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Sustainable Regional Development Scientific Journal, Vol. II, (1), 2025
Editorial Note

In the first semester of 2025, the Sustainable Regional Development Scientific Journal (SRDSJ), published under the aegis of the Albanian Association of Regional Scientists (A.A.R.S), launched the first issue (1) of its second volume (Vol.II) since its first day of publication. The SRDSJ is an international, open-access, and peer-reviewed journal that publishes research on various topics related to Regional Science and Sustainability. The journal it acts as a platform for scholars, researchers, policymakers, and practitioners to exchange insights on sustainable regional development and its various aspects.

Since July 2024, the SRDSJ has published 16 articles, on a wide range of topics (such as Regional Economics and Development; Spatial Analysis and Econometrics; Economic Geography and Transportation Economics; Urban Planning and Development; Tourism Economics and Development; Urban and Regional Sustainability; Regional Analysis and Policy; etc.). Serving its broad multidisciplinary scope, SRDSJ provides publication opportunities to researchers from various disciplines and an open-access platform for communicating regional science research and making it accessible to a wider audience. Also, SRDSJ supports a reasonably timely review process, promoting the academic dialogue by making scientific research accessible to the researchers' community in time.

The journal is indexed in various scientific databases (RePEc, EconPapers, RSAI, BnF) and its contribution to scientific research is accredited by scientific associations (such as Regional Science Association International, Albanian Association of Regional Scientists). Further, the SRDSJ has the merit to include in its editorial board reputable academics from worldwide, who ensure that the published papers meet rigorous academic standards. The SRDSJ community thanks the Editor-in-Chief, the Editorial Board, its Reviewers, Authors, and Readership for this achievement. Dedicated to its high standards and values, SRDSJ will pursue improvement. Moreover, the SRDSJ systemically provides a forum for ideas exchange, news, and information, by covering topics of broader academic interest, such as events (conferences, workshops, and seminars), academic profiles (providing insights into the work and accomplishments of leading scholars in the field), and book reviews (offering a valuable service by summarizing and evaluating important publications). This broad academic framework enhances the value of SRDSJ as a resource for scholars and practitioners for readers interested in keeping up with the latest developments in Regional Science.

All these attributes and merits of SRDSJ have been so far fertile and promising for the journal's future path. Following this reputed heritage, the SRDSJ continues working hard toward providing a reputable and respected publication, along with a valuable platform for high-quality research for anyone interested in regional science, regional development, and related fields. This current issue (SRDSI, Vol. II, (1), 2025) presents 7 papers that were carefully selected to meet the journal's high standards. These papers cover traditional and contemporary topics in Regional Science, such as spatial disparities, regional demographics, inequalities, education, healthcare, marginalized areas, and comparative advantages in production, input-output models, direct investments and economic growth, sustainability, climate change awareness and tourism, gas emissions, and waste management, and are described in brief as follows:

In brief, the first paper, titled "ORGANISATIONAL CULTURE AT PUBLIC HOSPITAL OF ALGARVE: INTERNAL MEDICINE STAFF PERCEPTION", authored by Susana PESCADA, Fernando TEIXEIRA, and Weska PEREIRA, examines the organisational culture of the Internal Medicine Inpatient Unit at the Public Hospital of Algarve (PHA), aiming to support strategic change management and inform human capital development policies. A quantitative, cross-sectional research design was employed, utilising the well-established Organizational Culture Assessment Instrument (OCAI) developed by Cameron and Quinn (1999, 2011). The instrument was administered to a broad range of healthcare professionals, including physicians, nurses, technical assistants, and operational support staff. Findings indicate that the current culture is predominantly aligned with the Clan type, characterised by teamwork, trust, and a family-like working environment, followed by elements of a Hierarchical culture, reflecting the importance of structure, control, and formal procedures. Participants demonstrated a clear preference for reinforcing the Clan model, while acknowledging the strategic value of incorporating leadership attributes from all four cultural types: Clan, Hierarchy, Market, and Adhocracy. Notably, cultural perceptions were consistent across sociodemographic groups, highlighting a shared vision for a more collaborative, internally focused culture. The results underscore the importance of aligning organisational culture with leadership development, employee engagement, and institutional priorities.

The second paper, titled ""STAKEHOLDERS` PERCEPTIONS ON CORPORATE ENGAGEMENT IN SOCIAL RESPONSIBILITY AND SUSTAINABLE DEVELOPMENT: INSIGHTS FROM DOMESTIC AND FOREIGN-OWNED CORPORATIONS IN ALBANIA", authored by Ardita TODRI, Ina SEJDINI, Imelda SEJDINI, Ina BALUKJA, investigates how corporations operating in Albania—both domestic and foreign are engaged in the alignment of their practices with social responsibility and sustainable development goals, viewed through the lens of stakeholders. A quantitative survey was conducted, distributing an online questionnaire to corporate employees and directors, resulting in 42 responses. The sample represents a diverse array of companies across multiple sectors, including production, services, trade, and construction, based in various cities throughout Albania. Employing a mixed-methods approach, the study investigates the influence of four key pillars on corporate alignment with Sustainable Economic Development Goals and Practices: Reduction of Carbon Emissions and Supply Chain Management, Inclusion and Community Engagement, Social Investments and Stakeholder Relations, and Transparency, Reporting, and Compliance with Human Rights. The analysis indicates that, based on the perception of employees and directors, transparency, reporting, and compliance with human rights have a positive impact on corporate commitment to social responsibility and sustainable development. These findings are supported by both ordinal regression and ordinal logistic regression models. This study offers valuable insights that can guide future corporate strategies while addressing existing research gaps, ultimately contributing to the advancement of sustainable development in Albania.

The third paper, titled "THE VIABLE BUSINESS PRACTICE OF OPTIMIZING THE OCCUPATIONAL ACCIDENTS COST: A MICROECONOMIC APPROACH" authores by Serafeim POLYZOS, Dimitrios TSIOTAS, evaluates the cost of occupational accidents and examines the tradeoff between their prevention and recovery components to determine the optimal security level that minimizes the total accident cost. The analysis emphasizes the need for firms to incorporate the costs of occupational accidents into their strategic planning and operations, demonstrating the effectiveness of optimizing these costs as a business practice. The ultimate purpose of this paper is to contribute to the culture that OSH should not be seen as an obligation but as a strategic asset for companies seeking sustainability, as, in the long run, it reduces risks, enhances business profitability, promotes anthropocentric development and life quality, and demonstrates corporate social responsibility. Overall, calculating the total occupational accident cost and choosing the appropriate prevention strategy are elements contributing to a safer, more efficient, and viable working environment.

The fourth paper, titled "ELECTRONIC BANKING RISKS: CHALLENGES, SECURITY CONCERNS, AND MITIGATION STRATEGIES" authored by Sara BIXHAKU, Antoneta POLO, Ilirjana ZYBERI, Enkela CACA, explores the major risks associated with electronic banking, highlights the most pressing cybersecurity threats, and examines both technical and administrative strategies to mitigate them. Rapid technological development makes the Internet the best way to provide customers with banking services regardless of time and geographic boundaries. Compared to traditional banking, electronic banking provides ease, convenience and access to their customers so that they can use the banking site for all types of transactions in a secure environment. Customers can interact with the banking site 24 hours a day and seven days a week. Despite the many benefits offered by this service, it remains a double-edged sword and is not used by every customer, because the growing distance between the bank and customers can lead to a lack of trust and increased concerns for safety. A particular risk comes with trying to integrate new channels with existing channels. An important step that banks must take before undertaking any kind of transformation is to ensure that online banking risk is properly addressed. Addressing e-banking risk includes a number of measures that banks and users can take to minimize and manage these risks. The purpose of this chapter is to identify the types of risks associated with electronic banking and to propose some of the main methods for dealing with these risks. These include multi-factor authentication, data encryption, customer awareness programs, and robust regulatory compliance. Addressing these challenges requires a holistic approach that combines technology, policy, and stakeholder collaboration. By strengthening digital security infrastructures and fostering a culture of cyber awareness, financial institutions can better protect their systems and customers in an increasingly digital financial ecosystem.

The fifth paper, titled "THE RELATIONSHIP BETWEEN FORMS OF BULLYING AND ACADEMIC SUCCESS OF HIGH SCHOOL STUDENTS IN THE REGION OF PRISHTINA, KOSOVO", authored by Alberina HAMITI, investigates the relationship between various forms of bullying and school success among high school students in the Municipality of Prishtina, Kosovo. A total of 204 respondents from six different high schools participated in this research. The study focused on four primary forms of bullying: physical, verbal, social (emotional), racist, sexual, and cyberbullying, and how these experiences influence students' academic performance, including grade point average (GPA), and attendance. Using a quantitative, cross-sectional research design, data were collected through a structured, self-administered questionnaire. The results revealed that verbal and social bullying were the most commonly reported forms, and these were significantly associated with lower academic achievement and reduced school engagement. Students exposed to frequent bullying, particularly social and cyber forms, showed a notable decline in motivation, classroom participation, and attendance. The findings emphasize the negative impact of bullying on academic outcomes and highlight the urgent need for targeted interventions in schools. The study concludes that addressing bullying in all its forms is essential for improving students' academic success and creating a safer, more supportive school environment in Prishtina.

The sixth paper, titled "REGIONAL INEQUALITIES: KNOWLEDGE FRONTIERS AND DEBATES", authored by Dimitris KALLIORAS, Spyros NIAVIS, concluded that regions are coherent spatial units (i.e., sub-national level) that share common (natural or artificial) features and consist of actors that share common goals. The regional problem exists when there are marked inequalities in the standard of living enjoyed by people in different regions. Regional science, the interdisciplinary scientific locus that is concerned with regional phenomena, aims, precisely, at dealing with the regional problem, and provides insight not only into science *per se* but also into policy making. The paper provides a comprehensive review of the literature on regional inequalities aiming at identifying current knowledge frontiers and debates. The study of regional inequalities is, apparently, at the heart of regional science.

Last but not least, the seventh paper, titled "DETERMINANTS OF DEMAND FOR CITIES WITH HIGHER EDUCATION INSTITUTIONS: AN APPROACH BASED ON FRACTIONAL REGRESSION", authored by Andreia DIONISIO, Cassio ROLIM, Conceicao REGO, concluded that higher education institutions are typically situated in urban areas, making them appealing destinations for students seeking advanced education. This paper aims to explore the factors influencing the demand for cities with these institutions, focusing on the Portuguese context. By analysing distance and the quality of life in municipalities, we can better understand what attracts students to these university cities. Our findings, based on a fractional regression model, reveal that proximity to home and the disparity in rental and accommodation expenses play a significant role in the appeal of these cities for students and their families.

All these interesting works are available on the next pages of the SRDSJ intending to promote the academic dialogue in Regional Science. Overall, the Editor in Chief, Professor Assistant Filipos A. Ruxho, the Editorial Board, and the signatory of this Editorial Note welcome the reader to the multidisciplinary journey of Sustainable Regional Development Scientific Journal that the current issue promises on its following pages.

On behalf of the Editor-in-Chief and the Editorial Board
Professor **Marinela Krstinic Nizic**

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Articles

ORGANISATIONAL CULTURE AT PUBLIC HOSPITAL OF ALGARVE: INTERNAL MEDICINE STAFF PERCEPTION

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Abstract
Organisational culture has increasingly emerged as a pivotal focus in management and organisational studies over recent decades, given its substantial impact on institutional performance, adaptability, innovation, and long-term sustainability. Within the healthcare sector, understanding cultural dynamics is essential to fostering effective leadership, enhancing service quality, and promoting employee well-being. This study examines the organisational culture of the Internal Medicine Inpatient Unit at the Public Hospital of Algarve (PHA), aiming to support strategic change management and inform human capital development policies. A quantitative, cross-sectional research design was employed, utilising the well-established Organizational Culture Assessment Instrument (OCAI) developed by Cameron and Quinn (1999, 2011). The instrument was administered to a broad range of healthcare professionals, including physicians, nurses, technical assistants, and operational support staff. Findings indicate that the current culture is predominantly aligned with the Clan type, characterised by teamwork, trust, and a family-like working environment, followed by elements of a Hierarchical culture, reflecting the importance of structure, control, and formal procedures. Participants demonstrated a clear preference for reinforcing the Clan model, while acknowledging the strategic value of incorporating leadership attributes from all four cultural types: Clan, Hierarchy, Market, and Adhocracy. Notably, cultural perceptions were consistent across sociodemographic groups, highlighting a shared vision for a more collaborative, internally focused culture. The results underscore the importance of aligning organisational culture with leadership development, employee engagement, and institutional priorities. Based on these insights, the study proposes actionable recommendations to enhance organisational effectiveness, professional satisfaction, and cultural alignment within the healthcare context.

Keywords: Organisational Culture, Healthcare Management, Internal Medicine, Cultural Diagnosis, Organisational Change.

