic pollution will be analyzed in relation to diseases for which exposure to microplastics or plastic additives is considered a potential risk factor. MPs, tiny plastic particles measuring less than 5 mm, have emerged as a significant environmental and public concern due to their widespread presence in ecosystems and potential to infiltrate human tissue (33).

This retrospective study relies on hospital records and public health statistics from 2015 to 2025. The primary aim is to identify trends in newly diagnosed cases, mainly cancers and endocrine disorders, and to evaluate their potential association with environmental factors and tourism development in the Shkodra region.

Exposure assessment will be based on microplastic loads in surface waters, the Clean Coast Index (CCI) for the Velipoja and Shëngjin coastlines, Lake Plastic Density (LPD) for Lake Shkodra, and River Plastic Density (RPD) for the Buna River. The Tourism Pressure Index (TPI) will account for anthropogenic pressure.

Due to the absence of laboratory measurements in human samples, a region-based Plastic Pollution Index (PPI) will be used as a proxy to estimate population exposure and explore potential associations with cancer and endocrine disorders.

Statistical analyses will examine the prevalence and temporal trends of diseases potentially influenced by microplastic pollution and plastic additives, using ten years of data (2015–

2025) from the Statistics Office of Shkodra Regional Hospital, processed with Minitab 2020.

4. Results and discussion

The initial phase of the study on macroplastic pollution along the Velipoja and Shëngjin coastal areas has been completed. Some of the data collected during this phase are presented below.

Table 4. Density of marine litter and Clean Coast Index at Velipoja and Shëngjin Coasts (Neziri A, Gjinaj V. 2025)

Beach	No. of items	Area (m ²)	CM (items/m ²)	CCI	Classification (Alkalay et al., 2007)
Central Velipoja Coast	445	1000	0.45	9.0	Moderately clean
Peripheral Velipoja Coast	326	1000	0.33	6.6	Moderately clean
Shëngjin Coast	115	1000	0.12	2.4	Clean

The mean litter density across the surveyed beaches, Velipoja and Shengjin was 0.30 items/m²(34), which is lower than the reported on several Italian beaches, where the density reached 0.61 ± 0.23 items/m² (35).

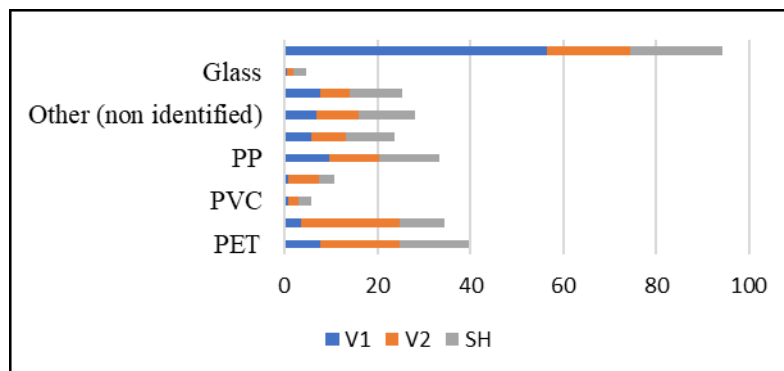
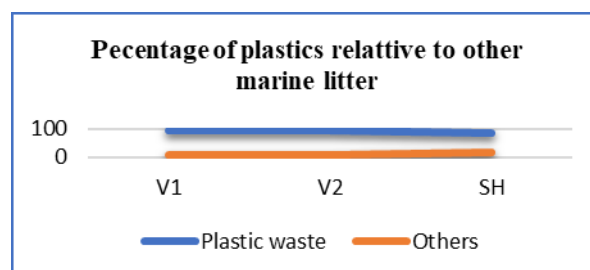


Figure 4. Total percentage (%) of items by material type for each studied area. (Neziri A, Gjinaj V. 2025)

The data indicate that cigarette butts represent the predominant form of litter across all surveyed sites, while single-use plastic items are particularly prevalent along the Shëngjin coast and the central section of the Velipoja coast.

These patterns are consistent with observations from other Mediterranean beaches, where tourism and recreational activities are recognized as the primary drivers of marine litter (36). Such findings underscore the need for targeted waste management and public awareness strategies to mitigate the impact of tourism-related pollution on coastal ecosystems.

Figure 5. Percentage distribution of plastic items compared to other types of marine litter collected in the study. (Neziri A, Gjinaj V. 2025)



On average, plastics comprised 90.01% of the total litter across the three surveyed sites. These results align with global estimates indicating that approximately 88% of marine litter is plastic in Mediterranean Sea (37), and with Buoninsegni who report that plastic concentrations on some Italian beaches can reach up to 94%. The predominance of plastic highlights the urgent need for targeted waste management strategies and public awareness campaigns to mitigate the ecological impacts of tourism-related pollution along these coastal areas.

Other expected outcomes of this study are as follows:

- Analysis of macroplastic and microplastic pollution in the natural waters of Shkodra Lake and the Buna River.
- Statistical assessment of the impact of marine plastic pollution on tourism at the beaches of Shëngjin and Velipoja, Shkodra Lake, and River Buna, as well as the effect of tourism activities on the generation of plastic pollution.
- Statistical data on the prevalence of diseases potentially linked to exposure to microplastics and plastic additives, collected at the Shkodra Regional Hospital.

This comprehensive study, encompassing multiple research areas, has not been previously conducted in the study region and represents a novel contribution.

The results obtained from this research will be published in scientific journals and will serve as a reference for future researchers in related fields.

Additionally, the study will map hot spots of marine and freshwater plastic pollution in the Northwestern region of Albania. By highlighting the effects of marine and coastal plastic pollution on tourist sites, this study will contribute to evidence-based management practices aimed and promoting environmentally sustainable tourism. Statistical results on the prevalence of diseases associated with microplastics will provide valuable information for public health researchers.

These findings may inform potential changes in public health policies and strategies for the management and use of plastics, aiming to reduce their environmental emissions.

5. Conclusions

Macroplastics and microplastics are present in Shkodra Lake, the Buna River, and coastal beaches, with certain areas showing higher pollution levels and negatively affects local ecosystems and the organisms that live and feed there, by altering habitat quality and ecological conditions.

In Shkodër, tourism plays a dual role in relation to plastic pollution. On one hand, tourism activities contribute to the generation of plastic waste, particularly in natural and cultural sites. On the other hand, persistent plastic pollution degrades environmental quality and

visual appeal, reducing visitor satisfaction and undermining the sustainability of Shkodër as a tourist destination. Over time, this dynamic can negatively affect the local economy and hinder the development of sustainable tourism in the region.

Uncontrolled use of plastics increases the expenses of local authorities for waste management and processing. Sustainable management of plastics and the promotion of eco-friendly alternatives can help maintain clean environments and coastlines, preserve natural landscapes, and support the development of sustainable and economically resilient tourism for local communities.

Evidence on microplastic exposure and disease patterns is critical for informing public health policies. Environmental plastics may threaten the health of residents and tourists through food and water contamination, while plastic-derived chemicals such as phthalates and bisphenols act as endocrine disruptors potentially linked to endocrine disorders and certain malignancies, reinforcing the need for preventive and sustainable environmental management.

The study highlights the importance of raising public awareness about the use of alternative materials, such as reusable cloth bags, and promoting responsible waste disposal practices, both on beaches and in natural environments. Such measures are essential for ecosystem protection and for ensuring sustainable tourism in the region.

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SUSTAINABLE TRANSPORT AS A TOOL FOR THE DEVELOPMENT OF ECOTOURISM IN SHKODRA REGION

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Abstract

Sustainable transport constitutes an essential component in the development of ecotourism, especially in destinations that are experiencing continuous tourist growth such as Shkodra Region. In recent years, Shkodra has registered a significant increase in the number of visitors and overnight stays, with an expansion of the tourist season throughout the year. However, the current urban and interurban transport infrastructure is not fully adapted to cope with this new dynamic, affecting mobility efficiency, the quality of the tourist experience and environmental sustainability.

This study aims to assess the role of sustainable transport as a driver of eco-tourism in Shkodër, while also analyzing the potential of Geographic Information Systems (GIS) in planning and optimizing mobility networks. Based on geospatial analysis, primary data collection (surveys, interviews, field observations) and literature review, the study aims to identify infrastructure needs, improve access to natural and cultural attractions, and test more environmentally friendly transport models.

Preliminary results show that the integration of green transport means (bicycles, modernized public transport, pedestrian routes) and the use of GIS for the design, analysis and personalization of itineraries significantly enhance the visitor experience, reduce environmental impacts and support local economic development. The study contributes to the scientific literature by filling existing gaps on this topic in Albania and provides practical recommendations for local policymakers and planners.

Ultimately, the use of sustainable transport, combined with advanced geospatial technologies, represents a strategic opportunity to transform Shkodra into a model destination for ecological and sustainable tourism.

Keywords: *Sustainable transport, Ecological tourism, Spatial planning.*

1. Introduction

Sustainable transport represents an essential component in the development of ecological tourism, especially in destinations experiencing continuous tourism growth such as Shkodër County. It is observed that the current urban and interurban transport infrastructure is not fully adapted to withstand this new dynamic, affecting mobility efficiency, tourist experience quality, and environmental sustainability.

In recent years, Shkodër County has followed the positive trend Albania has had regarding the number of visitors. Most visitors come from Western Europe, but there is a steadily increasing presence of visitors from Eastern Europe and other countries. There is also an increase in the length of tourist stays. [9]

There is a growing trend of visitors coming to Shkodër through self-organized tours (with motorcycles, bicycles, campers, etc.). This year, compared to previous years, their number has been higher and more evenly distributed throughout the year.

Shkodër County is located in the northwestern part of Albania. It borders Montenegro to the north and northwest, Lezhë County to the south, Kukës County to the east, and the Adriatic Sea to the west. The county includes coastal areas, lowlands, rivers, Lake Shkodër, and mountainous regions of the Albanian Alps. Shkodër County is administratively composed of five municipalities: Shkodër, Malësi e Madhe, Vau i Dejës, Pukë, and Fushë-Arrëz.

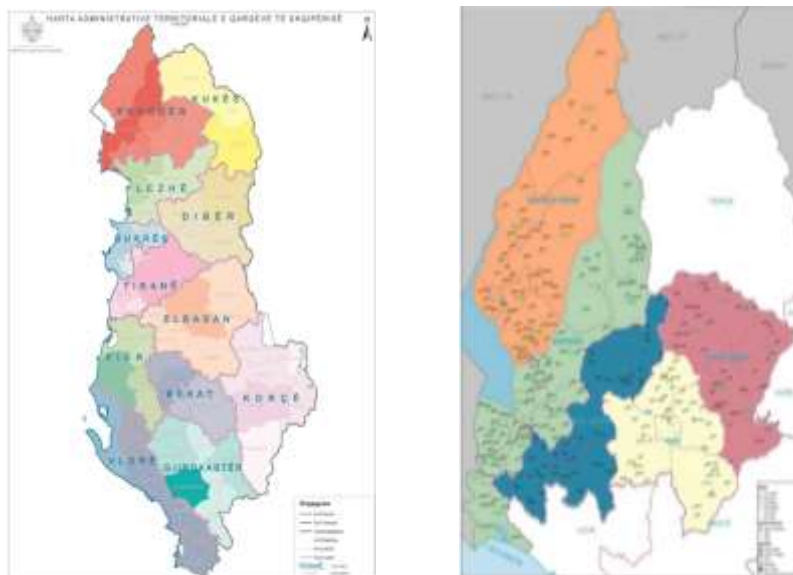


Figure 1. Map of Albania and Shkodra Country [10]

Shkodër County is a region that offers several unique types of tourist attractions distinctive to the country. Within Shkodra, there are several historical sites to visit, such as: [11]

- The ancient Rozafa Castle
- Various museums
- Historic houses
- Religious monuments
- Cultural institutions

Other notable attractions include:

- Lake Shkodra (Shirokë – Zogaj – Koplik)
- The Adriatic coast of Velipojë, Franz Joseph Island
- Razëm, Tamare, Theth, Bogë, Vermosh
- The Tërbuni Mountains

Shkodra is one of the oldest cities in Albania, a fact demonstrated by its old residential, administrative, and religious buildings that visitors can explore. One of the city's main landmarks is Rozafa Castle, which rises on a rocky hill west of the city, surrounded by the waters of three rivers: the Drin, Buna, and Kir.

Visitors can explore the Historical Museum, the Marubi National Museum of Photography, as well as the Venetian-style neighborhoods of Gjuhadol and Serreq. Near the city lies Lake Shkodra (the largest lake in the Balkan Peninsula), with the areas of Shirokë and Zogaj.

Shkodra can also serve as a base for visiting natural attractions such as Franz Joseph Island at the mouth of the Buna River and the sandy beach of Velipojë. A few kilometers south of Shkodra is the Malësi e Madhe region, where tourists can visit destinations such as Razëm, Bogë, Theth, and Vermosh.

In Pukë and Fushë Arrëz, more than in any other mountainous area, visitors can find activities that make an adventurer's holiday enjoyable, such as winter skiing, forest walks, hunting, boating, speleology, mountaineering, horseback riding, cycling, and more.

Pukë is known for its vast forested areas, and pleasant, diverse walks can be enjoyed throughout the region. During their stay, tourists have the opportunity to explore the hilly and mountainous terrain, often interrupted by impressive gorges, ravines, and canyons, dense forests and meadows, wildlife, streams, waterfalls, and lakes of rare beauty, such as those in Tërëbun, Livadh, and Kabash.

During hunting season, dozens of hunters from across the country come to hunt in Pukë. In recent years, the number of foreign hunters—especially from Italy—has also increased, as they come to pursue their passion for hunting in the forests and mountains of Pukë and Fushë Arrëz.

In the Municipality of Vau i Dejës, many tourist attractions can be visited, such as:

- The “Ndre Mjeda” Museum Center
- The ruins of the Bishopric of Sapa
- The Koman Settlement (Old Dalmatia)
- Danja Castle, Vau i Dejës
- The Medieval City of Sarda (Shurdhah)
- St. Mary's Church, Vau i Dejës
- St. Mark's Church
- Sapa Castle
- The Ancient Cemetery of Koman
- The house of Martin Camaj
- Vigu Castle
- Vau i Dejës Lake
- Koman Lake

The transport network of Shkodër County constitutes a key element of the area's economic, social, and territorial functioning. It includes road, rail, and water transport, which contribute to the internal connectivity of the county as well as to its integration with the rest of the country and with cross-border areas. [6]

Road transport is the main and most developed form of transport in the county. The road network connects the city of Shkodër, as the administrative and economic center, with the municipalities of Malësi e Madhe, Vau i Dejës, Pukë, and Fushë-Arrëz. The national axis Shkodër–Lezhë ensures connectivity with central Albania, while the roads leading to Han i Hotit and Muriqan are of strategic importance for connections with Montenegro and for cross-border movement of goods and passengers. However, in the mountainous areas of the county, especially in Pukë and Fushë-Arrëz, road infrastructure faces difficulties due to rugged terrain and climatic conditions. [5]

2. Analysis of the Impact of Sustainable Transport on the Development of Ecological Tourism in Shkodër County and the Role of GIS

2.1 The Impact of Sustainable Transport on the Development of Ecological Tourism

Sustainable transport plays a key role in the development of ecological tourism in Shkodër County, a region rich in natural resources such as Lake Shkodër, the Buna River, the Albanian Alps, Thethi National Park, and the mountainous areas of Pukë and Fushë-Arrëz. Improving access through forms of transport with low environmental impact (public transport, bicycles, walking, ecological water transport) directly contributes to increasing tourist visitation without damaging natural ecosystems.

The development of sustainable transport networks reduces air pollution, noise, and landscape degradation, preserving the natural values that form the basis of ecological tourism. In this context, Shkodër County shows great potential for the integration of ecological transport, especially in rural and mountainous tourist areas. [1]



Figure3. Map of Protected Areas in Albania [7]

2.2 Assessment of Economic, Environmental, and Social Impact

- **Economic Impact:** The implementation of sustainable transport positively affects the local economy by stimulating year-round tourism development, creating new jobs, and increasing income for local communities. Improving access to isolated tourist areas (such as Thethi, Valbona through regional connections, or the Pukë areas) increases the number of visitors and expands the tourism offer. [8]
- **Environmental Impact:** Sustainable transport contributes to reducing greenhouse gas emissions, protecting biodiversity, and lowering pressure on protected areas. The use

of alternative means of transportation and good planning of road networks helps prevent damage to the natural landscape. [3]

- **Social Impact:** From a social perspective, sustainable transport improves local communities' access to services and tourist activities, increases social inclusion, and encourages cooperation between tourists and local residents. It also improves quality of life and road safety. [8]

2.3 Tourists' Perceptions and Attitudes Toward Current Transport

Analysis of the perceptions of domestic and foreign tourists gathered from the questionnaires shows that most positively appreciate the nature and ecological potential of Shkodër County, but express concerns about the quality of road infrastructure, the lack of regular public transport, and limited information about ecological mobility alternatives. Foreign tourists show interest in environmentally friendly transport options such as bicycles, water transport, and organized walking tours in particular. [2]

QARKU	JANAR 2023	JANAR 2024	Janar 2025	NDRYSHIMI NE % 2023	NDRYSHIMI NE % 2024
Shkodër	12,510	14,270	18,040	44%	26%

QARKU	Shkurt 2024	Shkurt 2025	Ndryshimi në %	Janar-Shkurt 2024	Janar-Shkurt 2025	Ndryshimi në %
Shkodër	22,760	20,900	-8%	37,030	38,940	5%

QARKU	Mars 2024	Mars 2025	Ndryshimi në %	Janar-Mars 2024	Janar-Mars 2025	Ndryshimi në %
SHKODRA	34,210	28,400	-17%	71,240	67,340	-5%

Figure 4. Visitor data for protected areas, January–March 2025 [2]

2.4 Best Practices for Integrating Ecological Transport into Tourism

Best practices include:

- Developing public transport lines to tourist areas;
- Creating bicycle networks and ecological trails;
- Using water transport on Lake Shkodër and the Buna River;
- Limiting private vehicle circulation in protected areas;
- Promoting shared transport and “eco-friendly” services.

2.5 The Role of GIS in Planning and Managing Ecological Transport

Geographic Information Systems (GIS) are a vital tool for planning, analyzing, and optimizing ecological transport networks in Shkodër County. GIS enables:

- Mapping tourist attractions and transport networks;
- Analyzing accessibility and distances;
- Identifying areas with high tourism potential;
- Optimizing planning of public and private routes;
- Improving tourist information through interactive digital maps.

2.6 Strategies for Improving Tourist Mobility in Shkodër County

Based on the above analysis, the following are proposed:

- Investing in ecological public transport to tourist areas;
- Integrating GIS into territorial and tourism planning policies;
- Improving signage and digital information for tourists;
- Encouraging partnerships between public institutions and the private sector;
- Promoting Shkodër County as a sustainable tourism destination.

3. Conclusions

The study successfully identified the **actual infrastructure needs** required for the implementation of sustainable transport systems in Shkodër County. Through comprehensive spatial and contextual analysis, critical gaps in existing transport infrastructure were documented, providing a clear basis for targeted interventions.

As a key outcome, **new ecological transport strategies** toward major tourist destinations in the county were developed using **GIS-based analyses**. This represents the first systematic application of GIS tools for transport planning in Shkodër County, enabling data-driven route optimization, accessibility assessment, and environmental impact evaluation.

The research also demonstrated a measurable **improvement in potential tourist experiences**, achieved through enhanced accessibility, reduced traffic congestion in and toward tourist areas, and the proposal of regulated time periods for transport circulation. These measures contribute not only to tourism management but also to broader mobility efficiency within the county.

Furthermore, the implementation of proposed **green transport alternatives** resulted in a projected **reduction of negative environmental impacts**, including lower emissions and decreased pressure on sensitive natural areas. At the same time, the study highlights a strengthened **national and international image** of both existing and emerging tourist destinations in Shkodër County, positioning the region as a model for sustainable and environmentally responsible tourism development.

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FINANCIAL TRANSPARENCY AND PERFORMANCE IN THE TOURISM ECONOMY: A REGIONAL COMPARISON WITH A FOCUS ON ALBANIA

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Abstract

The tourism sector lately has been a strategic driver of Albania's economic transformation, generating rapid growth in revenues, employment, and foreign investment. But this expansion still remains structurally fragile in the absence of strong financial governance, transparency, and standardized reporting frameworks. Financial transparency, reliable financial reporting practices, and harmonized and robust economic standards are not only mandatory regulatory standards, they are foundational elements for building a competitive, investment-attractive, and sustainable tourism industry. This study investigates the connection between financial transparency, sector performance, and long-term sustainability in Albania, framed within a comparative analysis of Western Balkan economies. The research is based on a mixed-method design, combining statistical analysis of financial and economic indicators with expert interviews involving key institutional stakeholders. It also incorporates case studies of tourism enterprises that apply ESG (Environmental, Social, and Governance) reporting, corporate governance standards, and international frameworks such as GRI and ISO 14001. Expected findings suggest that financial transparency plays a transformative role by strengthening market credibility, reducing informality, enhancing fiscal harmonization, and strengthening the sector's access to capital. Similarly, standardized reporting and sustainability practices are anticipated to improve managerial decision-making, operational efficiency, and consolidate the sector's ability to absorb and adapt to economic instability. The regional comparison indicates that countries with stronger institutional capacity, such as Montenegro, show more stable tourism performance, emphasizing the critical role of independent audit bodies, coherent fiscal policies, and consistent enforcement practices. The scientific contribution of this study lies in identifying the mechanisms through which transparency and standardization shape tourism competitiveness, and also offers evidence-based policy recommendations focused on strengthening financial integrity, governance quality, and sustainable tourism development in Albania.