JEL Classification: H12, J24, I12, J13, M12, M14

Citation:
Pescada S., Teixeira F., Pereira W., 2025. "Organisational culture at public hospital of Algarve: Internal medicine staff perception", Sustainable Regional Development Scientific Journal, Vol. II, (1), 2025, pp. 11-21

1. Introduction

Organizational culture has emerged as a significant field of study since the 1970s, initially driven by American efforts to compete with Japanese corporate efficiency (Schein & Schein, 2017). By the 1980s, research had expanded to investigate the relationship between culture and organizational performance, establishing a foundation for systematic inquiry (Groysberg et al., 2018). Cameron and Quinn (2011) emphasise that culture plays a crucial role in determining long-term organisational success and effectiveness. The literature has explored various dimensions of organisational culture, including strategic alignment and employee engagement (Jensen et al., 2019; McCormick and Donohue, 2019; Wu et al., 2019). Multiple scholars have demonstrated that congruence between individual values and organisational expectations enhances performance and commitment (Seggewiss et al., 2019). Consequently, measuring and understanding culture has become essential for competitive advantage and strategic planning (Rua et al., 2018). The Competing Values Framework (CVF) developed by Cameron and Quinn's model (1999, 2011) identifies four cultural typologies, Clan, Adhocracy, Market, and Hierarchy, evaluated through six dimensions: dominant traits, leadership style, employee management, cohesion, strategic focus, and success metrics. Identifying the prevailing cultural type is considered fundamental for effective organisational change implementation (Schein, 2010; Cameron & Quinn, 2011).

This research applied the CVF to examine the organisational culture within the Internal Medicine Inpatient Services of PHA. The study aligns with PHA's human capital strategy, addressing challenges such as declining motivation, psychosocial risks, and perceived detachment from institutional values. The investigation aimed to identify the existing cultural profile, analyse discrepancies between current and ideal perceptions, and develop strategic recommendations. Using a cross-sectional, quantitative methodology, the study employed the OCAI to collect data from 206 healthcare professionals across three medical units. Results revealed a dominant Clan culture (68%), followed by Hierarchy (58%), indicating a collaborative environment with internal focus, loyalty, and structural stability. Leadership was primarily characterised as supportive and developmental, while hierarchical elements reflected standardisation and formal procedures. The ideal cultural profile indicated a desire to strengthen all four CVF types, particularly Clan (81%) and Hierarchy (74%), while also enhancing Adhocracy and Market dimensions. This suggests staff envision a balanced culture integrating emotional support, structured control, innovation, and external competitiveness (Jacobs et al., 2013; Mannion and Davies (2018).

A dimension-specific analysis revealed that Clan culture predominated across all aspects of the current organizational profile, particularly in the areas of cohesion and success criteria (Runtu et al., 2019). Nonetheless, participants indicated a desire to increase Market-oriented behaviors, especially within strategic emphasis and cohesion dimensions (Johnson and May, 2015). Regarding leadership, the ideal profile reflected a modest preference for Hierarchical traits, emphasizing technical competence and structure, while maintaining the relational strengths of Clan culture (Figueroa et al., 2019). This suggests a vision for management that balances authority with empathy. Respondents demonstrated a strong internal focus, valuing collaboration, trust, and shared purpose. Simultaneously, they expressed aspirations for a more culturally versatile environment that sustains cohesion while enhancing innovation, differentiation, and structured performance monitoring. These findings offer strategic insights for the Public Hospital of Algarve’s cultural transformation and enrich the broader understanding of how organizational culture shapes effectiveness within complex healthcare systems (Braithwaite et al., 2018; Squires et al., 2023).

2. Literature Review

2.1 Organisational Culture

The concept of organizational culture has undergone significant evolution, with a variety of definitions and dimensions shaping its interpretation (Pincus, 2024). While early administrative writings touched upon cultural aspects (Scott et al., 2003), it was during the 1980s that scholarly attention centred on the subject, emphasizing its role in internal dynamics and strategic organizational development (Gradstein, 2024). Broadly defined, organisational culture represents shared values, beliefs, assumptions, and norms influencing members' perceptions and behaviours (Driskill, 2018). It reflects historical development through symbols, language, and rituals, functioning as both an identity mechanism and behavioural guide (Schein, 2010;

Robbins and Judge, 2018). From a managerial standpoint, culture plays a vital role in operational efficiency and strategic alignment, as demonstrated by Kotter and Heskett (1992) and Cameron and Quinn (1999), who linked cultural attributes directly to performance outcomes. Fuertes et al. (2020) defined organisational effectiveness as the capacity to achieve strategic goals, whilst Cooke et al. (2019) linked it to adaptability and quality. Culture plays a pivotal role in strategic planning, requiring alignment with internal competencies and external demands (Kloot and Martin, 2007). Mintzberg et al. (2020) argued that culture can reshape organisational architecture, functioning as an integrative force promoting coherence. Cameron and Quinn (2011) define culture as a predominantly implicit phenomenon, reflected in the way activities and processes are carried out, with this underlying nature establishing a social contract that shapes behaviour and reinforces shared expectations. A strong organisational culture fosters collective identity (Rovetta et al., 2025). Panagiotis et al. (2014) assert that cohesive cultures promote commitment to broader missions beyond individual agendas. Schein (2010) conceptualizes culture as comprising emotional, cognitive, and behavioural dimensions resulting from social interactions, while also highlighting its role as institutionalized assumptions transmitted to new members. Baek et al. (2019) introduced a dual perspective on culture, viewing it as both an organizational metaphor and a set of tangible attributes, thereby highlighting the complexity of operationalizing culture as simultaneously symbolic and actionable. Seminal research by Servi (2024) demonstrated how cultural dimensions' influence decision-making and leadership, establishing culture as a core topic in organisational management.

2.2 Organisational Culture and Change

Organisational culture, despite its abstract character, plays a decisive role in facilitating or impeding change processes (Cameron and Quinn, 1999). Mannion and Davies (2018) underscore the importance of comprehending cultural assumptions during transitional periods. A considerable proportion of unsuccessful change initiatives stems not from resource constraints or strategic deficiencies (Scott et al., 2003), but from cultural incongruence (Cameron & Quinn, 2011). Culture functions as a profound cognitive framework through which organisational members interpret change, making its alignment with new strategic directions essential for successful implementation (Parmelli et al., 2011). As organisations respond to environmental transformations, technological advancements, or developmental phases, their cultural fabric often requires reconfiguration (Bianco-Mathis and Burrell, 2023). Cultural transformation extends beyond structural reorganisation, necessitating attitudinal and behavioural shifts, particularly from leadership (Choflet et al., 2021). Leaders serve as critical agents in articulating strategic vision, demonstrating target behaviours, and promoting alignment across organisational hierarchies (Spanos et al., 2024). Badanta et al. (2025) defines culture as an intangible yet actionable asset, arguing that it requires proactive management rather than passive observation. Cultural tension, resulting from discrepancies between existing and desired states, serves as a driver for change, particularly in sectors where adaptability is crucial, such as healthcare (Johnson et al., 2016). In the healthcare domain, empirical research confirms that cultural understanding is a fundamental requirement for the successful implementation of change (Biscaia, 2006; Rogers et al., 2020); De-María et al., 2024). Studies conducted in Portugal and internationally have examined cultural patterns across professional groups and institutional contexts, correlating them with outcomes including job satisfaction, leadership effectiveness, and care quality (Lourenço et al., 2017; Sasaki et al., 2017; Albino et al., 2022). A consistent finding is the recognition of cultural diagnosis as a strategic imperative (Willis et al., 2016; Davis and Cates, 2018). Mapping existing culture enables institutions to identify misalignments, engage stakeholders, and formulate targeted interventions (Mrkonjić et al., 2019; O'Neill et al., 2021). Consequently, culture transitions from theoretical construct to practical instrument of organisational development (Adams et al., 2017; Dickens et al., 2019). In summary, organizational culture, as a key facet of institutional identity and operational effectiveness, plays a pivotal role in transformational contexts, particularly in human-centric sectors like healthcare, where its influence can either drive innovation and resilience or impede progress, necessitating thorough cultural assessments within change strategies to align with organizational dynamics and secure stakeholder support (Pavithra, 2022; Tietschert et al., 2024).

3. Methodology

This research diagnosed the organizational culture within the Internal Medicine Inpatient Service at the PHA. The study established five objectives: identify the predominant cultural profile; explore divergences between

current and desired cultures; assess cultural congruence across units and demographic groups; determine most valued cultural elements; and propose strategic recommendations for cultural change. The CVF served as the analytical model, conceptualizing organizational culture through four typologies: Clan, Adhocracy, Market, and Hierarchy Cameron and Quinn (1999, 2011). The research employed a cross-sectional, quantitative design with a descriptive-correlational approach as supported by Pérez-Guerrero et al. (2024).

The study focused on 206 professionals who were permanently assigned to internal medicine units and had been in their roles for a minimum of one year. A purposive, non-probabilistic sampling method was used to select participants. Data collection relied on a structured questionnaire comprising two sections: a sociodemographic component and the Organizational Culture Assessment Instrument (OCAI). The OCAI had been specifically adapted and validated for application in the Portuguese context, as detailed by Lourenço et al. (2017). This approach enabled the researchers to explore organizational culture dynamics within a targeted and contextually relevant framework. Developed by Cameron and Quinn (1999, 2011), the OCAI, grounded in the CVF model, comprises 24 questions designed to evaluate culture across six distinct dimensions: Dominant Characteristics (DC), Organizational Leadership (OL), Employee Management (EM), Organizational Cohesion (OC), Strategic Emphases (SE), and Criteria for Success (CS). Each dimension offers four response alternatives, with each item corresponding to a specific type of culture. The first item represents the Clan culture, the second represents the Adhocracy culture, the third corresponds to the Market culture, and the fourth to the Hierarchical culture. A Likert-type version was implemented to enhance completion ease and comprehension (Choi et al., 2010; Heritage et al., 2014; Molina-Cabello et al., 2025).

Reliability testing, as detailed in Table 1, affirmed the instrument's robustness, with Cronbach's alpha values ranging from 0.88 to 0.93. Organizational Leadership displayed the highest reliability (α = 0.968), whereas Dominant Characteristics exhibited the lowest (α = 0.808); both reflect strong internal consistency.

Table 1: Cronbach's Coefficients by Dimension, by Type of Culture, and Overall (Current and Ideal)

Cronbach's α			
By Dimension – Current		**By Culture – Current**	
DC	0.808	Clan	0.926
OL	0.968	Adhocracy	0.907
EM	0.885	Market	0.891
OC	0.881	Hierarchy	0.882
SE	0.876		
CS	0.863	**Current Overall**	**0.968**
By Dimension – Ideal		**By Culture – Ideal**	
DC	0.814	Clan	0.915
OL	0.947	Adhocracy	0.905
EM	0.882	Market	0.899
OC	0.862	Hierarchy	0.908
SE	0.889		
CS	0.896	**Ideal Overall**	**0.967**

Source: Own elaboration

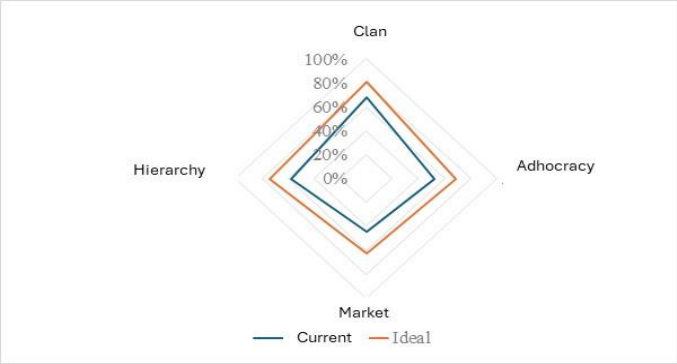
Quantitative analysis included descriptive and inferential statistics. Associations were tested using chi-square, Mann-Whitney U, and Kruskal-Wallis ANOVA with appropriate post-hoc tests. Statistical significance was set at α=0.05. Software utilized included Microsoft Office 365, Jamovi (v1.8), IBM SPSS Statistics (v28), and R Studio (v4.0). Ethical approval was obtained from PHA's Board of Directors and Ethics Committee. All participants provided informed consent, with voluntary participation, anonymity, and the right to withdraw fully guaranteed, respecting all ethical principles.