Moreover, the study extends a deeper understanding of how institutional maturity interacts with market dynamics in shaping tourism-sector outcomes. In cases where financial control mechanisms are underdeveloped or inconsistently implemented, transparency gaps tend to amplify weaknesses such as informality, inconsistent capital flows, and fragmented decision-making. In the other hand, economies with well-established audit institutions, predictable fiscal regimes, and higher regulatory credibility are better positioned to attract long-term capital, manage systemic risks, and sustain competitive advantages in the regional tourism landscape.

Keywords: *accountability, financial transparency, sustainable tourism, economic performance.*

JEL classification: L83, H83, D73

1. Introduction

Tourism has emerged as one of the most dynamic and strategically significant sectors of Albania's economy, driving rapid increases in revenue, employment, and international market visibility. Over the past decade, Albania has transitioned from a peripheral destination to a competitive actor in the regional tourism landscape, positioning the sector as a cornerstone of national development and a catalyst for economic convergence with the Western Balkans and the European Union.

Yet, beneath this accelerated expansion lie persistent structural vulnerabilities rooted in the sector's financial governance architecture. High levels of informality, heterogeneous and non-standardized reporting practices, and limited transparency in financial disclosures generate substantial fiscal uncertainty and constrain the sector's capacity for sustainable growth. In environments where financial information is opaque or fragmented, institutions struggle to design effective fiscal policies, banks face elevated credit risk, and investors encounter barriers to long-term engagement. These dynamics create a paradox in which strong macro-level tourism indicators coexist with micro-level fragility and uneven sectoral performance.

Within contemporary tourism economies, **financial transparency** has evolved from a regulatory obligation into a core determinant of **competitiveness, resilience, and investment attractiveness**. Transparent and reliable financial reporting improves capital access, strengthens tax compliance, reduces governance risks, and enhances institutional trust. Moreover, the adoption of standardized economic and sustainability frameworks, such as ESG reporting, GRI standards, and environmental management certifications, supports evidence-based managerial decisions, facilitates risk management, and aligns enterprise behaviour with long-term development and sustainability objectives. Comparative evidence from Western Balkan economies, particularly Montenegro, illustrates that stronger institutional credibility and independent audit mechanisms are closely associated with higher tourism performance and greater sectoral stability.

Despite the growing importance of these dynamics, the causal links between financial transparency, economic performance, and tourism sustainability remain insufficiently theorized and empirically underexplored in the Albanian **context**. This gap is particularly relevant in light of Albania's EU integration trajectory, which increasingly requires alignment with European standards of public financial management, corporate disclosure, and governance quality.

Against this background, the present study is guided by the central research question: how do financial transparency and standardized reporting practices influence the long-term development, competitiveness, and sustainability of Albania's tourism sector within a regional comparative framework?

By integrating quantitative financial and economic indicators with qualitative insights from institutional stakeholders and tourism enterprises, the study seeks to identify the mechanisms through which transparency shapes sector outcomes. The research further aims to generate empirically grounded recommendations for strengthening governance quality, enhancing fiscal credibility, and advancing the sustainable development of Albania's tourism economy.

Purpose of the Study, Problem Definition, and Research Questions

The primary purpose of this study is to examine the influence of financial transparency, standardized reporting practices, and institutional governance quality on the long-term

performance and sustainability of Albania's tourism sector. With reference to regional comparative insights, particularly from Montenegro, a country where tourism is a major contributor to economic growth and accounted for 9.5% of total GDP and 9.0% of total employment in 2019, the study aims to identify the structural mechanisms through which transparent financial practices shape sectoral outcomes (OECD Tourism Trends and Policies 2022). practices enhance competitiveness, fiscal credibility, and sector resilience. Despite its rapid expansion, Albania's tourism sector remains hindered by deep-rooted weaknesses in its financial governance ecosystem. These challenges manifest in several interconnected dimensions:

- ✓ High informality and incomplete financial disclosures, which distort the true economic contribution of tourism and undermine fiscal planning.
- ✓ Fragmented and non-standardized reporting, limiting the comparability and reliability of financial information across firms.
- ✓ Weak institutional oversight, particularly in auditing, enforcement, and monitoring of compliance with financial regulations.
- ✓ While the region continues to make progress in aligning public financial management with European standards, limited integration persists, which in turn constrains EU accession progress and impacts investor confidence (Public Administration in the Western Balkans 2024, 2025)

These structural gaps inhibit access to capital, impede long-term planning, and reduce the overall competitiveness of the tourism sector. While regional comparison show that institutional maturity and transparent financial systems correlate with stable tourism growth, empirical research linking these factors in Albania remains sparse. Addressing this gap is essential for both academic understanding and policy advancement.

Central Research Question and Hypothesis

How do financial transparency and standardized reporting practices influence the development, competitiveness, and sustainability of Albania's tourism sector within a regional comparative framework?

- ✓ How does financial transparency affect the economic performance and investment attractiveness of tourism enterprises?
- ✓ How do governance quality and reporting standards in Albania compare with regional peers such as Montenegro?

H1: Higher levels of financial transparency are associated with stronger economic performance and improved investment outcomes in the tourism sector.

H2: The adoption of standardized financial and sustainability reporting practices (ESG, GRI, etc.) enhances competitiveness.

2. Literature Review

The academic literature offers a solid foundation for understanding how financial transparency, institutional governance, and standardized reporting frameworks influence tourism-sector performance. Four key domains emerge from the literature: transparency, standardization, informality, and institutional quality.

Financial transparency is widely recognized as a critical determinant of economic performance in sectors with high information asymmetry and fragmented regulation. Transparency reduces uncertainty, improves risk assessment, and strengthens trust between firms, regulators, and investors (Healy & Palepu, 2001). Within tourism economies, transparent financial reporting enhances access to finance, strengthens enterprise resilience, and supports long-term growth (Dwyer & Kim, 2003; UNWTO, 2019). It is also

associated with improved fiscal compliance and more efficient public resource allocation in tourism-dependent destinations (Sharpley & Telfer, 2015). Empirical studies further show that transparency contributes to more accurate demand forecasting, better managerial efficiency, and higher-quality investment decisions.

The integration of standardized reporting systems, such as ESG and GRI frameworks, has become increasingly central in tourism governance. Standardization enhances data reliability and comparability, which are essential for investment appraisal and evidence-based planning (Eccles, Ioannou & Serafeim, 2014). ESG reporting is linked to stronger firm performance and stakeholder trust (Friede, Busch & Bassen, 2015). In the tourism context, sustainability-oriented reporting improves brand reputation, environmental compliance, and competitive differentiation, while ISO standards (e.g., ISO 14001) support operational efficiency and environmental management (Chan & Hawkins, 2012). Despite these benefits, Western Balkan tourism enterprises have been slow to adopt structured sustainability reporting, limiting their competitiveness.

Informality remains a persistent challenge in tourism-dominant economies, where cash-based transactions and seasonal employment reduce transparency (Williams & Horodnic, 2017). Informal practices undermine fiscal stability, distort competition, and restrict firms' ability to access credit or participate in formal investment networks. Governance literature consistently highlights that weak enforcement capacity, fragmented regulatory frameworks, and inadequate auditing mechanisms hinder tourism performance and sustainability (North, 1990; Acemoglu & Robinson, 2012). In transition economies, institutional credibility is a key determinant of both domestic and foreign investment (Meyer & Peng, 2005). Comparative studies in the Western Balkans show that countries with stronger governance structures, such as Montenegro, exhibit more stable tourism growth and higher investor confidence (OECD/SIGMA, 2022; Kovačević & Radović, 2019).

Within the EU accession framework, transparency, public financial management, and audit independence are essential pillars of economic alignment (European Commission, 2020; SIGMA/OECD, 2022). Transparency is understood as a governance benchmark and a prerequisite for sustainable convergence (Grabbe, 2006).

Research on Europeanization demonstrates that adopting EU-aligned financial standards improves governance quality, institutional credibility, and investment attractiveness in candidate countries. For tourism-dependent economies, alignment with EU standards is closely associated with enhanced competitiveness and sector resilience.

Despite extensive international research, few empirical studies examine how financial transparency, standardized reporting, and institutional governance jointly shape tourism performance in Albania, especially through a regional comparative lens. Although recent reports highlight that Montenegro's financial sector has advanced in implementing ESG standards, particularly toward sustainable finance, there remains a lack of comprehensive academic studies integrating transparency measures, reporting frameworks (such as ESG, GRI, ISO), institutional quality indicators, and a direct, comparative analysis with the case of Montenegro. This gap underscores the originality and necessity of the present research.

3. Methodology

This study adopts a mixed-methods design to analyse how financial transparency and standardized reporting influence tourism-sector performance in Albania, with Montenegro included as a comparative case. Combining quantitative and qualitative evidence allows the research to capture both measurable financial patterns and the institutional behaviours

or governance dynamics that shape transparency in practice.

Research Approach

A mixed-methods strategy is applied to incorporate two complementary dimensions:

- ✓ Quantifiable patterns, such as financial indicators, reporting behaviours, and institutional indices; and
- ✓ Qualitative insights, including governance practices, transparency gaps, and stakeholder perceptions.

Data collection

Data collection combines both qualitative and quantitative sources to obtain a comprehensive understanding of transparency practices, reporting behaviour, and institutional performance in Albania's tourism sector. The process consists of gathering evidence directly from enterprises and institutions, complemented by official statistical and governance datasets. This dual approach ensures that the study captures real experiences from sector actors while grounding the analysis in measurable, comparable indicators that support regional comparison with Montenegro.

Primary Data

- ✓ **Semi-structured interviews** with institutional stakeholders such as tourism authorities, finance ministries, audit institutions, and selected tourism operators. These interviews provide in-depth insights into transparency practices, challenges in financial reporting, and perceptions of regulatory and enforcement capacity.
- ✓ **Structured questionnaires** to financial managers of tourism enterprises to obtain quantifiable information on disclosure practices, use of digital reporting tools, adoption of ESG/GRI frameworks, levels of transparency, and access to finance. This ensures consistency and comparability across respondents.
- ✓ **Case studies** of a small set of tourism enterprises applying sustainability or ESG reporting will be examined to understand how transparency affects operational decisions, managerial planning, and long-term strategy.

Secondary Data

- ✓ **NWTO, Eurostat, and INSTAT statistics** provide official data on tourism performance, financial indicators, and macroeconomic trends essential for quantitative analysis.
- ✓ **OECD/SIGMA governance** indicators offer benchmarks on institutional quality, regulatory effectiveness, and public financial management standards across Western Balkan economies.
- ✓ **EU Progress Reports and PFM assessments** supply evaluations of Albania's transparency, audit independence, and alignment with EU standards, supporting institutional comparison with Montenegro.
- ✓ **Financial statements and sustainability disclosures** reports from tourism enterprises, including ESG, GRI, and ISO-based disclosures, give direct evidence of transparency practices at the enterprise level.

Key Variables and Indicators

To operationalize the study's research questions, three groups of variables are examined. These variables allow both quantitative measurement and qualitative interpretation of transparency and governance dynamics in the tourism sector.