4. Results

This research diagnosed the organisational culture within the Internal Medicine Inpatient Unit at the PHA. The unit comprises three wards—Medicine 1, Medicine 2, and Medicine 3—integrated into a wider Department of Medicine. From a total of 222 professionals working across these wards (84 physicians, 90 nurses, 6 technical assistants, and 42 operational assistants), 206 met the inclusion criterion of minimum one year service. Participation patterns varied significantly across professional categories and wards. Technical assistants demonstrated the highest proportional engagement, while nurses represented the largest absolute participant group. Medicine 3 registered the highest ward-level participation (84% of eligible staff), contrasting with Medicine 1's considerably lower engagement (15%). Demographically, the sample was predominantly female (85%) and younger than 39 years (81%), with most participants under 30 and only 9% aged 50 or above. These figures align with broader national trends in the Portuguese healthcare workforce. The study utilized the OCAI, adapted for Portugal by Lourenço (2016), which is based on Cameron and Quinn's (1999, 2011) CVF model and evaluates organizational culture across four typologies (Clan, Adhocracy, Market, Hierarchy) and six dimensions (Dominant Characteristics, Leadership, Employee Management, Cohesion, Strategic Emphasis, Success Criteria).

Analysis revealed a current cultural profile dominated by Clan (68%) and Hierarchy (58%) types. This indicates a workplace perceived as collaborative and people-oriented, yet structured with clear internal focus. Clan attributes such as trust, flexibility, and participation coexist with hierarchical elements characterised by order, structure, and centralised control. The preferred cultural profile demonstrated desire for enhancement across all four culture types, with Clan remaining dominant (81%). Notably, respondents indicated stronger preferences for Adhocracy (innovation) and Market (competitiveness) dimensions. The largest discrepancy appeared in the Market culture, with an 18% gap between current and ideal states, reflecting aspirations for greater external focus and goal orientation (Figure 1).

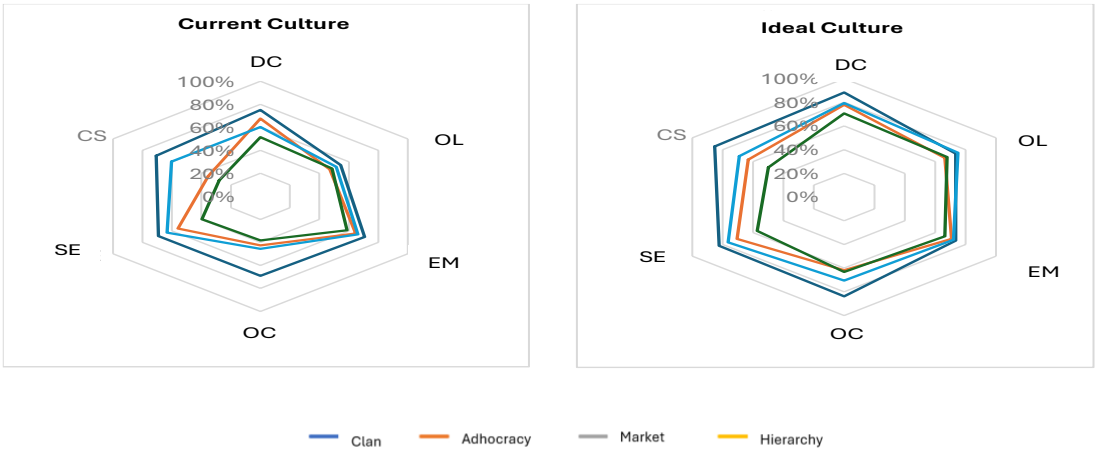
Figure 1: Organizational Culture of the Internal Medicine Services at PHA – Current and Ideal.



Source: Own elaboration

Dimension-specific analysis reinforced these patterns (Figure 2). Clan culture predominated in Cohesion and Success Criteria dimensions, emphasising loyalty, commitment, and mutual support. Leadership was characterised as primarily facilitative (Clan attribute), though structured efficiency (Hierarchical element) was also evident. Interestingly, in the ideal scenario, leadership was the only dimension leaning more toward Hierarchy, suggesting the perceived need for both structure and support.

Figure 2: Organizational Culture of the Internal Medicine Services at PHA – By Dimension – Current and Ideal.



Source: Own elaboration

Sociodemographic variables influenced cultural perceptions. Female respondents' views aligned with overall trends, while male professionals reported an absence of Adhocracy (Table 2).

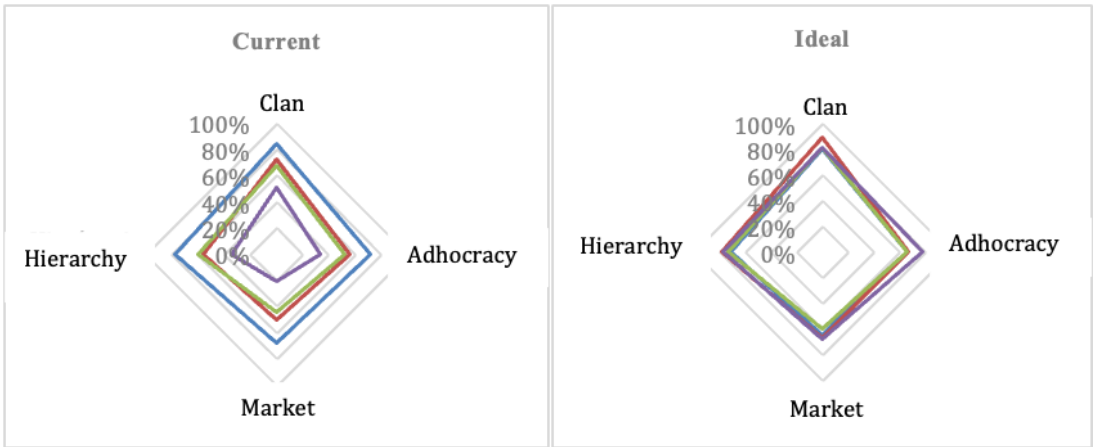
Table 2: Organizational Culture of the Internal Medicine Services at PHA – by Gender Current and Ideal

Culture	Female		Male	
	Current	Ideal	Current	Ideal
Clan	45%	36%	48%	29%
Adhocracy	20%	23%	0%	23%
Market	8%	15%	11%	22%
Hierarchy	27%	26%	41%	26%
	100%	100%	100%	100%

Source: Own elaboration

Younger participants (under 40) demonstrated stronger desire for change across all culture types, whereas older professionals favoured cultural stability. The 40-49 age cohort uniquely advocated for balanced expression across all types while maintaining Clan preference. Analysis by professional category, Operational Assistants (OA), Technical Assistants (TA), Nurses (E), and Physicians (P), highlighted subtle yet noteworthy distinctions in perceptions of the current organizational culture. Despite these differences, a clear and consistent alignment emerged in relation to the preferred culture, with the Clan and Hierarchy typologies being unanimously favored across all groups (Figure 3).

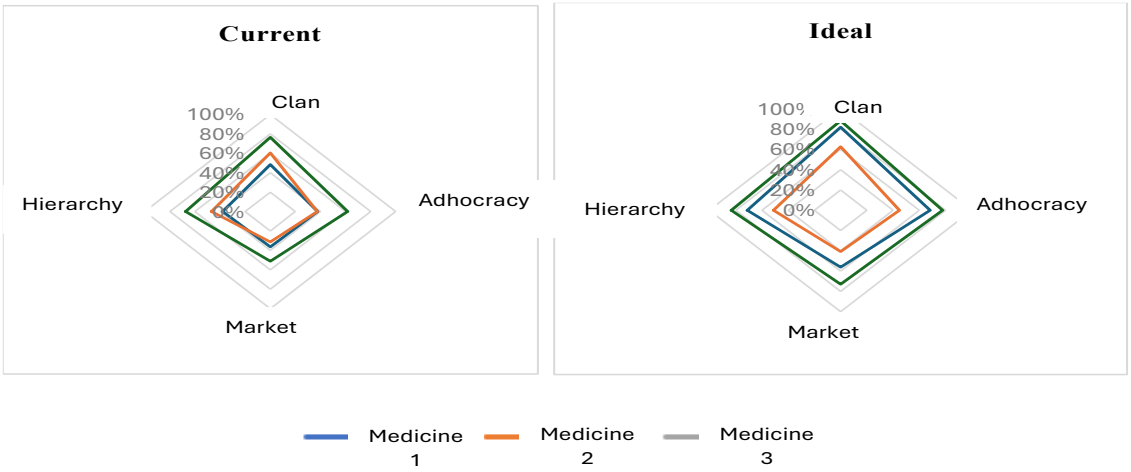
Figure 3: Organizational Culture of the Internal Medicine Services at PHA – by Professional Category Current and Ideal.



Source: Own elaboration

Medicine 3 professionals showed strongest alignment with the Clan model, potentially reflecting the cohesive response required during its operation as a COVID-19 ward. Medicine 2 exhibited no statistically significant difference between current and ideal cultures, possibly due to limited data representation (Figure 4).

Figure 4: Organizational Culture of the Internal Medicine Services at PHA – by Department Current and Ideal.



Source: Own elaboration

Length of service analysis (average tenure: 4.12 years) revealed that while Clan culture preference remained consistent regardless of seniority, professionals with shorter tenure expressed greater dissatisfaction with current culture and higher transformation expectations, suggesting potential generational shifts or unmet aspirations among newer staff. In conclusion, the organisational culture within PHA's Internal Medicine wards is currently perceived as predominantly supportive and structured. However, healthcare professionals—particularly younger and newer staff—express statistically significant preferences for integrating greater innovation, competitiveness, and goal orientation while preserving foundational elements of collaboration and trust. These findings provide crucial insights for healthcare leaders seeking alignment between organisational culture and professional expectations.

5. Discussion

This research evaluated the organisational culture within the Internal Medicine Department at PHA, comprising three subunits (Medicine 1, 2, and 3). The study population was predominantly female, under 39 years of age, with an average tenure of 4.12 years. Nurses represented the largest professional group, with Medicine 3 yielding the highest response rate. The cultural assessment employed the OCAI based on the CVF (Cameron & Quinn, 2011). This framework posits four cultural typologies - Clan, Adhocracy, Market, and Hierarchy - that coexist within organisations, typically with one predominant form (Corvo et al., 2024). According to this model, organisational sustainability requires balanced representation across all cultural dimensions (Basilio et al., 2024). Results revealed Clan culture as predominant (68%), followed by Hierarchical (58%), Adhocratic (52%), and Market (44%) orientations. The ideal cultural profile expressed by participants maintained Clan culture's primacy (81%) whilst seeking enhancement across all cultural dimensions (Behrens, 2024). This preference is consistent with the established body of literature, for instance, Silva et al. (2018) and Watanabe et al. (2024) have highlighted that Clan cultures—distinguished by their emphasis on teamwork and personal development—are associated with significantly higher levels of employee satisfaction when compared to Adhocratic models. Subcultural diversity within organisations represents a natural phenomenon (Camacho et al., 2018). Whelan (2016) and Cicea et al. (2022) conceptualise organisations as networks of subcultures that may interact synergistically, neutrally, or

antagonistically. While these subcultures develop distinct norms through shared experiences, they remain embedded within the broader organisational culture that establishes systemic patterns (Berger et al., 2021). Sociodemographic variables showed minimal influence on cultural perceptions, though subtle generational variations emerged, with younger professionals demonstrating greater receptivity to change (Pilav and Jatić, 2017). These findings contrast with Cruz and Ferreira (2012), who identified Hierarchical culture as dominant in Portuguese public health institutions, but align more closely with primary care settings. Albino et al. (2022) similarly identified a predominant Clan culture with notable Hierarchical elements within hospital settings, aligning with the present findings, and highlighted that the application of OCAI fosters professional awareness, encourages critical reflection, and supports transformational change. This investigation highlights the strategic importance of organizational culture assessment in driving performance improvement (Chandler and Krajcsák, 2021), emphasizing its role as a catalyst for change. Hubbart (2024) builds upon this by asserting that a comprehensive understanding of cultural transformation mechanisms is pivotal for achieving meaningful progress, while Malik et al. (2020) complements these findings by underscoring the critical need for managers to adeptly interpret cultural indicators to translate insights into actionable strategies. The research highlights the significance of aligning leadership development initiatives with cultural objectives, advocating for a hybrid leadership model that combines the relational attributes of Clan culture with the structured framework of Hierarchical culture (Shikama et al., 2024). Such an approach is deemed essential for maintaining organizational performance, fostering adaptability, and enhancing professional engagement (Fagerdal et al., 2022).