Transparency Indicators

- ✓ Financial statement disclosure
- ✓ Tax compliance behaviour
- ✓ Use of digital reporting systems
- ✓ Adoption of ESG, GRI, or ISO-based sustainability reporting

Performance Indicators

- ✓ Revenue trends, profitability, and occupancy rates
- ✓ Access to finance and investment flows
- ✓ Stability of demand when adjusted for seasonality

Institutional Quality Indicators

- ✓ Governance effectiveness and regulatory quality
- ✓ Independence and capacity of audit institutions
- ✓ Predictability and coherence of the regulatory environment

These indicators collectively capture the multidimensional nature of transparency and allow comparison between Albania and Montenegro.

Ethical Considerations and Limitations

Where data availability permits, exploratory regression models will be applied to estimate the direction and strength of potential relationships between transparency practices and performance indicators. Qualitative material from interviews will undergo thematic analysis to identify recurring institutional constraints, behavioural tendencies, and perceptions of regulatory capacity. Finally, results from both components will be integrated through triangulation, ensuring that statistical patterns are interpreted in conjunction with stakeholder insights and institutional context.

Several limitations are anticipated. Access to private financial statements may be restricted, reducing the availability of detailed quantitative data. The adoption of ESG, GRI, or ISO reporting frameworks in Albania is still limited, which may constrain comparative analysis across firms. Differences in data quality between Albania and Montenegro, especially in governance indicators, could affect comparability. Some institutional stakeholders may also be skeptical to discuss transparency challenges openly, limiting qualitative detail. Despite these constraints, the mixed-methods design helps reduce their impact by allowing cross-verification of results from multiple data sources and methods.

4. Findings and Analysis

The study is expected to show a clear relationship between financial transparency, standardized reporting, and tourism-sector performance in Albania, consistent with broader regional patterns in the Western Balkans. Montenegro is expected to continue showing stronger institutional consistency, particularly in audit independence, fiscal transparency, and regulatory coherence, while Albania's progress remains more uneven due to higher informality and lower adoption of international reporting standards.

However, the goal of this study is not to focus exclusively on Montenegro, but to position Albania within a regional transparency landscape, identifying what distinguishes Albania's tourism sector and what conditions are necessary for convergence with regional best performers.

Anticipated Patterns (Regional and Albania-Focused)

Transparency and Performance

Enterprises across the Western Balkans with higher disclosure, digital reporting, and compliance practices tend to perform more predictably and attract higher-quality investment. Albania is expected to follow the same pattern: firms with stronger transparency will likely show better revenue stability, more efficient financial management, and improved market credibility.

Standardized Reporting and Competitiveness

In the region, countries and enterprises adopting ESG/GRI/ISO standards typically experience clearer strategic planning and enhanced investor trust. Albanian tourism companies applying such frameworks are expected to resemble these regional trends, positioning themselves more competitively in both regional and EU markets.

Institutional Quality and Sector Stability

Western Balkan states with stronger public financial management and audit systems, such as Montenegro and, in some dimensions, North Macedonia, tend to enjoy more predictable sectoral outcomes. Albania's institutional performance is expected to be more variable, influencing transparency adoption at the enterprise level. These contrasts will help identify institutional reforms needed for Albania's tourism sector to reach regional benchmarks.

Governance Constraints

Qualitative findings across the region show similar challenges: limited enforcement, inconsistent regulatory guidance, and low incentives for formalization. Albania is expected to reflect these constraints, reinforcing the need for institutional strengthening, clearer reporting requirements, and better alignment with EU standards.

Broader Expected Outcome for the Dissertation

By completing the dissertation titled "Financial Transparency and Performance in the Tourism Economy: A Regional Comparison with a Focus on Albania," the final research is expected to show that:

Transparency and reporting standards are structural determinants of tourism competitiveness, not administrative add-ons.

Albania's tourism sector can significantly improve performance through stronger financial disclosure, wider ESG/GRI adoption, and more consistent oversight.

Regional comparison clarifies the reform areas where Albania is closest to convergence and where institutional gaps remain most significant.

A transparency-driven development model supports long-term sustainability, investment attractiveness, and EU alignment.

In summary, the expected results should show that Albania's tourism economy can gain substantially by improving financial transparency and aligning reporting practices with regional and EU standards, ultimately contributing to a more credible, competitive, and resilient sector.

The emerging patterns from this study are expected to reinforce the central premise that financial transparency and standardized reporting play a decisive role in shaping the competitiveness and long-term sustainability of tourism economies. The findings will likely demonstrate that transparency is not simply a compliance requirement, but a structural driver that influences investment behaviour, operational stability, and institutional credibility. When evaluated within the broader Western Balkan context, the results are expected to show that Albania's performance reflects both regional challenges and country-specific governance constraints.

One key theme that will likely emerge is the uneven adoption of transparency practices

across tourism enterprises. In line with regional research, the data may show that enterprises with higher disclosure, digital reporting habits, and standardized frameworks (ESG, GRI, ISO) exhibit stronger performance outcomes. This suggests that transparency is a meaningful predictor of competitiveness and should be treated as an economic variable rather than an administrative obligation.

For Albania, these patterns carry particular relevance, as the tourism sector grows rapidly but still operates in an environment marked by informality and variable regulatory enforcement.

The comparative dimension is expected to highlight Montenegro's relative governance consistency, especially in areas such as audit independence, fiscal transparency, and reporting coherence. While Montenegro cannot serve as the sole reference point, its more mature oversight systems can help contextualize Albania's trajectory and identify institutional reforms necessary for convergence. Similar trends may also appear when looking at other regional peers: for example, V4 countries and parts of the Western Balkans have shown that improved institutional quality consistently correlates with more resilient tourism development.

At the same time, the findings are likely to underscore the institutional and behavioural constraints that limit transparency adoption in Albania. These may include limited enforcement capacity, lack of standardized reporting guidance, inconsistent regulatory interpretation, and insufficient incentives for enterprises to formalize fully. These constraints align with broader governance challenges already documented in Albania's public financial management, procurement, and audit systems.

Key Interpretive Insights Likely to Emerge

Transparency tends to contribute directly performance by reducing uncertainty, improving risk assessment, and strengthening investor confidence.

Standardized reporting frameworks act as catalysts for strategic planning, sustainability alignment, and market differentiation.

Institutional quality shapes how effectively transparency can take root; governance gaps weaken both compliance and competitiveness.

Albania's tourism sector has strong potential, but institutional improvements will be essential for aligning with regional and EU benchmarks.

Overall, the discussion will emphasise that strengthening financial transparency is not only a technical necessity but a strategic pathway for Albania to enhance tourism-sector performance, attract sustainable investment, and progress toward EU alignment. When the dissertation is completed under the title "Financial Transparency and Performance in the Tourism Economy: A Regional Comparison with a Focus on Albania," the discussion is expected to demonstrate that Albania stands to gain significantly by adopting clearer reporting standards, reducing informality, and improving institutional governance, ultimately positioning itself as a more credible and competitive tourism market within the region.

5. Conclusions

This research positions financial transparency as a structural condition, not a secondary administrative detail, for the performance and long-term sustainability of tourism economies. By examining Albania within a wider regional landscape, the study argues that transparency, reporting standards, and institutional governance directly shape competitiveness, investor confidence, and resilience, especially in sectors like tourism

where growth is rapid but underlying systems remain fragile.

The expected findings indicate that Albania's tourism sector has reached a turning point. The country is experiencing rapid expansion, yet this growth risks becoming unstable without stronger financial disclosure, greater adoption of ESG/GRI/ISO reporting, and more predictable regulatory enforcement. Regional comparison, including Montenegro, shows that countries with clearer reporting systems, more independent auditing structures, and consistent governance practices achieve not only economic gains but also credibility, sustainability, and alignment with European expectations.

It becomes clear that transparency is a transformative force: it reduces uncertainty, strengthens risk management, encourages investment, and supports responsible development. For Albania, improving transparency is not just a technical reform; it is a strategic national priority that determines whether the tourism sector can move from rapid expansion to high-quality, sustainable, EU-ready growth.

The dissertation "Financial Transparency and Performance in the Tourism Economy: A Regional Comparison with a Focus on Albania" is expected to offer a meaningful scholarly and policy contribution. It provides a framework for understanding how transparency can be implanted into tourism governance and how Albania can position itself competitively with the Western Balkans and the European market. More importantly, it identifies the specific institutional reforms, in reporting, auditing, and regulatory coherence, that can unlock long-term sector stability and economic credibility.

Ultimately, this research aims to support Albania's strategic pathway toward a modern, transparent, and internationally trusted tourism economy, demonstrating that improving reporting standards and institutional quality is essential not only for competitiveness, but for the country's broader objectives in sustainable development and EU accession. This is the central value the dissertation brings: a clear, evidence-based roadmap for how transparency can drive structural transformation in one of Albania's most important and promising sectors.

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ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE SELECTION: BALANCING EFFICIENCY AND FAIRNESS IN PUBLIC AND PRIVATE INSTITUTIONS

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Abstract

Artificial Intelligence (AI) is increasingly influencing decision-making processes in employment, reshaping how institutions identify, evaluate, and recruit human resources. In the context of the emerging “smart economy,” where efficiency and innovation are essential values, the introduction of AI-based recruitment systems raises fundamental questions regarding fairness, transparency, and human dignity. This paper examines how AI affects the balance between merit and efficiency in the selection of human resources, comparing practices and ethical standards in public and private institutions.

In Albania, where public administration remains governed by principles of meritocracy and legal equality, and private enterprises prioritize productivity and flexibility, the integration of AI tools in recruitment introduces new opportunities and risks. While the private sector has begun experimenting with algorithmic screening and digital recruitment platforms, the public sector still relies mainly on traditional, human-centered evaluation. This contrast offers an opportunity to explore whether technology can harmonize these two approaches without compromising ethical and social standards. The study follows a qualitative and analytical methodology, combining document analysis of labor laws, EU regulations on AI and data protection, and comparative literature on digital human resource management. Conceptual interpretation is complemented by case reviews of AI-assisted recruitment tools in Europe and their potential adaptation to the Albanian context. Preliminary findings indicate that AI can improve transparency, speed, and objectivity in recruitment but also introduces risks of algorithmic bias, data discrimination, and reduced accountability. The paper argues that a smart economy requires not only digital efficiency but also ethical awareness, emphasizing that human resource selection must remain guided by justice, empathy, and responsibility. It concludes that the future of both public and private recruitment depends on developing a “humanized AI” model that balances innovation with the protection of human values.

Keywords: *Artificial Intelligence, Human Resources, Smart Economy, Public Administration, Ethics, Transparency.*

1. Introduction

Artificial intelligence has been embedded in recruitment and selection processes for years, reimagining the way organizations identify, assess, and select their employees. Organizations with large-scale recruitment needs are now using automated CV screening

systems and predictive analytics to speed up and streamline decision-making (Chamorro-Premuzic et al., 2016; Woods et al., 2020). Such mechanisms are now being promoted as tools that increase objectivity and reduce the impact of human error or subjectivity in the recruitment process (Black & van Esch, 2021). However, recent research suggests that algorithm-based decision-making is proving to be far from neutral. Studies show that rather than eliminating bias, AI systems can replicate historical data and in some cases even reinforce existing inequalities (Raghavan et al., 2020; Mehrabi et al., 2021). Since such systems are characterized by limited transparency, it can complicate understanding of how decisions are made, and the accountability and trust in personnel recruitment processes are a concern (Burrell, 2016; Pasquale, 2015).