6. Final Considerations

This study highlights the analytical value and complexity inherent in assessing organisational culture, particularly within the healthcare sector. It underscores the methodological and interpretative challenges associated with subjective data and the need for active professional engagement to ensure data validity. Without robust participation and sound methodological frameworks, cultural assessments risk bias and reduced representativeness. The analysis was conducted in the Internal Medicine Department of PHA and revealed that Clan culture predominates, followed by Hierarchical culture. The findings align with broader literature that recognises Clan culture—marked by collaboration, participation, and interpersonal support—as favourable for enhancing employee satisfaction and organisational cohesion. The professionals surveyed not only recognised the current dominance of Clan culture but also expressed a preference for reinforcing its attributes in the future organisational profile. Importantly, the ideal culture outlined by participants goes beyond a singular cultural model. Respondents advocated for a more integrative leadership style that combines traits from all four archetypes in Cameron and Quinn's (2011) CVF. This includes visionary qualities from Adhocracy, performance-driven focus from Market culture, and procedural stability from Hierarchical models. Such a hybrid leadership approach is considered essential to navigating complexity, balancing innovation with structure, and achieving sustainable organisational development. A significant outcome of the study is the consistency observed across sociodemographic variables such as age, profession, and service unit. Despite minor differences, the general cultural patterns remained stable, with Clan culture consistently prioritised. This uniformity enhances the robustness of the data and provides a reliable foundation for strategic planning. The findings support an internal focus across all cultural types, with emphasis on people-centred leadership and relational dynamics, complemented by technical competence and procedural rigour. The study proposes a broader institutional cultural assessment as a next step. Such a diagnosis would not merely serve as a descriptive tool but as a catalyst for strategic alignment. Leadership development programmes, team-building initiatives, and targeted training should be designed to reinforce the desired cultural attributes, aligning practice with professionals' aspirations and fostering shared organisational values. This investigation also contributes to a wider body of knowledge affirming the importance of cultural diagnosis in diverse management domains, including strategic planning, knowledge management, project execution, employee engagement, and performance enhancement. As noted in the literature, understanding cultural dynamics is often a precursor to effective transformation and a vital component of long-term resilience. In conclusion, this study provides not only empirical insight into the current cultural state of PHA's Internal Medicine Department but also actionable recommendations for cultural transformation. It contributes to strategic decision-making by offering a clear understanding of existing cultural patterns and pointing to mechanisms for their evolution. Disseminating these findings

within the institution may stimulate reflection, promote participatory change, and support the cultivation of a cohesive, adaptive, and people-centred organisational culture. Future research should explore intersections between organisational culture and other key variables such as leadership effectiveness, quality of care, interdisciplinary collaboration, generational differences, and international comparisons. These dimensions could deepen insight into how culture shapes, and is shaped by, broader systemic factors in healthcare settings.

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STAKEHOLDERS` PERCEPTIONS ON CORPORATE ENGAGEMENT IN SOCIAL RESPONSIBILITY AND SUSTAINABLE DEVELOPMENT: INSIGHTS FROM DOMESTIC AND FOREIGN-OWNED CORPORATIONS IN ALBANIA

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Abstract
This research investigates how corporations operating in Albania—both domestic and foreign are engaged in the alignment of their practices with social responsibility and sustainable development goals, viewed through the lens of stakeholders. A quantitative survey was conducted, distributing an online questionnaire to corporate employees and directors, resulting in 42 responses. The sample represents a diverse array of companies across multiple sectors, including production, services, trade, and construction, based in various cities throughout Albania.
Employing a mixed-methods approach, the study investigates the influence of four key pillars on corporate alignment with Sustainable Economic Development Goals and Practices: Reduction of Carbon Emissions and Supply Chain Management, Inclusion and Community Engagement, Social Investments and Stakeholder Relations, and Transparency, Reporting, and Compliance with Human Rights.
The analysis indicates that, based on the perception of employees and directors, transparency, reporting, and compliance with human rights have a positive impact on corporate commitment to social responsibility and sustainable development. These findings are supported by both ordinal regression and ordinal logistic regression models. This study offers valuable insights that can guide future corporate strategies while addressing existing research gaps, ultimately contributing to the advancement of sustainable development in Albania.

Keywords: directors' perceptions, domestic and foreign corporations, employees' perceptions, ordinal logistic regression analysis

JEL Classification: D2, G39, Y8

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1. Introduction

The establishment of the United Nations Framework Convention on Climate Change (UNFCCC) in March 1994, followed by the adoption of the Kyoto Protocol in December 1997 and the Paris Agreement in December 2015, marks pivotal milestones in global climate policy. Building on these achievements, the United Nations Climate Change Conference in Glasgow in November 2021 led to the issuance of the "China-US Joint Glasgow Declaration on Enhancing Climate Action in the 2020s". These initiatives underscore a continued commitment to strengthening bilateral cooperation, intensifying efforts to reduce carbon emissions, and tackling the global challenge of illegal deforestation. As major contributors to global warming and environmental pollution, large enterprises bear a critical responsibility for reducing carbon emissions (Jiao et al., 2022; Zhang et al., 2022).

Furthermore, researchers suggest that organizations should adopt social and environmental strategies along a continuum, ranging from resistant or defensive approaches to those focused on creating value and gaining a competitive advantage (Goula et al., 2024; Ruxho & Ladias, 2022a). This strategic continuum posits that as organizations progress along this spectrum, they increasingly recognize the benefits of adopting more proactive social and environmental strategies (Sarkute et al., 2024; Ruxho & Ladias ,2022b).

In this context, social and environmental issues have gained prominence among stakeholders, who demand transparency regarding how companies integrate these concerns into their economic objectives and supply chain management (Efunniyi et al., 2024). The study by Lu et al. (2021) identifies several key limitations of Corporate Social Responsibility (CSR) in addressing the Sustainable Development Goals (SDGs), including selective implementation of the SDGs, greenwashing, insufficient stakeholder integration, inadequate involvement of small and medium-sized enterprises (SMEs), and disparities in CSR practices across different countries. Consequently, many organizations have yet to fully incorporate sustainability practices within their operations or engage meaningfully with local communities, highlighting the urgent need for increased focus on these critical issues.

CSR refers to an organization's commitment to ethical behavior, sustainable practices, and contributions to economic, social, and environmental well-being (Ilyas et al., 2023). It encompasses a wide range of activities and initiatives related to *Economic Responsibility* (sustainable business practices, ethical governance, and supply chain responsibility), *Social Responsibility* (community engagement, education, development, and health management), *Consumer Protection* (product safety, responsible marketing, and customer engagement), and *Environmental Responsibility* (sustainability efforts, waste management, biodiversity protection, and climate action). Thus, CSR extends beyond philanthropy; it integrates social and environmental concerns into an organization's core strategy and operations, demonstrating a commitment to long-term value creation for both the organization and its stakeholders while enhancing competitiveness (Bocean et al., 2022).

Socially responsible corporations prioritize transparency, accountability, and advocacy for human rights in the workplace. They publish annual sustainability reports addressing human rights issues, labor practices, and environmental impacts (Abeysekera, 2022). To ensure consistency, comparability, and accuracy in their disclosures, they utilize the Sustainability Accounting Standards Board (SASB) guidelines and independent third-party audits further enhance the credibility of these reports (Hales, 2021).

Stakeholder engagement is a vital component of CSR. By collaborating with NGOs, trade unions, local communities, and government bodies, corporations gather feedback to refine their social responsibility practices and improve transparency in addressing emerging human rights and sustainability concerns. To safeguard workplace rights, socially responsible organizations implement comprehensive policies aligned with international labor standards, such as those set by the International Labour Organization (ILO), and local labor laws. These policies focus on fair wages, non-discrimination, and the elimination of forced or child labor. Companies also promote safe working environments through safety training, regular risk assessments, and mental health initiatives to enhance employee well-being (Lincaru et al., 2024; Ladias et al., 2023; Ruxho et al., 2023).

Respecting workers' rights to form unions and engage in collective bargaining is another key aspect of CSR. Socially responsible corporations engage in meaningful dialogue with employee representatives to address grievances and ensure fair employment terms. Additionally, these organizations establish safe channels for reporting unethical or illegal practices and provide training on human rights, anti-discrimination, and ethical behavior to foster a culture of respect and accountability.

Meanwhile, the United Nations' 2030 Agenda, with its 17 SDGs and 169 sub-targets, serves as a global framework for transitioning to sustainability. It emphasizes the interconnectedness of issues like poverty, hunger, health, education, gender equality, and environmental degradation, advocating for collective action

to address these challenges (Weiland et al., 2021). Initially focused on environmental issues, the concept of sustainability has broadened to encompass social and economic dimensions. Policymakers and business leaders increasingly frame their strategies using the language of sustainability to align economic and social development within planetary boundaries (Awuah et al., 2024; Todri & Papajorgji, 2024).

Strong corporate sustainability, unlike traditional models that assume unlimited resources, acknowledges the finite nature of ecological systems and emphasizes governance structures that respect planetary limits. This approach integrates environmental responsibility with human rights protection and social inclusiveness, ensuring that businesses contribute positively to global development while operating within ecological constraints (Desing et al., 2020).

In Albania, CSR and SD are relatively nascent concepts, with varying degrees of adoption across different sectors and company sizes (Lee et al., 2023). The study by Icka et al. (2021) investigates the environmental sustainability practices of microenterprises and SMEs in the country, highlighting the increasing awareness of legal requirements, customer demands, and political and societal pressures. The findings reveal that, despite the lack of comprehensive sustainability regulations in Albania, many SMEs are becoming aware of environmental sustainability and are beginning to implement sustainable practices. In this context, public perception emerges as a critical factor influencing business behavior. A 2021 study assessing citizens' opinions on CSR and marketing in Albania found that 45% of respondents prioritized product safety and quality as key areas where businesses should focus their CSR efforts (Habili, 2021). It is also noteworthy that, in terms of sustainable development, Albania has made commitments aligned with the United Nations Sustainable Development Goals (SDGs). However, there is less alignment with goals such as life below water, indicating specific areas where further efforts are needed. The research of Melovic et al. (2019) instead, found that employee perception of their employer's social responsibility and sustainability varied significantly, with a wide range observed across different Western Balkan countries including Albania.

Overall, while CSR and SD are gaining traction in Albania, there remains significant room for growth. Continued efforts from the government, businesses, and civil society are essential to foster a culture of corporate responsibility that aligns with international standards and contributes to the country's sustainable development objectives.

This research investigates how corporations operating in Albania—both domestic and foreign are engaged in the alignment of their practices with social responsibility and sustainable development goals, viewed through the lens of stakeholders. As the first comprehensive study examining these dimensions within the country, it provides a holistic analysis. By examining stakeholders' perceptions, the study provides valuable insights that can inform future corporate strategies and address gaps in the existing literature. Ultimately, this work aims to foster a more sustainable and responsible business landscape in Albania.

2. Materials and Methods

2.1 The Methodological Research Design

This study investigated corporate engagement in social responsibility and sustainable development through an online questionnaire. The questionnaire comprised two primary sections. The first section collected demographic information about the respondents, including age, country of residence, job title, educational background, and company affiliation. The second section, the core of the questionnaire, assessed corporate engagement across five key pillars of social responsibility and sustainable development. Each pillar was operationalized through eight specific elements. These pillars are:

A.Carbon Emissions Reduction and Supply Chain Management;
B.Inclusion and Community Engagement;
C.Social Investments and Stakeholder Relations;
D.Transparency, Reporting, and Human Rights Compliance; and
E. Alignment with Sustainable Economic Development Goals and Practices.

Employing a mixed-methods approach, the study integrated quantitative and qualitative data. Quantitative data, derived from numerical responses to the questionnaire, were supplemented by qualitative insights gathered from the research population. This integrated approach facilitated a hypothesis-driven analysis to explore the relationships among the pillars.

The central hypothesis of this study examined the influence of four specific pillars – Carbon Emissions Reduction and Supply Chain Management (A), Inclusion and Community Engagement (B), Social Investments and Stakeholder Relations (C), and Transparency, Reporting, and Human Rights Compliance

(D) – on corporate alignment with Sustainable Economic Development Goals and Practices (E). The research hypothesis is formally stated as:

$$Ho: E_{(1\text{-}8)it} = \beta_0 + \beta_1 A_{(1\text{-}8)it} + \beta_2 B_{(1\text{-}8)it} + \beta_3 C_{(1\text{-}8)it} + \beta_4 D_{(1\text{-}8)it} + \mu_{it} \quad (1)$$

2.2 Participants and data

This research involved contacting 42 corporate stakeholders, such as employees and directors (Table 1). According to the law no. 25/2018 on "Accounting and Financial Statements" approved on 10 May 2018, as corporate are classified those enterprises which exceed at least two of the following three criteria at the reporting date: Total assets – Albanian lek (ALL) 750 million; Turnover – ALL 1,500 million and Average number of employees during the year – 250. The evaluated corporations spanned several sectors, including production, services, trade, and construction. These corporations operate in multiple Albanian cities, such as Tirana, Elbasan, Fier, Vlore, Lushnja, Shkoder, and Korca. Furthermore, the companies have diverse origins, with headquarters in Albania and other countries including Turkey, the Netherlands, the Cayman Islands, Slovenia, Switzerland, Austria, Cyprus, Serbia, Hungary, France, Italy, the USA, South Korea, and Lebanon. The respondents encompassed a diverse age range: 7.1% were aged 18–25, 33.3% were between 26–34, 30.9% fell within the 35–44 age group, 21.4% were aged 45–54, 4.8% were 55–64, and 2.4% were over 65. In terms of their corporate affiliations, 16.6% were associated with Albanian corporations, 21.4% were linked to corporations from the EU, USA, and the Balkans, while 19.04% were connected to Asian corporations.