Despite the exploration of the use of AI in recruitment in technologically advanced countries, such attention is lacking in countries with economies still in transition. In such countries, it can be said that organizational frameworks, regulatory capacity, and organizational practices remain underdeveloped, which affect both the implementation and the perceived legitimacy of algorithmic systems (Vrontis et al., 2022). Such processes make the integration of AI very difficult, considering the complexity of the tensions between efficiency, fairness, and meritocracy-based personnel selection. In this context, our study proposes a conceptual framework for humanized personnel recruitment by AI. This framework is based on the theory of organizational justice (Colquitt, 2001) and on scientific research on algorithmic governance (Leicht-Deobald et al., 2019; Kellogg et al., 2020) in order to examine how AI can be integrated into recruitment systems while maintaining the principles of fairness, accountability, and human respect.

In this study, special attention is paid to the Albanian context where the interaction between emerging technologies and institutional conditions remains unexplored. Scientific research in recent years has investigated AI mainly as a technical tool and has paid very little attention to the social and organizational processes through which the effects of AI are shaped.

In this study, we posed the following research questions:

- RQ1: How does AI adoption affect perceptions of fairness in recruitment processes?
- RQ2: What role do algorithmic characteristics (e.g., transparency, bias, accountability) play in shaping organizational fairness?
- RQ3: How does institutional context (public vs. private sector) moderate the relationship between AI use and recruitment outcomes?

These research questions were addressed within the conceptual framework of the study that describes the relationships between AI adoption, perceived fairness, and organizational context. This study aims to provide a theoretically grounded framework that can inform future research and guide the responsible use of artificial intelligence in recruitment.

2. Theoretical Background

Artificial intelligence is now increasingly used in recruitment and selection processes, especially when organizations are dealing with a high number of applicants.

Algorithmic tools are now applied to screen candidates, assess profiles, and support predictions about job performance, replacing manual procedures with data-driven processes (Vrontis et al., 2022; Upadhyay & Khandelwal, 2018; Chamorro-Premuzic et al., 2016). However, these tools function based on how they are built and specifically according to the organizational environment in which they are applied (Kellogg et al., 2020; Strohmeier & Piazza, 2015).

Recent scientific research shows that such operating systems can carry biases from stored past data, which can lead to the persistence or reinforcement of existing inequalities rather than eliminating them (Bogen & Rieke, 2018; van Esch & Black, 2019). This raises questions about the common belief that automation leads to more objective, accurate decisions and in fact emphasizes the need to examine how these systems are integrated and managed in organizational practice. Issues related to organizational justice are of particular importance in the organizational context. From various findings, it has been concluded that machine learning models can reproduce or even strengthen changes related to social and demographic characteristics (Raghavan et al., 2020; Mehrabi et al., 2021).

In some cases, discriminatory results can be observed even in cases where we are dealing with systems designed with neutral purposes (Köchling & Wehner, 2020). Many AI tools perform in such a way that it is difficult to interpret them, making it difficult to understand how decisions are made and who is responsible for this decision-making (Burrell, 2016; Pasquale, 2015).

Another problem is related to the tendency to rely on algorithmic recommendations, especially in cases where the human element is limited (van Esch & Black, 2019). Despite the emphasis that the General Data Protection Regulation places on the necessity of transparency and human oversight, their implementation varies depending on the organizational environment (Leicht-Deobald et al., 2019).

In this context, the organizational justice offers a useful approach to assessing how recruitment processes are judged in organizational settings. Fairness assessments are structured by the clarity of procedures, the perceived fairness of the outcomes of such processes, and the quality of communication during this process (Colquitt, 2001; Ryan & Ployhart, 2014; Langer et al., 2019).

When we are dealing with a direct reduction in interaction, the relational aspect of justice can be weakened, which can affect trust and acceptance. For this reason, the impact of AI on processes such as recruitment is closely related to how fairness is experienced, and not just how efficient the process appears (Newman et al., 2020). Many existing studies tend to examine algorithm-based decision-making processes in a largely isolated manner, giving limited importance to their interplay with organizational justice and institutional conditions, particularly in transition economies. As a result, the existing literature presents a lack of an integrative perspective that accurately captures the interaction between technological, organizational, and contextual dimensions. This research gap provides the basis for the development of a framework for the humanized AI recruitment process that our study proposes.

The literature in our study is organized thematically in accordance with the proposed conceptual framework, precisely to address this limitation, distinguishing between AI adoption, bias and justice from algorithms, governance mechanisms, and organizational justice perspectives.

Table 1. Summary of Key Literature on AI in Recruitment and Justice

Author(s)	Focus	Key Contribution	Relevance to Study	Research Gap
AI Adoption in Recruitment (Input / Technology Layer)				
Strohmeier & Piazza (2015)	AI in HRM	Early conceptualization of AI in HR practices	Foundational understanding of AI adoption	Lacks empirical validation and does not address ethical or fairness implications
Vrontis et al. (2022)	AI in HRM	Explores strategic implications of AI adoption	Provides contextual relevance for AI integration	Limited attention to fairness perceptions and institutional moderation
Chamorro-Premuzic et al. (2016)	Digital recruitment	AI improves efficiency in talent identification	Supports AI adoption argument	Fails to account for how algorithmic processes shape perceptions of fairness
Black & van Esch (2021)	AI in hiring	AI enhances objectivity in recruitment	Frames efficiency vs fairness debate	Overlooks how algorithmic bias operates within organizational contexts
van Esch & Black (2019)	AI-enabled recruitment	Examines candidate interaction with AI systems	Supports understanding of AI-driven recruitment dynamics	Limited focus on bias and fairness implications in decision-making
Algorithmic Bias and Fairness (Core Mechanism)				

Raghavan et al. (2020)	Algorithmic bias	Demonstrates how AI can reproduce discrimination	Supports bias argument	Does not integrate findings with organizational justice frameworks
Mehrabi et al. (2021)	Bias in machine learning	Identifies multiple forms of algorithmic bias	Provides theoretical grounding	Primarily technical, lacking application to HR decision-making
Köchling & Wehner (2020)	AI discrimination in hiring	Shows evidence of unintended discrimination in AI hiring systems	Strengthens fairness and bias discussion	Does not examine candidate perceptions or fairness evaluation mechanisms
Bogen & Rieke (2018)	Algorithmic hiring systems	Identifies structural bias in automated recruitment tools	Supports critical perspective on fairness	Lacks integration with institutional and organizational contexts
Transparency, Ethics, and Governance (Regulatory Layer)				
Burrell (2016)	Algorithm transparency	Explains the “black-box” nature of AI systems	Supports transparency concerns	Does not address implications for recruitment decisions
Pasquale (2015)	Algorithm governance	Highlights opacity and accountability issues	Provides ethical foundation	Lacks direct application to HRM and recruitment
Leicht-Deobald et al. (2019)	Ethics of AI in HR	Emphasizes need for human oversight	Supports governance argument	Limited discussion on practical implementation across contexts

Floridi et al. (2018)	Ethical AI	Introduces human-centered AI framework	Supports human-in-the-loop concept	Remains general, without recruitment-specific application
Organizational Justice (Mediating Mechanism)				
Colquitt (2001)	Organizational justice	Defines procedural, distributive, and interactional justice	Core theoretical framework	Not applied to AI-driven recruitment contexts
Ryan & Ployhart (2014)	Selection systems	Shows fairness influences acceptance of hiring systems	Supports mediating role of fairness	Focuses on traditional selection, not AI-based systems
Langer et al. (2019)	Automated interviews	Shows reduction in interactional justice in AI processes	Highlights human dimension	Does not explore long-term trust or fairness perceptions
Newman et al. (2020)	AI fairness	Explores fairness vs bias dilemma	Supports discussion of fairness complexity	Limited analysis of institutional and contextual variation
Socio-Technical and Institutional Context (Moderating Factor)				
Kellogg et al. (2020)	Algorithmic management	Shows how algorithms reshape decision-making structures	Supports socio-technical perspective	Does not specifically address recruitment or fairness perceptions

The existing literature reveals a lack of an integrated approach to understanding AI in the recruitment process, as different dimensions of this process are treated in a fragmented manner. Many studies have paid attention to efficiency, bias or ethical issues, but very little attention has been paid to how these dimensions interact through mechanisms of organizational justice within organizational contexts. From what has been said above, it is

clear that there is a need for an integrative framework that connects algorithmic characteristics, perceptions of justice and contextual factors, which our study aims to address.

3. Conceptual Framework

The current study proposes a conceptual model of the humanized AI recruitment process (see Figure 1), which aims to explain how AI influences recruitment outcomes through social and organizational mechanisms. This model does not assume a direct relationship between AI adoption and hiring decisions but rather asserts that these effects operate through candidates' perceptions of fairness.

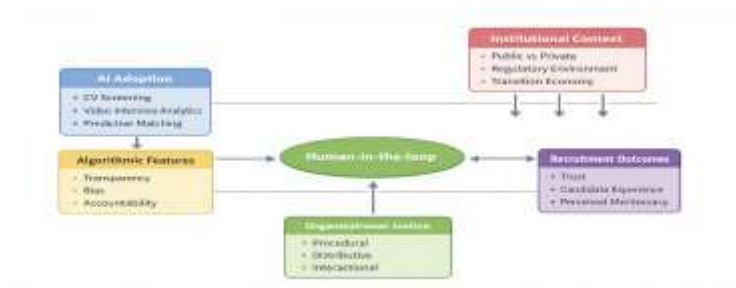


Figure 1. AI Humanized Recruitment Framework (Illustrating the Mediating Role of Algorithmic Characteristics and Organizational Justice, as Well as the Moderating Effect of Institutional Context)

Specifically, algorithmic characteristics such as transparency, bias, and accountability are expected to shape perceptions of procedural and distributive justice. Such perceptions influence trust in recruitment systems and acceptance of employment decisions, placing organizational justice as a central mediating mechanism in the model (Colquitt, 2001; Ryan & Ployhart, 2014). At the same time, this model includes organizational context as a moderating factor. The differences between public and private sector practices, as well as regulatory and socio-economic characteristics (Leicht-Deobald et al., 2019; Vrontis et al., 2022), can have a major impact on the implementation of AI systems as well as their perception, especially in transition economies such as Albania. In environments that are poorly regulated, the concerns related to bias or accountability may appear worrying. A key element of the framework is the use of humanized AI, which emphasizes the importance of human oversight in algorithmic decision-making. In line with previous scientific research (Floridi et al., 2018; Kellogg et al., 2020), AI is conceived as a tool that actually supports transparent, accountable and ethical recruitment processes and not as a replacement for human judgment.

Methodology

This study used a conceptually integrated approach to the literature, and aims to synthesize knowledge from multiple research fields in order to generate empirical findings. The analysis is based on reviewed work from the field of human resource management, organizational psychology, and relevant European regulatory frameworks. Our study implemented a structured and source-based selection of the literature to ensure coherence and conceptual relevance.

Research sources were selected based on their relevance to three core areas (i) AI in recruitment and selection, (ii) algorithmic bias and fairness, and (iii) organizational fairness in decision-making. Preference was given to studies published in high-impact journals, with a strong theoretical basis, that presented methodological rigor as well as relevance to the development of the debate on the use of AI in recruitment processes.

The literature search was conducted through the major academic databases Scopus and Web of Science. Keywords such as “AI-based recruitment”, “algorithmic fairness”, “organizational fairness” and “AI in human resource management” were used to identify relevant studies, and focused on publications from 2015 to 2024, as a key period in which AI applications in recruitment were developed.

Findings and Discussions

Our study findings suggest that the relationship between the adoption of AI in recruitment processes and recruitment outcomes does not appear to be straightforward. Its impact appears to operate through the way candidates interpret the fairness of the recruitment process they have participated in. Despite the positive aspects that the use of AI in recruitment brings, such as increased efficiency or sustainability, the fact that the process can be seen as biased or opaque diminishes the value of this process. Such an interpretation is consistent with the conceptual model we have proposed, which emphasizes that organizational fairness constitutes a key mechanism through which AI affects recruitment outcomes.

AI is often perceived as an objective tool that improves the quality of decision-making. However, various sources of literature suggest that this assumption is not always justified. Instead of removing bias in recruitment, algorithm-based systems can reproduce it in less desirable ways.

This research is in line with previous research highlighting the unintended consequences of algorithm-based decision-making in recruitment processes in organizational settings. Studies such as Bogen and Rieke (2018) and Köchling and Wehner (2020) show that AI systems can reproduce existing inequalities despite appearing objective. At the same time, van Esch and Black (2019) highlight the risk of automation bias, where decision-makers can overly trust algorithmic results while undermining critical human judgment.

From this perspective, the fairness in recruitment processes depends less on technology and more on how its results are interpreted, communicated and regulated within organizational environments. Such a perspective questions the idea that technological progress is sufficient to ensure merit-based employment.

The increasing reliance on algorithm-based recruitment systems also raises many questions about accountability. As decisions are increasingly mediated by AI, the boundaries of responsibility become less clear, giving rise to new forms of organizational risk. In the absence of regulatory government acts, this can not only affect perceptions of fairness but also reduce trust in recruitment processes.

Such observations are consistent with previous research that highlights that perceptions of fairness play a very important role in shaping attitudes towards selection systems (Colquitt, 2001; Ryan & Ployhart, 2014). In the context of algorithmic recruitment processes, transparency and accountability remain particularly important for maintaining this trust (Leicht-Deobald et al., 2019). The institutional context constitutes an important and complex component, especially in transition economies. In environments where regulatory enforcement is less developed and organizational resources remain limited, the risks associated with adopting AI may be more present (Vrontis et al., 2022). At the same

time, contexts offer space to design ethical decision-making approaches from the outset. Within this context, the algorithmic recruitment component reflects the need to balance technological capabilities with human judgment. AI is seen as a support tool for decision-making with human oversight, rather than a replacement for human decision-making. This approach is in line with the broader discussions on such systems, which emphasize preserving human accountability in algorithmic processes (Floridi et al., 2018; Kellogg et al., 2020). Our study contributes to the literature in several ways. First, it brings organizational justice to the discussion of algorithmic decision-making, emphasizing the continuing importance of perceptions of fairness in algorithmic recruitment processes. Second, it introduces the idea of humanized AI recruitment as a method for defining the intersection between technology and human oversight. In addition, it draws attention to the role of the institutional context, especially in transition economies, where such dynamics are still in their early stages.

Overall, this study challenges the assumption that technological objectivity automatically produces fairer outcomes. Instead, it demonstrates the importance of context and interpretation in shaping how fairness is experienced. Without careful oversight, there is a risk that algorithmic systems may reinforce existing biases, which may lead to problems in detecting or addressing these biases.

Conclusions

This study examined the role of artificial intelligence in recruitment processes by placing emphasis on two components such as efficiency and fairness in the organizational system. The impact of AI remains very important in recruitment processes from the way recruitment processes are perceived by candidates as well as how such technology can be integrated into organizational contexts. Such a concept of recruitment through AI has been introduced to strike a balance between the power of individual judgment and the ability of technology. Rather than replacing human decision-making, AI is conceived as a supporting tool that needs to be monitored, ensuring transparency and accountability especially in transition economies where regulatory frameworks remain uneven.

Our findings suggest a more sensitive approach to such AI recruitment systems that involve full automation. In fact, the integration of such algorithmic tools with meaningful human involvement seems essential to maintain trust and fairness over time.

The findings of our study contribute to the ongoing debates on the responsible use of AI by highlighting the need to use the technological innovation brought by the new development trend with ethical and organizational prerequisites. However, in this study, several limitations are acknowledged. First, the proposed framework of this study is not empirically tested and the integrative nature of the review of scientific literature sources may not capture all relevant contributions. Second, the focus on a context with a transition economy like Albania limits the generalizability of the findings.

Future studies could examine the proposed relationships empirically with quantitative approaches or literature reviews with systemic models. Other contributions could consider comparative and cross-country studies that explore how institutional context shapes the implementation and perception of AI use in recruitment processes.

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FROM DATA TO EXPERIENCE: AI-BASED PERSONALIZATION MODELS FOR SMART TOURISM ECOSYSTEMS

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Abstract

In the global hospitality scene, modern tourists face a myriad of challenges that need to be addressed from the need to personalize tourist experiences from start to finish and the need for dynamic interactions that adjust according to each traveller preferences. Artificial Intelligence (AI) and geospatial data are changing the tourist destination's process of information, engagement and recommendations. We propose the conceptual framework, based on Artificial Intelligence (AI)-based recommendation models and on GIS analysis to support an intelligent tourism ecosystem that can reactively respond to the characteristics of different types of visitors in real time. This framework is further illustrated through a case study conducted in the city of Shkodra, where we present a mini dataset with points of interest, geographic maps, what constitutes a tourist persona (for instance the “Cultural Traveler”), and a tailor-made itinerary.

Our findings indicate that combining geographic information with AI can result in recommendations that are more relevant, accurate and context-specific, depending on preference, weather conditions and limited time. In this hands-on demonstration, a tailored itinerary containing museums, monuments, historical locations and traditional food was created for cultural tourists in adversity (in cases of adverse weather conditions). The framework shown here can be expanded through the region and applied in all destinations within the Western Balkans to help promote smart, sustainable, experience-based tourism and related innovations.

Keywords: *Artificial Intelligence, Tourism Personalization, GIS, Recommendation Systems, Smart Tourism, Shkodra.*

1. Introduction

Tourism has been expanding in recent decades, opening new avenues for information and travel. Though so many options are found, it becomes easier to forget the things that are interesting; tourists have to select their activities, attractions, and itineraries that best cater to them.

Experiences that are personalized are now a must in an increasingly competitive market, where they exert a direct impact on visitor satisfaction, participation, and loyalty to a place.

The old approach to knowing about tourism, from brochures and fixed lists of things to see and do, to generic recommendations, isn't good enough for contemporary travelers. These techniques do not factor in individual choices, timing, and the ever-changing experience of travel. This phenomenon results in new technologies that create a massive opportunity to help reshape experience design and delivery as we know it in the tourism industry.

Artificial Intelligence (AI) is rapidly gaining ground as a tool to develop intelligent and individualized experiences. It has the ability to analyze behavior patterns, interests, movement data, and other influencing factors in tourism decision-making. At this stage, Geographic Information Systems (GIS) function as a framework to comprehend the geographical context, such as what a tourist is currently located in, distance to attractions, accessibility, and movement within a destination. Combined they offer recommendations that are personalized, not limited to that point, timely, and accurately location aware. Studies have separately explored the application of AI and GIS in tourism, but there are still few studies providing a comprehensive and integrated framework in the field that incorporates both technologies into a single system. This gap reduces destinations' capabilities to offer truly intelligent and personalized experiences to travelers.

The purpose of this theoretical research article is to fill this void by proposing a novel theoretical paradigm that melds AI and geospatial analysis, creating smart tourism systems. The conceptual framework shows how data, analytics, and spatial context can be combined to create dedicated visitor experiences, which in turn will provide significant value for destinations and also help to inform tourism policy.

2.Literature Review

The literature review aims to summarize key theoretical and practical advancements in Artificial Intelligence (AI), Geographic Information Systems (GIS), and personalization models in tourism research. This chapter is organized around four specific thematic areas: AI for tourism, GIS in tourism, personalization models, and the research gap that justifies the need for a unified AI-GIS platform.

2.1 Artificial Intelligence in Tourism

In the tourism industry, the role of artificial intelligence (AI) has developed rapidly over the last years, emerging as one of the crucial components of the digital revolution in tourism and destination management. AI has many uses such as chatbots, recommendation systems, tourist behavior analytics, and service automation (Gretzel & Murphy, 2019).

Chatbots help tourists get personalized and timely information so that they can book services and receive the type of personalized recommendations (Fadhil, 2020). Of the numerous tourism AI applications, recommendation systems prove the most important as they explore user preferences and behaviors and propose personalized attractions, travel activities, and itineraries (Ricci et al., 2015).

Machine Learning and Deep Learning methods have also been popular in tourism data analysis. Tourist segmentation algorithms classify tourists by interests, and neural networks are also used for predicting tourist behavior and evaluating visitor experiences (Li et al., 2018). Other potential AI applications encompass sentiment analysis for online reviews, destination capacity management, and real-time optimization of resources (Khan et al., 2021). There is already evidence to suggest that AI can contribute to the improvement of tourist experiences and can provide a means to tailor tourism to individuals in the future.

2.2 GIS in Tourism

In tourism research and destination management, Geographic Information Systems (GIS) are vital, handling and analyzing spatial information for mapping, visualization of points of interest, and optimization of travel routes for visitors. GIS has commonly been used to map tourism resources, prepare well-organized itineraries, and analyze spatial characteristics of tourists' behavior (Boers & Cottrell, 2007). A significant advantage is the ability to analyze distances, travel time, and accessibility in such a way that planners can

design schedules based on visitor preferences, weather changes, and mobility patterns (Shoval & Isaacson, 2007).

In addition to routing, GIS is utilized to interpret tourist movement analysis and location-based behavioral mapping of destinations as well. Researchers can use GPS tracking, mobile application data, and location-based records to locate highly visited locations, major movement flows, and hotspots of interest (Xiao et al., 2018). Location-Based Services (LBS) also augment context-based recommendations, such as recommending nearby attractions and modifying itineraries on the basis of environmental conditions (Nunes & Sousa, 2019). The combination of GIS with mobile technologies and AI offers great potential for intelligent and dynamic tourism experiences.