Table 1 Study participant`s data.

The demographic information of the participants	Total	Age					
		18-25	26-34	35-44	45-54	55-64	65
Base size	**42**	**3**	**14**	**13**	**9**	**2**	**1**
Albanian corporations	7	1	2	3	1	-	-
UE corporations	9	-	3	2	3	1	-
USA corporations	9	1	2	3	2	-	1
Balkanic corporations	9	-	5	2	1	1	-
Asian corporations	8	1	2	3	2	-	-

3.Research method

The online questionnaire introduces five study pillars to gather stakeholders opinions on corporate Alignment with Sustainable Economic Development Goals and Practices. It was distributed via respondents' official email addresses. The questionnaire utilized a Likert scale ranging from 1 (one) to 5 (five), where: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Undecided (U), 4 = Agree (A), and 5 = Strongly Agree (SA) see Table 2.

Table 2 Research questionnaire.

Reduction of Carbon Emissions and Supply Chain Management (A)	A1	The corporation has implemented the "net zero objective" strategy to reduce carbon emissions while also promoting sustainable behavior within the organization (such as using public transportation or working from home).
	A2	The corporation uses renewable energy sources (solar, wind, and hydroelectric) in its internal processes to contribute to environmental protection.
	A3	The corporation continuously discusses with employees and managers the need to undertake initiatives that reduce carbon emissions and improve energy efficiency in production processes and logistics.
	A4	The corporation operates in synergy with suppliers and customers regarding opportunities to reduce carbon emissions throughout the supply chain.
	A5	The corporation promotes research practices on the development of sustainable products and services, as well as uses artificial intelligence (AI) and specific devices (IoT) to monitor and optimize emissions in real time.
	A6	The corporation engages stakeholders (e.g., employees, the community, investors, partners, NGOs, consumers, etc.) in efforts to enhance the sustainability of its supply chain.
	A7	The corporation applies the principles of the circular economy, such as recycling or resource recovery, in its internal processes as well as in the supply chain.
	A8	The corporation responsibly addresses cases of non-compliance with social or environmental standards in its internal processes as well as in the supply chain.
Inclusion and Community Engagement (B)	B1	Social diversity management aligns with the corporation's mission and values.
	B2	The corporation ensures diverse representation in the recruitment of its personnel.
	B3	The corporation fosters an inclusive workplace culture so that employees feel valued and respected regardless of their background.
	B4	The corporation collaborates with various organizations, vocational schools, and universities to promote inclusion and improve diversity in the community, supporting different groups and advocacy organizations that work for equality and fair representation.
	B5	The corporation prioritizes addressing social and environmental issues in the community where it operates.
	B6	The corporation collaborates with local stakeholders as well as community leaders to develop plans aimed at supporting underrepresented or marginalized groups.
	B7	The corporation aims to assess employee satisfaction and engagement in community programs.
	B8	The corporation plans to use innovation and increase engagement with the community in the coming years to better convey the voice and needs of the community.
Social Investments and Stakeholders (C)	C1	Investments related to social activities are an integral part of the overall corporate business strategy.
	C2	The corporation's investments in the social context aim to primarily address issues of education, healthcare, the environment, innovation, and poverty alleviation.
	C3	The company has undertaken initiatives to explore emerging areas such as green bonds and microfinance.
	C4	The corporation engages stakeholders (e.g., employees, the community, investors, partners, NGOs, consumers, etc.) in its initiatives related to social activities.
	C5	The corporation has defined the roles of related parties (clients, suppliers, and consumers) in driving social and sustainable business practices.
	C6	The corporation's employees and the community it is part of have the opportunity to contribute to the development of its social and sustainable strategy.
	C7	The corporation has set specific requirements for suppliers regarding labor practices, environmental sustainability, and ethical behavior.
	C8	Local communities play an active role in shaping the corporation's social responsibility programs.

Transparency, Reporting	D1	The corporation publicly discloses information related to its investments, environment, and social responsibility (the corporation handles sensitive or negative information in its reporting on social responsibility, identifies progress made toward social and environmental goals, discusses success stories, and compares transparency practices against global or industry-specific standards).
	D2	The corporation ensures that its transparency reports are accessible and understandable for all stakeholders (shareholders, employees, the community, local and central government, etc.).
	D3	Different communication channels are used to provide updates on activities related to corporate social responsibility (e.g., social media, posters, websites, etc.).
	D4	The corporation uses technological services, such as data analytics or blockchain, to enhance reporting transparency.
	D5	International frameworks guide the corporation's practices in respect of human rights (e.g., UN Guiding Principles on Business and Human Rights, International Labour Organization conventions, etc.).
	D6	The corporation consults and collaborates with various organizations or field experts to improve the respect for human rights and to avoid actions by the corporation that could harm local communities or employees.
	D7	The corporation ensures that grievance mechanisms are available for affected individuals to report cases of human rights violations.
	D8	The corporation prioritizes addressing the conflicts between business objectives and obligations to human rights.
Alignment with Sustainable Economic Development Goals and Practices (E)	E1	The corporation collaborates with the government, NGOs, or other corporations to advance the Sustainable Development Goals (SDGs).
	E2	The corporation raises awareness about the Sustainable Development Goals (SDGs) among employees, customers, and suppliers.
	E3	The corporation takes actions to advance gender equality in relation to workforce management.
	E4	The corporation ensures that partnerships formed in relation to the Sustainable Development Goals (SDGs) are mutually beneficial and impactful, as it seeks to balance global priorities with its local initiatives.
	E5	The corporation identifies and sets priorities in the fields of social, environmental, and economic development.
	E6	The corporation addresses the conflicts between profit goals and sustainable development objectives and social responsibility.
	E7	The corporation supports innovative approaches and technologies to advance sustainable development and social responsibility.
	E8	The corporation commits to external auditing regarding initiatives related to sustainable development and social responsibility within the framework of transparency and accountability.

Due to the non-normal distribution of the Likert data, both ordinal regression and ordinal logistic regression were employed to test the impact of factors such as carbon emissions, inclusion, social investments, and reporting transparency on overall alignment. The data were analyzed using the SPSS 20 statistical program (SPSS Inc., Chicago, IL).

This approach is used to understand the relationship between the independent and dependent variables. Ordinal logistic regression, which relies on the proportional odds assumption, was used to estimate the odds of a higher category. The dual approach ensured a robust analysis. The data collected for each pillar element (A/B/C/D and E, from 1 to 8) are evaluated using average ratings, with decimal values rounded to the nearest whole number. This transformation is recommended, as it simplifies interpretation, particularly for users who may find it challenging to interpret Likert scale values, such as those on a 5-point scale.

4. Results and Discussion

Corporate employees, both domestic and foreign, operating in Albania have assessed several key pillars of corporate responsibility. They rated the areas of Inclusion and Community Engagement (B), Social Investments and Stakeholder Relations(C), Transparency, Reporting, and Human Rights Compliance (D)—along with their alignment with Sustainable Economic Development Goals and Practices (E)—an average of

4, reflecting a general agreement with the company's approaches. In contrast, the pillar focused on Carbon Emissions Reduction and Supply Chain Management (A), as well as the initiative to explore emerging areas like green bonds and microfinance (C3), received a more uncertain rating of 3.
Similarly, directors evaluated the pillars of Inclusion and Community Engagement (B) and Transparency, Reporting, and Human Rights Compliance (D) with an average rating of 4, indicating their agreement with the corporate strategies. However, they expressed uncertainty about the effectiveness of the pillars addressing Carbon Emissions Reduction, Supply Chain Management (A), and Social Investments and Stakeholder Relations (C), which also received a rating of 3.
Statistical analysis using the Shapiro-Wilk (1968) test revealed that the Likert scale data for variables A, B, C, D, and E do not exhibit a normal distribution ($p < 0.05$). This non-normality informed the selection of ordinal regression for the analysis, and the results are presented at a 95% confidence level (refer to Table 3).

Table 3 Ordinal regression variables tests of normality data.

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
A	.215	15	.049	.863	15	.027
B	.223	15	.043	.899	15	.049
C	.185	15	.027	.883	15	.048
D	.231	15	.031	.809	15	.005
E	.227	15	.036	.835	15	.011

The parallel lines test yielded a statistically significant result ($p > 0.05$), confirming that the location parameters (slope coefficients) are consistent across response categories for variable E (see Table 4). This supports the assumption of proportional odds in the ordinal logistic regression model.

Table 4 Test of parallel lines.

Model	2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	408.230			
General	261.865	146.365	104	0.054

A Generalized Linear Model (ordinal logistic regression) was used to determine the impact of four factors (A, B, C, D) on corporate alignment with Sustainable Economic Development Goals (E) at a 95% confidence level (Table 4). The model fit the data well (Chi-square significance = 0.000). All four factors significantly impacted the outcome (A, B, D all 0.000, C is 0.000, in Table 5).

Table 5 Omnibus Test.

Likelihood Ratio Chi-Square	df	Sig.
29.046	4	0.000

The ordinal logistic regression results confirm that only the study pillar: Transparency, Reporting, and Human Rights Compliance (D) significantly influences corporate alignment with Sustainable Economic Development Goals and Practices (E), achieving statistical significance at a 95% confidence level (Table 6).

Table 6 Generalized Linear Model Parameters Estimation.

			95% Wald Confidence Interval		Hypothesis Test			
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)

A	3.824	3	-2.069	9.71	1.618	1	0.203	45.780
B	9.390	6.51	-3.337	22.156	2.078	1	0.149	1.19E4
C	-8.285	5.90	-19.86	3.292	1.967	1	0.161	0.000
D	7.276	4.26	-1.085	15.638	2.909	1	0.048	1.446E3
Scale	1							

From the employees' point of view, transparency enhances workplace morale and engagement, as workers feel valued and informed about company practices and performance regarding ethical conduct and sustainability. For directors, adherence to these principles not only mitigates risks and promotes ethical business practices but also enhances the company's reputation, attracts socially conscious investors, and complies with international standards. This alignment ultimately contributes to long-term business sustainability and positively impacts the local community and environment, creating a beneficial cycle of responsibility and growth.

5. Conclusions

This research examines how corporations operating in Albania—both domestic and foreign—align their practices with social responsibility and sustainable development goals, viewed through the lens of stakeholders. Findings reveal that transparency, reporting, and human rights compliance result to be crucial for corporations in Albania as they seek to align with social responsibility and sustainable development goals because they foster trust and accountability among employees and directors.

The ordinal regression analysis reveals a statistically significant relationship between transparency, reporting, and human rights compliance and the level of corporate alignment with social responsibility and sustainable development practices. Improvements in transparency, reporting, and human rights compliance lead to a 7.23 increase in the predicted log odds of achieving a higher level of corporate alignment. Further, the ordinal logistic regression results confirm that an increased level of transparency, reporting, and human rights compliance (odds ratio of 1446) significantly improves the level of corporate alignment. These outcomes highlight the significant advantages of adopting stricter transparency measures and reporting frameworks to enhance compliance with human rights standards while improving the elements presented in pillar D of the study and not only. However, it is essential to consider various corporate factors that can either facilitate or impede this compliance, including industry norms, geographic considerations, and other pertinent variables. Thus, the effectiveness of improved transparency and reporting may differ across domestic and foreign owned corporate, indicating that a tailored approach is necessary to achieve meaningful results even in promoting human rights adherence.

In this context, future research could create customized transparency and reporting frameworks that cater to the unique contexts of various corporations and regions, thereby improving their effectiveness in promoting social responsibility, sustainable development as well as human rights adherence. It may include longitudinal studies to assess the long-term impacts of implementing stricter transparency measures, evaluating shifts in outcomes over time and their sustainability. Moreover, it should seek to gather insights from a diverse array of stakeholders, including businesses, NGOs, and affected communities, to gain a comprehensive understanding of their perceptions and experiences with compliance, as well as the critical role that transparency plays in advancing human rights.

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THE VIABLE BUSINESS PRACTICE OF OPTIMIZING THE OCCUPATIONAL ACCIDENTS COST: A MICROECONOMIC APPROACH

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Abstract
Occupational Safety and Health (OSH) is a social requirement but enterprises often see it merely as a legal obligation. Occupational accidents impose a significant economic burden on societies, extending beyond medical and compensation costs, as they result in losses due to reduced productivity, social consequences, and a burden on the health and welfare systems of regions. Through a microeconomic analysis, this paper evaluates the cost of occupational accidents and examines the tradeoff between their prevention and recovery components to determine the optimal security level that minimizes the total accident cost. The analysis emphasizes the need for firms to incorporate the costs of occupational accidents into their strategic planning and operations, demonstrating the effectiveness of optimizing these costs as a business practice. The ultimate purpose of this paper is to contribute to the culture that OSH should not be seen as an obligation but as a strategic asset for companies seeking sustainability, as, in the long run, it reduces risks, enhances business profitability, promotes anthropocentric development and life quality, and demonstrates corporate social responsibility. Overall, calculating the total occupational accident cost and choosing the appropriate prevention strategy are elements contributing to a safer, more efficient, and viable working environment.

Keywords: Occupational Safety and Health; OSH; prevention costs; direct and indirect accidents cost; sustainable working environment.

JEL Classification Codes: D50; R00; R13.

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1. Introduction

Occupational Safety and Health (OSH) is a critical pillar not only for labor policy but also for the overall maintenance of social cohesion and the economic sustainability of regional economies (Jilcha and Kitaw, 2017; Reis et al., 2020; Ruxho and Ladias, 2022a; Ruxho et al., 2023). Beyond social harm, occupational diseases and occupational accidents impose a significant economic burden on societies (Dembe, 2001). Occupational accidents and diseases cause annual costs of up to 4% of GDP in the EU regions (Tompa et al., 2021). These costs do not only regard medical and compensation costs but also indirect losses due to reduced productivity, the resulting social consequences, and the burden on the health and welfare systems of the regions (Concha-Barrientos et al., 2005; Takala et al., 2014). The modern labor market, described by technological changes (Acemoglu, 2002), flexible forms of employment (Benner, 2008), and social and psychological pressures (Ullah et al., 1985), makes OSH particularly relevant not only for the avoidance of occupational accidents but also for the improvement of the overall workers quality of life (Pacheco and Riano-Casallas, 2017; Andersen et al., 2019). The COVID-19 pandemic (Tsiotas and Tselios, 2022; Tsiotas et al., 2023; Tsoulias and Tsiotas, 2024) has highlighted the need for new standards of occupational protection (Michaels and Wagner, 2020; Michaels et al., 2023), which include, beyond physical safety, mental health, ergonomics, and safety in teleworking situations. The increasing trend of accidents is due to many factors such as inadequate controls (Zwetsloot et al., 2011), understaffed labor inspection services (Liao and Chiang, 2012), lack of a culture of prevention (Kim et al., 2016), and inadequate training (Aziz and Osman, 2019) of workers. In this context, investment in prevention (Kim et al., 2016; Andersen et al., 2019; Walters et al., 2022) is emerging, beyond social and moral imperative, as a purely cost-effective strategy. On the contrary, companies following and investing in OSH policies reap faster than expected desired results, such as increased productivity, fewer leaves, reduced compensation, and an improved public and social image (Abdul Aziz et al., 2019; Andersen et al., 2019; Shabani et al., 2023).

The European experience has shown that the combination of institutional framework, training, internal monitoring, and worker participation leads to a dramatic reduction in occupational risks (Leka et al., 2011; Economou and Theodossiou, 2015; Iavicoli, 2016; Walters et al., 2022). In Scandinavian (Nordic) Countries, for example, OSH is treated as an investment (Holmberg and Lundberg, 1989; Karlsen, and Hempel Lindoe, 2006; Hanvold et al., 2019), projecting its effects in terms of reduced welfare costs and increased competitiveness. Despite the efforts given for the reduction in occupational accidents, Greece (Drakopoulos et al., 2012; Tatsaki et al., 2019; Politis et al., 2025) and many European countries (Gagliardi et al., 2015; Jakob et al., 2021) continue to face shortcomings such as poor prevention, the absence of a national strategy on occupational diseases and the lack of incentives for companies to implement modern and efficient OSH policies. For example, in Greece (Drakopoulos et al., 2012; Tatsaki et al., 2019; Politis et al., 2025), relevant data from fragmented and poorly documented sources show that a large proportion of the insured working population is involved in an occupational accident during their working life. In Greek legislation (Drakopoulos et al., 2012; Nicolaidou et al., 2017), the responsibility for the prevention of occupational hazards lies mainly with enterprises, however, the existence of a demanding legal framework lacking internal control mechanisms, targeted training, and a culture of prevention of occupational accidents is not a comprehensive solution. In terms of OSH culture, treating occupational safety as a cost rather than an investment exposes companies to greater risks and costs in the long term.

In terms of economic theory (Krugman and Wells, 2009), the total cost of OSH for a company consists of two main components, the cost of prevention and the recovery cost (Ruser and Butler, 2010), which in turn is complex and is divided into direct (time losses, productivity losses, material damage, etc.) and indirect (compensation, legal costs, medical costs, administrative costs, etc.). The prevention cost curve follows a mechanism of increasing returns to scale as a function of the level of safety, while the accident cost curve behaves inversely (Oi, 1974; Ruser and Butler, 2010). Given their joint contribution to total costs, these two curves add up to an optimal equilibrium point representing the minimum total cost. Provided that achieving absolute safety against occupational accidents is theoretically impossible (as unforeseen factors, mechanical failures, and human errors are subject to stochasticity), it is a challenge to identify the optimal level of safety at which investment in prevention yields the maximum benefit at the minimum cost. The theoretical approach to the relationship between prevention costs and safety levels describes that excessive savings in protection measures ultimately lead to an exponential increase in losses (Oi, 1974; Keane, 2015). Instead of aiming for the lowest possible cost, it is important to find the cost that minimizes overall risk. Therefore, occupational safety and health (OSH) should not be viewed merely as an expense, but rather as a valuable investment. Countries that have invested heavily in prevention have saved huge amounts of money in the long term while gaining competitiveness.

In this context, this paper attempts to present the conceptual and theoretical dimensions of the costs of

occupational accidents through the prism of (micro)economic theory (Krugman and Wells, 2009) and to highlight the microeconomic mechanisms that lead to their optimal treatment as a sustainable practice. The critical research question addressed and attempted to be answered in this paper is not the one-dimensional techno-economic approach of how much it costs to implement safety policies, but the extended sustainable perspective that claims to assess how expensive it is not to implement them. Through the overall theoretical approach, this paper aspires to inspire the development of an integrated system of collecting and analyzing statistical data on the costs and consequences of accidents, both at regional (Ladias et al., 2023; Tsiotas and Kallioras, 2025), national (Beha and Ruxho, 2024; Ruxho et al., 2024; Tsiotas and Polyzos, 2024; Tsiotas et al., 2025), and wider (Polyzos and Tsiotas, 2025; Tsiotas and Polyzos, 2025) levels. Such an integrated approach is likely to encourage OSH business initiatives leading to a national strategy to address occupational accidents and illnesses and the psychosocial burden at workplaces. The following sections attempt to highlight the dimensions of a comprehensive study of the costs of occupational accidents for building a safe, efficient, just, and sustainable working environment.

2. The cost of occupational accidents

The debate on the reduction of occupational accidents should not be limited to a metric approach to cost-benefit analysis (Ramos et al., 2020; Lestari et al., 2021) because the impact of occupational accidents goes beyond numbers. Although the economic incentive of firms (which is about maximizing profit) can indeed act as a driver for preventive measures (Kankaanpaa, 2010), it is clear that the absence of social variables in the equation creates a fundamental deficit in understanding the true scale of the problem. The social impact of occupational accidents, such as the psychological burden (Ullah et al., 1985), the reduction in the quality of life of workers (Pacheco and Riano-Casallas, 2017; Andersen et al., 2019), and the consequent effects on their family environment, is extremely difficult to quantify precisely. This is due either to the impossibility of systematically recording all the relevant variables or to the absence of a comprehensive methodology for their assessment. However, the fact that these variables cannot be quantified does not imply that they should be ignored. The problem is exacerbated by the fact that firms often treat occupational safety as a 'negative externality' (Ramos et al., 2016), namely as a cost that does not directly affect the product or production process of the company. This approach creates the conditions for the emergence of an 'imperfect market' (Krugman and Wells, 2009), namely an economic structure in which the real costs of OSH are not borne by the producer but are passed on to society (Dickens, 1984), as the recovery costs with the costs of occupational accidents are borne by society as a whole (and not exclusively by the enterprise on a microeconomic scale). From a Pigouvian viewpoint (Barnett, 1980; Pouliakas and Theodossiou, 2013), state intervention to incorporate these social costs into business practices is not only a regulatory but also a stabilizing act, as it ensures that firms make decisions not only based on their immediate private interests but also based on social benefit. To understand this relationship, we can develop a fundamental mathematical framework based on economic theory (Krugman and Wells, 2009), which expresses the total costs (CT) of workplace health and safety undertaken by a business can be broken down into three components shown in relation (1):

$$C_T = C_P + C_A = C_P + (C_D + C_I) \quad (1)$$

where C_P expresses the prevention costs (Ruser and Butler, 2010; Nagata et al., 2014), namely the costs of preventive measures such as training of workers, purchase of protective equipment, modernization of machinery, etc., and of setting up an operational OSH system· C_D expresses the direct costs (Nagata et al., 2014; Steel et al., 2018), namely the damage caused by accidents, such as loss of production, damage to equipment or product, costs of replacing staff or interruption of work, etc.)· and C_I expresses indirect costs (Steel et al., 2018), which are longer-term and often implicit or indistinguishable costs such as compensation, medical and legal expenses, loss of reputation and loss of productivity due to the impact of the accident on the working climate. Jointly C_D and C_I produce the recovery accident costs C_A.

In a plane diagram (Figure 1), in which the horizontal axis (x) describes the level of safety (S) and the vertical axis (y) the costs (C) of occupational accidents, the relationship (1) is described by two opposing curves. The first concerns the prevention cost (C_P), which follows a pattern of decreasing returns to scale with increasing safety levels. This mechanism expresses that, at an initial stage, small investments in OSH offer significant improvements, but in later stages, increasingly larger expenditures are required for equivalent increases in the level of safety. Conversely, the cost of accident remediation ($C_A = C_D + C_I$) decreases as safety increases, but cannot be reduced to zero, as it is impractical to eliminate human error and unforeseen events. According to equation (1), the synthesis of these two curves produces the total cost curve (C_T), which has a characteristic convex U-shape showing a minimum ($C_{\min}$) at a given level of safety S_{opt}.

This point expresses the optimum safety level at which the undertaking achieves maximum efficiency (minimizing the cost of occupational accidents) and constitutes a point of equilibrium in terms of the competitive relationship between the investment expenditure on prevention and the expenditure on compensation for occupational accidents.

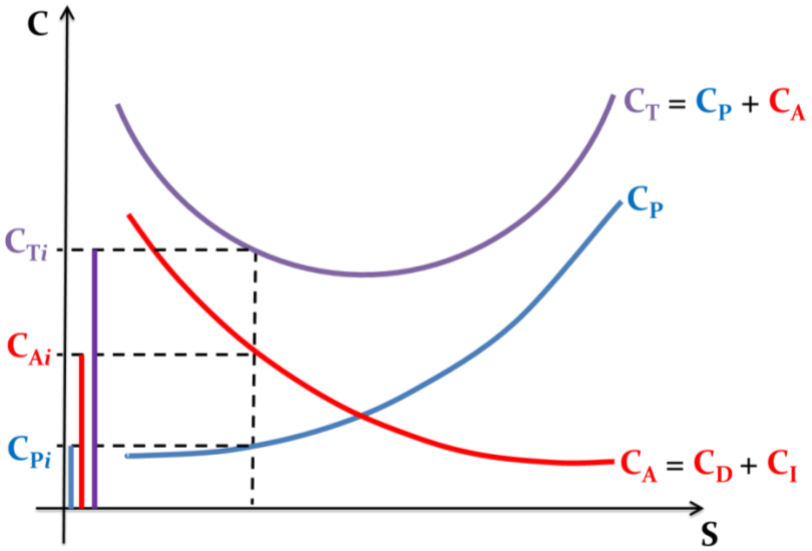

Figure 1. The cost curves of occupational accidents in a safety-cost level model.

Despite the usefulness of this theoretical approach, its application in practice faces significant challenges. Firstly, the availability of reliable statistical data (Abikenova et al., 2023) is a key factor for the accuracy of the calculations and the representativeness of the estimates. In addition, social awareness (Wahrini et al., 2019) plays a key role in determining the priorities of companies, prompting them to invest more in safety, even where the direct economic benefit is not obvious. Technological advances (e.g. the use of the Internet of Things, artificial intelligence, intelligent security surveillance systems, etc.) can transform the cost-security relationship (Rajendran et al., 2021), reducing the cost of prevention (C_P) while increasing the level of security (S), causing an overall downward shift in the total cost curve. In the short run, an employer attitude that does not take into account the indirect costs (C_I) of occupational accidents may appear more profitable at first sight. However, in the long run, it proves to be unsafe, as workplace accidents can harm the corporate image, bring legal consequences, and be unprofitable, leading to a loss of confidence among the workforce and consumers (Andersen et al., 2019). In this context, accident prevention must be seen not as an unnecessary expense but as a strategic investment (Pecillo, 2020) that increases the viability and competitiveness of the company in the long term. The State, for its part, must ensure that businesses do not pass on the external consequences of insecurity to society (Krupavicius et al., 2024) as a whole (Dufour et al., 2020), by creating a regulatory framework for businesses to incorporate the full social costs into their accounting model and by promoting labor as a value and not solely as a means of production.