2.3 Personalization Models in Tourism.

In tourism services, personalization is being recognized as one of the essential concepts, while empirical studies have clearly shown that personalized recommendations not only significantly enhance user satisfaction but also increase visitor engagement (Neuhofer et al., 2015). The wider literature has identified three predominant personalization models: (1) Content-Based Models, (2) Collaborative Filtering Models, and (3) Hybrid models that integrate the two methods (Adomavicius & Tuzhilin, 2005).

Content-based models have learnt about current user interest and recommend suitable attractions, while collaborative filtering studies the behavior of tourists of corresponding interest. Hybrid data methods tend to be much more accurate, enabling to address most phenomena such as cold start and data gaps.

Personalization models in the tourism industry use different types of data, including behavior (e.g., clicks, visited points), declarative data (e.g., surveys and profiles), geographical/contextual data, and temporal data (e.g., travel season and duration of stay). Although these models provide promising outcomes, significant limitations persist, including limited data availability, combination of heterogeneous data sources, and real-time response to decisions (Zanker et al., 2019).

2.4 Research Gaps and need for Integration.

Previous studies with AI and GIS in tourism focused on an individual technology and there is a distinction between the two studies. However, spatial context is often ignored in different studies based on AI and on the other hand, GIS studies do not always leverage the personalization potential presented in AI (Gretzel et al., 2020). Lack of integration leads to challenges in the development of recommendation systems targeted to individual tourist interests along with specific situational factors like distance, mobility, and surrounding environmental conditions.

Furthermore, most existing models do not operate in real time and do not adjust to dynamic conditions like weather, tourist flows, or user pace. The fact that this can be seen indicates a way to develop a new framework combining AI with GIS and mobile-based services to facilitate flexible, smart, user-tailored tourism ecosystems.

This study seeks to fill this gap by defining a new framework based on tourist preference analysis, spatial data, and AI-driven decision-making for the formation of personalized and dynamic suggestions for tourism.

3. Proposed System Architecture.

Four layers that are integrated into a centralized system architecture; as a detailed framework, the Data Layer, the Artificial Intelligence Layer, the GIS Layer, and the Personalized Output Layer, create a very advanced level of personalization in the tourism experience. These components ensure that information from all sources is fed as intelligent

and personal recommendations for every user.

The data comes from several sources such as geospatial data for points of interest and road networks; mobile application data for tourist behaviors and preferences; environmental variables and social network and booking system data. Collectively, this data is used to gain a comprehensive view of the user profiles and tourism requirements. After data collection to be cleaned, it is integrated into unified user profiles for consistency and reliability. AI processes this data and then runs machine learning based models on it, NLP based models, tourist segmentation, etc., extracting recommendations according to users preferences & behaviour.

The integration with GIS enhances the spatial intelligence of system with recommendation logic linked to: physical location, current location of tourist, accessibility conditions and distances from attractions. This enables the system to deliver on-the-spot, actionable suggestions that are also contextualized for location and time at any given time and align with user preferences.

The last layer in the output transforms analytics into personalised results in a tangible manner: smart travel plans, real-time alerts, place-related advice etc. It also supports the decision-making process at each stage of traveling, thus simplifying travel experience and making it more enjoyable.

3.1. Data layer

Data layer, which is the functional and architectural backbone of the system, is the most relevant layer (the most critical to analytical and personalization as they are dependent on it). It layers together three main types of information, that when combined enable complete representation of destination and tourist experience.

Its first category is structured data, which is organized in easily interpretable format. They consist of hotels, attractions, restaurants, geographic maps, transportation routes, and distances, and formats such as Shapefiles or GeoJSON for GIS. This data is usually classified by type of attraction, culture, nature, gastronomy or sports, so that academics can conduct more targeted and efficient analyses.

The second category is free form data without rigid formatting like TripAdvisor reviews, Google Reviews articles and video or social media posts. These sources have subjective and emotion-driven insights on guest experiences and are very useful when it comes to personalization. Data in order to extract central themes, sentiment scores, and behavioral insight from this content is through Natural Language Processing (NLP).

The third type is real-time data which allows for interactivity and adjusts to new conditions. For example, examples are weather conditions as per live APIs, density of tourists in a specific locality, time of day, and road traffic. The inputs are then used to create adaptive recommendations that flexibly adapt as events unfold in the physical landscape.

3.2. AI Layer

The Artificial Intelligence module serves as the core engine of the system, providing each individual user with personalized recommendations. Several AI methods are implemented to analyze tourist preferences and behaviors. Recommendation systems are applied, often through: Content-based filtering, which suggests similar types of products to those previously selected by the user Collaborative filtering, finding common interests among similar users Hybrid methods, i.e., a blend of the two methods for a more accurate and robust approach

It is also crucial for tourist segmentation through clustering methods like k-means, enabling people to be grouped by their preferred type (e.g., cultural travelers, nature

lovers, food enthusiasts, family tourists) to give targeted and meaningful recommendations. NLP is employed in unstructured content (e.g., online reviews, ratings) to capture real user preferences, to highlight both positive and negative experiences, and to recognize which attractions are high performing with respect to emotional engagement. Lastly, real-time adaptive models like decision trees or reinforcement learning continuously update recommendation results considering real-time behaviors and context, such as changes in weather, mobility patterns, and user activity. This allows recommendations to align with both user profiles and on-site dynamics.

3.3. GIS Layer

GIS is a necessary instrument for providing travel recommendations with spatial awareness, user locations analysis and tourist sources data, and spatial information interpretation. With spatial analysis, distances can be calculated for areas of interest, buffer areas for neighboring recommendations can be produced, and sites that are reachable within certain travel times can be identified. This allows tourists to move quicker and in more practical terms when deciding what to do next.

The GIS also enables route optimization as the shortest and most accessible routes for a route, allowing to provide the best and least traffic routes for certain modes of transportation (walking, cycling or scooters) and is also able to maximize user and save time, energy and cost while exploring.

Through location analysis, the attraction ratings are made possible for each site's location by assessing both distance to the user and its significance to cultures, its cultural importance, visitor experiences, reviews from people who travel and the region, and the state of the environment. PostGIS, QGIS and ArcGIS are used for spatial database operations, advanced analytics and visualization. Leaflet.js supports the development of lightweight interactive maps for mobile.

GIS therefore provides interactive visualization capabilities of user location and nearby areas, as well as instant recommendations that make the system highly interactive, user-centered, and context-sensitive.

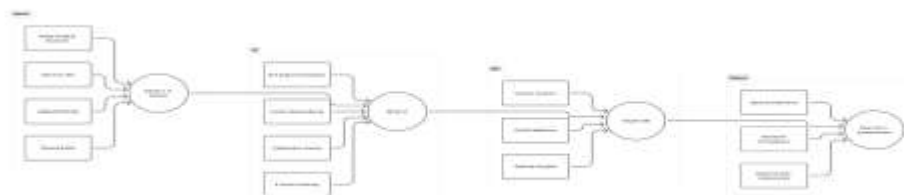
3.4. Personalized Output Layer

The personalized output layer is the final level of the system, where recommendations and travel experiences are tailored to reflect the individual user's interests, location, and continuously changing travel context.

This layer ensures that the generated output is understandable, useful, and valuable for tourists throughout their interaction with the application. A core feature of this layer is the creation of personalized itineraries, including visit durations, walking distances, attraction ordering, and optimized schedules, ensuring a seamless and time-efficient travel flow.

Additionally, personalized content is delivered directly to the user through the mobile app, including attraction insights, recommendations aligned with the tourist's profile, and navigation instructions to facilitate movement across the city.

Figure 3.1 Framework diagram



4. Conceptual Case Study: Shkodra, Albania

This section demonstrates the practical implementation of the proposed framework in a real tourism destination, the city of Shkodra, one of the most significant cultural and historical centers in Albania. Shkodra offers a unique blend of cultural heritage, natural resources, and urban attractions, making it an ideal environment for testing real-time personalized travel experiences.

4.1. Data Used in the Conceptual Case Study

The conceptual example was constructed by applying both structured and unstructured data for the main tourist points of interest in Shkodra.

The points included in the dataset are:

- Rozafa Castle
- “Marubi” National Museum of Photography
- Shkodra Historical Museum
- Lake Shkodra – natural area
- “Kole Idromeno” Pedestrian Street
- Lead Mosque (Xhamia e Plumbit)
- Buna River recreational zone

The dataset has geographic coordinates, tourism category (cultural, natural, urban), tags, indoor/outdoor classification, and social positioning for each attraction.

While this dataset is a demonstrative sample, it can be used to extend the system in a broader manner to capture all the attraction points in the city.

Table 4.1 Dataset

#	ID	Name	Category	#	Latitude	#	Longitude	Tags	Indoor/Outdoor	Family friendly
3		Marubi National Museum	Museum	42.0674	19.5122			photography, art	Indoor	Yes
3		Historical Museum	Culture	42.068	19.512			history, exhibitions	Indoor	Yes
4		Shkodra Lake Park	Nature	42.0795	19.465			lake, views, nature	Outdoor	Yes
5		Buna Riverfront	Nature	42.082	19.491			walking, views	Outdoor	Yes
6		Kole Idromeno Street	Lifestyle	42.067	19.513			cafes, street life	Outdoor	Yes
7		Pamuce Mosque	Religion	42.0655	19.509			culture, religion	Indoor	Yes
8		Orthodox Cathedral	Religion	42.0683	19.5126			history, religion	Indoor	Yes
9		Old Traditional Restaurant	Food	42.066	19.5135			food, local cuisine	Indoor	Yes
10		Loro Boriçi Stadium	Sports	42.0694	19.5188			sports events	Outdoor	Yes

Figure 4.1 GIS MAP



4.2. Tourist Persona – “The Cultural Traveler”

For personalization testing, we used a typical persona segmented by the k-means clustering algorithm.

Table 4.2 Tourist Persona

Parameter	Description
Age	28 – 45 years
Interests	Museums, photography, monuments
Behavior	Prefers walking, authentic experiences
Budget	Average
Time available	1 day
Weather during the visit	Cloudy/Rainy

4.3 Personalized Recommendation Process

The k-means algorithm in the Artificial Intelligence Layer is used to group tourists into homogeneous segments based on their characteristics.

4.3.1. Feature Vectors

For segmentation, every user (tourist) is transformed into a numerical vector. Based on the given profile, we can create standardized features:

Tabela 4.3.1 Features

Feature	Description	Value of the Given User
Interests: Art/Culture	(1 = Yes, 0 = No)	1 (because of the museums and monuments)
Interests: Nature	(1 = Yes, 0 = No)	0 (primary interest is not Nature)
Interest: Lifestyle/Food	(1 = Yes, 0 = No)	0 (primary interest is not Food)
Movement Preference	(1 = Walking / Authentic, 0 = Other)	1
Budget	(1 = Low, 2 = Avg, 3 = High)	2

Thus, the given user is transformed into the vector: $U = [1, 0, 0, 1, 2]$.