3. Minimizing the total cost of accidents and determining the optimum level of safety

3.1. Microeconomic definition of the equilibrium condition

Minimizing the total cost of occupational accidents (Figure 2) is a fundamental objective for any company seeking to determine the optimum level of safety in economic terms.

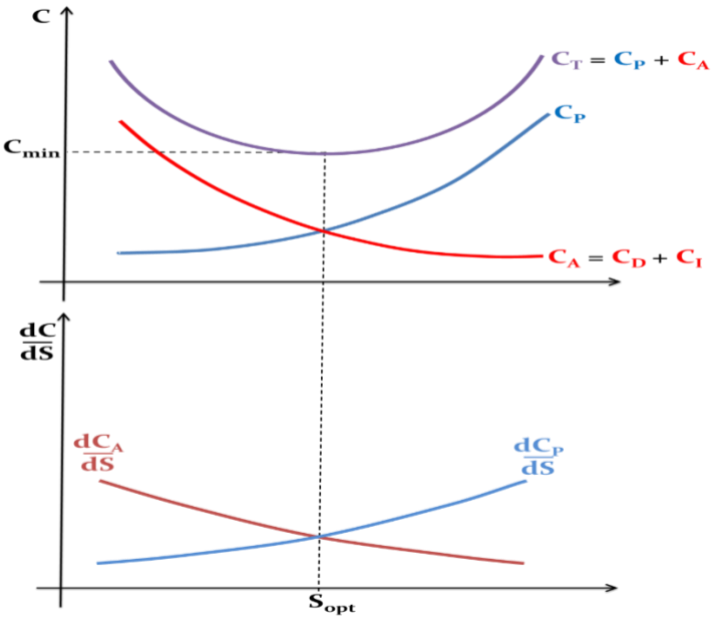

Figure 2. The occupational accidents' optimum (minimum cost) S_{opt} defined by the equilibrium point of the marginal propensities between prevention and accident costs.

The basic condition that defines this point results from the zeroing of the first derivative (Krugman and Wells, 2009) of the total cost:

$$\frac{dC_T}{dS} = \frac{d(C_P + C_D + C_I)}{dS} \quad (2)$$

which leads to the equality of the absolute values of the marginal cost (Krugman and Wells, 2009) of prevention and the marginal cost of accidents, according to the mathematical expression (3):

$$(2) \Leftrightarrow \left| \frac{dC_p}{dS} \right| = \left| \frac{d(C_A)}{dS} \right| \quad (3)$$

where C_P is the prevention cost, C_A ($C_A = C_D + C_I$) is the accident cost, and S is the safety level. The intersection of the two derivatives curves determines the optimum safety level S_{opt} (Figure 2), for which the total cost of the undertaking $C_T = C_P + C_A$ is minimized; S_{opt} is the equilibrium point at which the full substitution of prevention costs for accident costs is achieved. Beyond this point, an increase in the level of safety causes a disproportionate increase in prevention costs without a corresponding reduction in accident costs, making the investment inefficient.

3.2. The countervailing corporate strategies in out-of-equilibrium positions

It is interesting to note that for each total cost level $C_i > C_{min}$ there are two levels of security (S_1 and S_2) on either side of S_{opt} that yield the same cost (C_i), as it is shown in Figure 3. Although the cost equality $C(S_1) = C(S_2)$ expresses the same economic outcome, as a whole, these two points represent different corporate strategies. In particular, in S_1 the firm assumes high accident costs by choosing low investment in prevention, while in S_2 the reverse is true. The choice between these strategies depends on the level of risk the firm is willing to take, combined with market stability, the business strategy for the firm's social image, and external institutional factors.

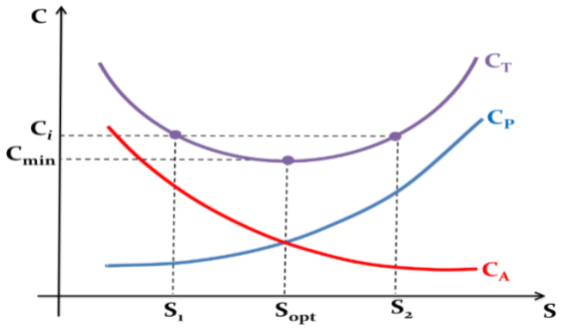

Figure 3. Each cost C_i above the optimum level $C_i > C_{min}$ corresponds to a pair of security levels (S_1 and S_2) on either side of S_{opt}.

The analysis shown in Figure 3 is based on the neoclassical assumption of economic rationality (Krugman and Wells, 2009) that business decisions are made through the optimization of exclusively economic criteria. The practice, however, appears nuanced as a number of variables in the firm's internal (e.g. corporate culture, the human capital of the firm, etc.) and external (e.g. pressures from government control mechanisms, existing labor legislation, prevailing labor market conditions, etc.) environment influence the observed behavior of the firm. Consequently, the observed level of safety adopted by a firm is often not identical to the theoretically optimal S_{opt}, but fluctuates around it, showing small or large deviations depending on the mechanism by which the conditions of the business environment change.

3.3. Shifts from equilibrium

The disturbance analysis in this section assumes that shifts in the prevention cost (C_P) and accident cost (C_A) curves can arise from factors originating either from the internal or external environment of the firm. For example, on the internal environment side, a firm may invest either in staff training (Aziz and Osman, 2019), in the purchase of modern equipment (Rajendran et al., 2021), or in the relocation of workers (Hassanain and Ibrahim, 2021) to positions commensurate with the level of risk, or even in the creation of combined prevention models. Each of these strategies can bring about a different level of safety S at a different overall cost. From an external perspective, if under the current institutional framework of insurance policy, accident costs are fully borne by the insurer, then the firm may downgrade prevention (Figure 4), whereas if the firm bears a large part of the accident costs, then it is forced to increase the need for prevention (Figure 5).

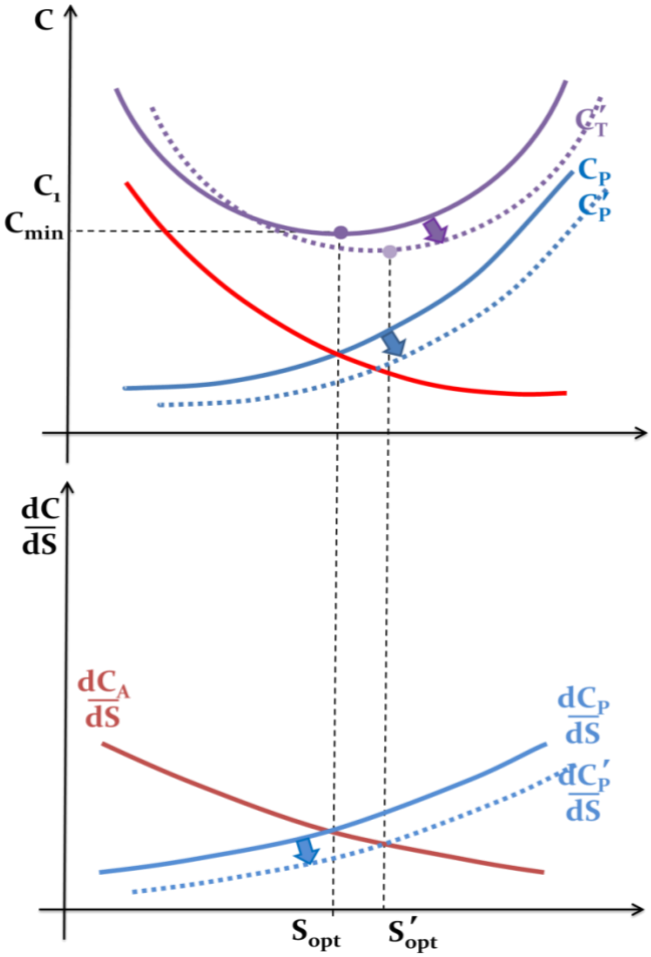

Figure 4. A shift of OSH costs equilibrium when a firm downgrades the prevention costs.

In this context, when the C_P curve shifts upwards, e.g. due to increased equipment prices or stricter safety regulations, then higher prevention costs are required for the same level of safety. This implies a

decrease in Sopt (namely $S'_{opt} < S_{opt}$) with a simultaneous increase in the minimum total cost ($C_{min} > C'_{min}$). Conversely, when the C_P curve shifts downwards, e.g. due to technological advances or more efficient allocation of prevention resources, then Sopt increases and the minimum total cost decreases. This shift suggests that with less investment, the firm achieves higher levels of safety, which makes it more competitive. A similar effect is brought about by shifts in the C_A accident cost curve. If, for example, direct or indirect accident costs (such as compensation, delays, legal costs, social outcry, loss of reputation, etc.) increase, then the C_A curve shifts upwards. This makes it more advantageous to increase prevention costs, leading to a higher optimal level of S_{opt} safety. Conversely, in cases where accident costs are decreasing, e.g. due to government subsidies, insurance coverage, or lax controls, the C_A curve shifts downwards and the firm can choose a lower level of prevention without a significant burden on overall costs:

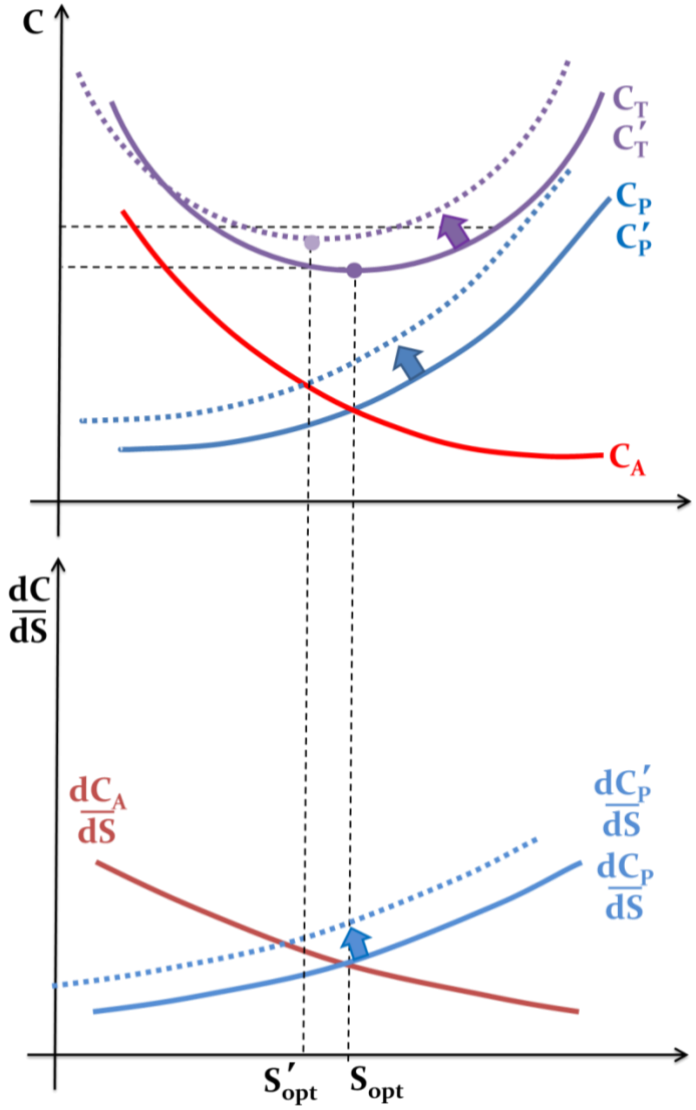

Figure 5. A shift of OSH costs equilibrium when a firm upgrades the prevention costs.

4. Sustainable practices resulting from minimizing the overall cost of occupational accidents

The previous microeconomic analysis has highlighted the importance for each company of periodically reviewing its cost curves. Changes in the factors affecting either C_P or C_A can lead to a new optimal level of safety (Figures 4 and 5), with direct consequences for the operation and viability of the business. In the prevention cost pillar, corporate targeting should be oriented towards shifting the C_P curve downwards, through the optimization of prevention policies (Takala et al., 2014; Andersen et al., 2019) that incorporate the benefits of technological advances (Rajendran et al., 2021), upgrading infrastructure, the organizational structure of the firm (Khandan et al., 2017), good time and human resource management, improving the level of training, cultivating a corporate OSH culture (Kim et al., 2016), and the quality of cooperation with the workforce.