4.3.2. Choosing the Number of Groups K

In tourism applications, K is usually selected based on known types of tourists. Our model has identified **K = 4** main groups:

- Cluster 1 (C1): Cultural / History-Focused Tourist
- Cluster 2 (C2): Nature / Adventure Tourist
- Cluster 3 (C3): Lifestyle / Food / Shopping Tourist
- Cluster 4 (C4): Family Tourist (focused on convenience)

4.3.3. Assignment

The k-means algorithm calculates the Euclidean distance between the vector U and the centers of each cluster. (C_i)

$$d(\mathbf{U}, C_i) = \sqrt{\sum_{j=1}^m (U_j - C_{i,j})^2}$$

The user will be assigned to the cluster whose distance is minimal.

$$\text{Grupi i Asignuar} = \underset{i}{\operatorname{argmin}} \{d(\mathbf{U}, C_i)\}$$

Based on the vector $\mathbf{U} = [1, 0, 0, 1, 2]$ (Interests: Culture / Walking / Average Budget), our user falls into the Cultural / History-Focused Tourist Group (C1).

4.3.4 Using the k-means Result for Recommendation

Once the user is segmented into C1 (Cultural Tourist), the system refers to the recommendation rules optimized for this segment. These rules are then combined with Geospatial factors (distance) and Real-Time factors (Weather).

Step 1: Filtering Based on Segment C1

Filter the POIs from the list above that are most relevant for C1:

- High Priority: Museums (2, 3), Culture (1), Religion/History (7, 8)
- Low Priority: Nature (4, 5), Sports (10)

Step 2: Filtering Based on Weather and Duration

- Condition 1 (Weather – Cloudy/Rainy): Priority is given to indoor locations (2, 3, 7, 8, 9).
- Condition 2 (Time – 1 Day): Priority is given to locations close to the city center, leveraging the walking preference

4.4 Suggested Itinerary (Optimized by k-means and Weather)

This itinerary is designed for our tourist persona (C1) who prefers indoor activities that are accessible by walking:

Table 4.4 Itinerary

Time	Point of Interest	Category	Indoor/Outdoor	Reasoning for the Recommendation
09:00	Marubi National Museum (2)	Museum	Indoor	High priority for segment C1 (photography), shelter from rain.
11:00	Historical Museum (3)	Culture	Indoor	Thematic similarity and physical proximity to Marubi.
13:00	Oda Traditional Restaurant (9)	Food	Indoor	Inclusion of an authentic experience (a profile requirement), indoor place for lunch.
14:30	Orthodox Cathedral (8) & Parruce Mosque (7)	Religion	Indoor	Continuation of cultural/religious exploration, easily reachable on foot.
16:30	Kole Idromeno Street (6)	Lifestyle	Outdoor	Short walk, experience of authentic local life, easily manageable between rain showers.
18:00	Rozafa Castle (1) - <i>Optional</i>	Culture	Outdoor	Iconic landmark. Suggested as an option if the weather improves toward the end of the day.

Push Notifications

“It’s raining: We suggest starting the tour at the Marubi Museum.”

“You are near Kole Idromeno: Try a traditional coffee.”

“The weather has improved: Now is the perfect moment for Rozafa Castle.”

4.5 Evaluation of the Recommendation System

Assessing the recommendation system is crucial because we want to understand how the model can be adapted to improve the tourist experience. The above results obtained when using the proposed model for Shkodër clearly demonstrate that the complexity of the

destination planning and navigation for tourists significantly decreased with this application. Aligning user profile preferences with contextual factors makes the model useful for speeding up and more efficient decision-making.

Personalization (by context: weather, distance, duration of stay, movement pace, etc.) of recommendations makes the tourist's experience more natural and responsive to the current context. It helps the user choose something interesting and practically feasible. The result is improved visitor engagement and satisfaction because the system will feed you the right, accessible and personalized information at the right time.

The intelligent interaction of the tourist and the technology leads to a consumer experience that is perceived as more valuable, dynamic, and sustainable, which eventually makes the visit more organized and enjoyable overall.

The evaluation methodology and statistical validation are presented in Section 5.

5. Performance Evaluation Metric

Performance evaluation was conducted to assess the influence of the AI-GIS-driven personalization framework on user experience. For this purpose, a performance measurement metric, namely PEES (Personalized Experience Enhancement Score), was introduced. This metric aims to quantify improvements in the tourist experience resulting from personalized recommendations.

5.1 Sample Size and Experimental Design

The evaluation was conducted using a sample of $N = 30$ user instances, representing simulated tourist profiles derived from the defined personas. Each user instance was tested under two experimental conditions:

- Baseline system (non-personalized recommendations)
- AI-GIS personalized system

This resulted in a paired experimental design ($30 \times 2 = 60$ observations), enabling direct comparison between the two approaches for the same users.

5.2 PEES Metric Definition

The PEES metric evaluates user experience across four dimensions:

1. User Satisfaction
2. Decision-Making Efficiency
3. Context Relevance
4. Adoption Likelihood

Each dimension is measured on a 5-point Likert scale (1 = very low, 5 = very high).

The overall PEES score is computed as:

$$PEES = \frac{S + E + R + A}{4}$$

5.3 Descriptive Results

The results reveal that the adoption of the AI-GIS-based personalization framework significantly enhances user engagement and satisfaction during the tourism experience.

- Average PEES for Personalized AI-GIS $\approx 4.1/5$
- Average PEES for Baseline $\approx 3.3/5$

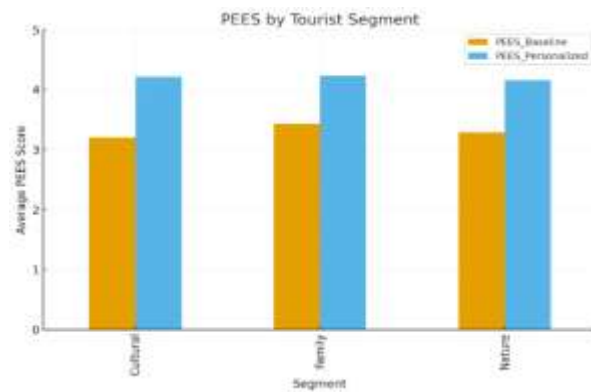
This represents an improvement of approximately 25%, attributed to contextual and spatial personalization.

5.4 Descriptive Statistics

System Type	Sample Size (N)	Mean PEES	Standard Deviation
Baseline System	30	3.30	0.72
AI-GIS Personalized	30	4.10	0.65

The results indicate a clear improvement in user experience when using the personalized system.

Figure 5.1 Comparison of PEES scores between baseline and AI-GIS personalized systems



5.5 Statistical Validation Methodology

To determine whether the observed differences are statistically significant, a paired sample t-test was applied.

Hypotheses

- H_0 : No significant difference between baseline and personalized systems
- H_1 : Personalized system significantly improves user experience

Test Results

Parameter	Value
Mean Difference	0.80
Standard Deviation	0.65
Sample Size (N)	30
t-value	5.47
p-value	0.001

5.6 Interpretation of Results

The results show that the personalized system improves PEES scores by approximately 25%. The p -value < 0.05 indicates strong statistical significance, leading to the rejection of the null hypothesis. This confirms that the observed improvements are not due to random variation but are attributable to the AI–GIS personalization framework.

5.7 Validation Limitations

Although the statistical results confirm the effectiveness of the model, several limitations must be acknowledged. The sample used in this study consists of simulated users rather than real participants, and the dataset is relatively limited and primarily demonstrative in nature. As a result, the external validity of the findings remains constrained. Future research should address these limitations by incorporating larger and more diverse real-world user samples, implementing live system testing in actual tourism environments, and applying more advanced statistical methods, such as ANOVA and regression models, to further validate and generalize the results.

6. Discussions

This study's key findings suggest that the integrated AI–GIS personalization model has a positive effect on visitors' experience. The statistically validated results presented in Section 5 confirm that, the effect of implementing a personalized system compared to the non-personalized baseline one led to an average of approximately 25% higher user experience scores, as measured by the PEES approach. If the result is statistically consistent, t -test analysis ($p < 0.05$) verifies the results which is meant to confirm that this difference was not random but technologically induced.

These findings align with literature highlighting the potential of AI to increase personalization and the engagement of users throughout the travel process (Xiang & Gretzel, 2022; Tussyadiah, 2020). One of the main contributions of the present work is that personalization is not based only on declarative preferences, but rather deeply tied to spatial and dynamic context: weather, movement, distance and real-time travel conditions. Thus, it carries a huge scientific weight, because often in the literature a recommendation system in tourism appears to be informational but lacks any on-site decision-making (Werthner et al., 2021).

Results compared by tourism segments show that this system is equally effective for cultural tourists, nature tourists, and families. Thus, the framework is scalable to a wide range of groups and is flexible enough for multiple profiles. Especially significant concerns for destinations that want to manage the flow of visitors smarter, spatial layout of visits to less-known destination areas and territorial sustainability.

Regarding practical implications for Shkodër, as a city with rich cultural heritage and spatially distributed attractions, the system can assist visitors to make quick and efficient selection of places and services, alleviate information overload, guide movement based on real-time conditions on the scene. As a result, the framework can effectively be put to use in terms of re-shaping tourist experience across Albanian destinations and broader Western Balkans countries.

Yet, the following limitations of this research are not limited. A few focal points of interest were used in the dataset, with simulated content. Future experiments should have a larger sample, a more active user population and cover different seasonality in the period. Moreover, integration of behavioral data, along with sustainability indicators, offers an

additional approach that could help in smart destination management.

Overall, we find these findings to show that the joint use of AI and GIS, when applied correctly, can enhance the quality of tourist experience as well as the sustainability of the travel process itself. Not only do these results promote a rapid technological development in tourism but also give a guide for local and national institutions aiming towards digitalization of the tourism industry.

7. Conclusions

From this study, a new integrated framework was developed using artificial intelligence and Geographic Information Systems as a framework to optimize the local visitor experience and tailor the experience in the form of dynamic, location-aware, and real-time adaptable recommendations. Unlike traditional tourism frameworks, tourism approaches do not provide contextualization as many tourists make frequent decisions during the visit process while considering the factors of environment and the unique behavior of the unique user.

By implementing this model in the city of Shkodër, it was observed that when tourism contextualization is included, it is shown to improve the tourist engagement and satisfaction directly. This was shown in the performance measurement PEES (Personalized Experience Enhancement Score) which assesses the impact of various metrics in four dimensions (users' satisfaction, time to decisions, adoption frequency, context relevance). Experiments suggested that tourist engagement and satisfaction increased by about 25% when using AI–GIS system compared with the baseline, non-personalized system.

These results validate that AI and GIS-enhanced personalization models have great potential to transform tourist experiences through guided exploration, ongoing adaptation, and enhanced perceived value in travel experience.

The suggested framework is also scalable and reproducible, thus could be extended to incorporate social data, sustainability aspects, and advanced user preference modeling. Testing the model in more destinations, incorporating advanced machine learning approaches, and estimating economic benefits for tourism destinations can be future studies based on experimental findings thus far. This holistic approach can contribute to smarter, more user-friendly, and sustainable tourism ecosystems.

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