Examples of strategies that can lead to an improvement in the level of safety without a proportionate

increase in prevention costs are raising awareness of the use of protective equipment (Michaels and Wagner, 2020; Michaels et al., 2023), redistributing staff to jobs (Hassanain and Ibrahim, 2021) according to their degree of risk, or even the appropriate organization of working hours to reduce fatigue (Rosa, 2017; Cunningham et al., 2022). The preceding microeconomic analysis has shown that the orientation of a company's occupational accident management strategy is a decisive factor in achieving satisfactory levels of safety in an economically sustainable manner. A well-designed prevention strategy (Takala et al., 2014) can lead to the achievement of safety levels that result not only in the lowest possible overall cost but also promote the social responsibility of the enterprise. However, the optimum level of safety achieved at the S_{opt} point is not a static parameter, but a dynamic situation that changes with the conditions of the internal and external environment of the company, so that its attainment is a continuous objective. In terms of the sustainability implication (Polyzos, 2022; Ruxho, 2024; Sepetis et al., 2024) of the preceding analysis, through the efficient management of total health and safety costs at work, beyond economic efficiency (optimization in the economic pillar), social acceptance (optimization in the social pillar) and harmonious coexistence with the environment required ensuring social health (optimization in the economic pillar) are achieved (Kavouras et al., 2022; Vitrano et al., 2023; Bikfalvi et al., 202; Jain et al., 2024). A company seeking to reduce C_T must therefore take account of the dynamic balance between prevention and accidents, namely, it must not value accident costs in the short term but in the long term, an approach guided by the principles of sustainable management and optimization.

Towards the thematic organization of the stages through which the process of accounting for the impact of an occupational accident passes, the conceptual framework of Figure 6 is introduced, which can provide a roadmap for the overall valuation of the total cost of occupational accidents. This thematic diagram can be read both at the level of estimating a potential accident (prevention) and at the level of valuing a contributory accident (response). At the planning level, each enterprise must record the risks (potential accidents) to which its production factors are exposed at the stages of its production process and operations. Then for each accident, whether taken as a design entity or a contributory event, its total cost can be estimated through the illustrated stages in the proposed process in Figure 6. The figure illustrating the process of estimating the total cost of accidents can be used by any company regardless of its industry.

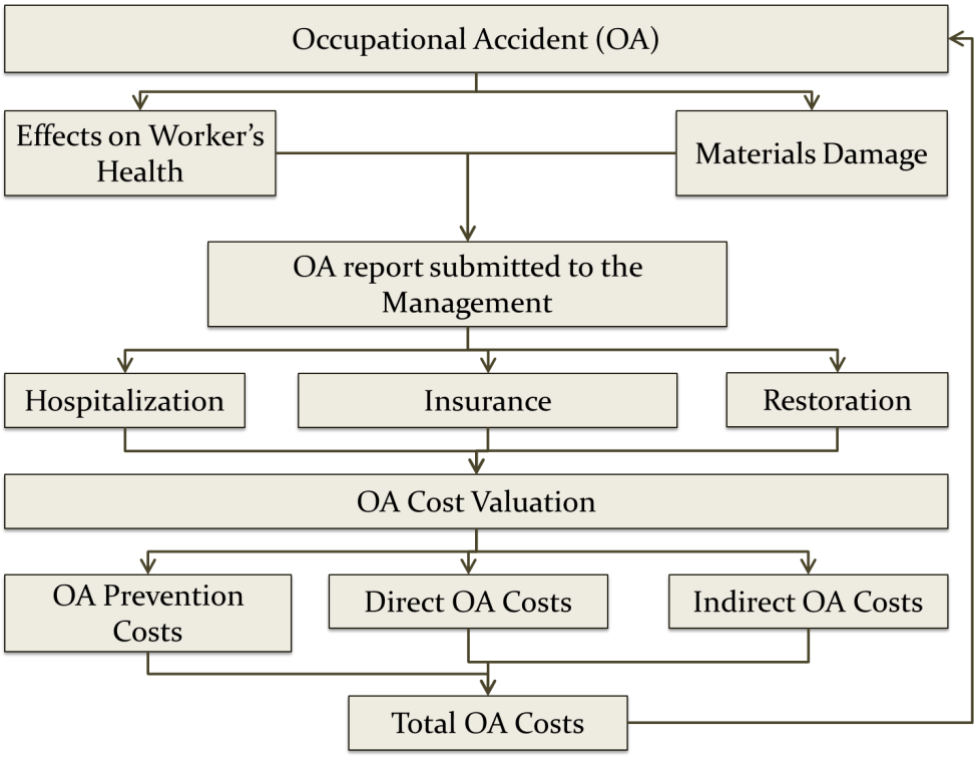

Figure 6. The proposed conceptual framework for the overall valuation of the total occupational accident cost.

Initially, the accident assessment must consider whether there are any effects on the health of the workers or possible material damage to equipment, plant, or products produced. In the event of an accident, these effects shall be communicated to the competent management for further management and accounting.

At the planning level, it is the relevant directorates that provide the techno-economic (Rajendran et al., 2021) and related information for each type of accident. This information includes medical costs, compensation, insurance contributions, equipment rehabilitation costs, and other costs directly related to the accident (Concha-Barrientos et al., 2005; Takala et al., 2014; Andersen et al., 2019). In the final stage, the systematic recording of all these data leads to a comprehensive picture of the financial costs of the accident. When the organization of the enterprise allows for the recording and keeping of the relevant data over time, then the accounting of the costs of occupational accidents can lead to more accurate estimates. This approach allows better decisions to be made on investments (Ruxho and Ladias, 2022b; Polo et al., 2025) in prevention and the adoption of OSH policies. The introduction of a system of regular recording and processing of OSH-related costs, from the initial planning of activities to their final production operation, is therefore becoming crucial to the success of the method. The company that seeks to understand in depth the costs of safety and to enjoy the long-term benefits offered by its optimization must recognize the importance of recording, organizing, and utilizing occupational health and safety information.

5. Conclusions

The microeconomic analysis in this paper has highlighted the importance of factoring the costs of occupational accidents into the strategic planning and operation of a modern business. Determining the economically optimal level of safety should not be treated solely as a theoretical process, but as a practical objective directly linked to the sustainability, competitiveness, and social responsibility of the company. Businesses' approach to OSH must go beyond the passive limits of mere compliance with the requirements of the legislation in force.

Businesses must become aware that the reduction of accidents and a general improvement in the level of safety at work cannot be achieved automatically through a mechanism of exogenous institutional regulation. Instead, it is linked to the maturation of the enterprise and the structural and operational improvement of its production processes. The more a company goes deeper in the direction of optimizing its production processes, the more it becomes aware of the added value of occupational health and safety in achieving its sustainability objective. In other words, the reduction in occupational accidents on a microeconomic scale is the result of the progress the company has made in moving toward its optimal operating levels. Progress in this direction passes through good organizational practices, operational upgrades, adoption of new technologies, and research based on reliable collection and evaluation of cost data.

By keeping detailed data on the costs of prevention, management, and remediation of occupational hazards, and by calculating actual rather than apparent costs, it is possible to develop a framework for a holistic assessment of the safety level of occupational accidents that promotes the sustainability of enterprises. Overall, OSH should be seen not as an obligation, but as a strategic asset for companies seeking sustainability. A company that integrates prevention into its operations reduces risks and at the same time enhances its long-term profitability by investing in preserving human life and demonstrating its corporate social responsibility.

In this context, calculating the real cost of accidents and choosing the appropriate prevention strategy are integral elements of this journey towards a safer and more efficient working environment.

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ELECTRONIC BANKING RISKS: CHALLENGES, SECURITY CONCERNS, AND MITIGATION STRATEGIES

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Abstract

Electronic banking has transformed the financial industry by offering convenient, fast, and cost-effective services to consumers and businesses. However, the digitalization of financial transactions also introduces a range of risks and security concerns. Key challenges include phishing attacks, identity theft, malware, and system vulnerabilities, which can lead to financial loss and erosion of customer trust. Additionally, the rapid evolution of technology and increasing regulatory demands pose significant operational hurdles for banks. This paper explores the major risks associated with electronic banking, highlights the most pressing cybersecurity threats, and examines both technical and administrative strategies to mitigate them. Rapid technological development makes the Internet the best way to provide customers with banking services regardless of time and geographic boundaries. Compared to traditional banking, electronic banking provides ease, convenience and access to their customers so that they can use the banking site for all types of transactions in a secure environment. Customers can interact with the banking site 24 hours a day and seven days a week. Despite the many benefits offered by this service, it remains a double-edged sword and is not used by every customer, because the growing distance between the bank and customers can lead to a lack of trust and increased concerns for safety. A particular risk comes with trying to integrate new channels with existing channels. An important step that banks must take before undertaking any kind of transformation is to ensure that online banking risk is properly addressed. Addressing e-banking risk includes a number of measures that banks and users can take to minimize and manage these risks. The purpose of this chapter is to identify the types of risks associated with electronic banking and to propose some of the main methods for dealing with these risks. These include multi-factor authentication, data encryption, customer awareness programs, and robust regulatory compliance. Addressing these challenges requires a holistic approach that combines technology, policy, and stakeholder collaboration. By strengthening digital security infrastructures and fostering a culture of cyber awareness, financial institutions can better protect their systems and customers in an increasingly digital financial ecosystem.

Keywords: operational risk, interest rate risk, transaction risk, reputation risk, strategic risk

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1. Introduction

Perceived risk has long been an important factor influencing customers' decision-making when purchasing products or consuming services. This concept becomes particularly important in the context of electronic banking, where the use of technology is often perceived as an uncertain and complicated process. According to various studies, including those by Mitchell [1] and Davidow [2], customers often face ambiguity and uncertainty due to the nature of technology, which brings new and unfamiliar stimuli.

When they decide to use electronic banking, customers are exposed to various risks, such as the availability of services, their performance and security. This perception of risk is supported by empirical research, such as those of Ho and Ng [3] and Lockett and Littler [4], which confirm that the use of electronic banking systems is closely related to the sense of risk.

In this context, operational risk, credit risk, interest rate, liquidity, price, exchange rate and transaction risk are among the main risks that banks and their customers encounter in electronic services. These risks have a significant impact not only on the operation of banks, but also on the customers' perception of their safety and reliability.

The paper explores these aspects of risk in electronic banking, analyzing the main factors that contribute to them and the impact they have on the performance of financial institutions and the customer experience. Furthermore, it examines the importance of effectively managing these risks to ensure that banks provide quality services and maintain their reputation in an increasingly competitive market.

2. Literature review

E-banking is defined as "an online portal through which consumers can perform various types of banking services ranging from paying bills to making investments" [5]. With the exception of cash withdrawals, internet banking gives customers access to almost any type of banking transaction at the click of a mouse [6]. Indeed, the use of the Internet as a new alternative channel for the distribution of financial services has become a competitive necessity instead of just a way to achieve competitive advantage with the advent of globalization and fierce competition [7, 8].

Banks use online banking as one of the cheapest channels of providing banking products [5]. Such a service also saves time and money of the bank with an added benefit of minimizing the possibility of bank teller errors [9]. Wise and Ali [10] argued that many banks in their country want to invest in ATMs to reduce the cost of branches since customers prefer to use them instead of using a branch to do business. The financial impact of ATMs is a marginal increase in fee income significantly offset by the cost of a significant increase in the number of customer transactions. The increase translates into improved customer loyalty leading to customer retention and increasing the value of the organization. E-banking is a lower cost delivery channel and a way to increase sales. Karjaluoto et al. [11] argued that "electronic banking is no longer limited by time and geography. Customers worldwide have relatively easy access to their accounts, 24 hours a day and seven days a week". The author further argued that, with online banking, customers who used to think that bank branches take too much time and effort are now able to transact at the click of their fingers. Robinson [12] believes that offering Internet banking services enables banks to establish and expand their relationships with customers. There are many other advantages for banks offered by online banking such as, mass customization for each user, innovation of new products and services, more effective marketing and communication at lower cost [13], development of non-core products such as insurance and stock production as an expansion strategy, improving market image, better and faster response to market evolution [9].

Stewart [14] asserted that despite the advantages of e-banking there is a possibility of its failure and this is mainly attributed to the lack of trust of consumers towards electronic channels. There are several other theories about customer behavior that can explain the rate of adoption and acceptance of e-banking. Interesting is the study of Doll [15], who also claimed that the content of product information in the design and presentation of the web are also important factors that affect customer satisfaction.

Mattila and Mattila [16] also asserted that security has been widely recognized as one of the main barriers to Internet adoption and it depends on the availability of Internet service and a number of other social and psychological factors. In the banking industry, customer-bank-corporate relationships remain a key issue where businesses invest to maintain a higher competitive edge in the market [17]. The relationship between banks and corporate clients is the most important factor in the success of new financial services. In conclusion, several empirical studies have examined the impact of internationalization and corporate e-banking on firm performance [18].

The growing popularity of e-banking has drawn attention to legal and illegal online banking practices. Criminals focus on stealing a user's online banking credentials because the username and password combination is relatively easy to obtain and then relatively easy to use fraudulently to access a bank account in internet and to commit financial fraud. To notify users, many banking sites are now including Security Indicators (Si) on their sites. Hua, Guangying [19] conducted an experiment to investigate how users' perception of online banking is affected by the perceived ease of use of the Internet and the privacy policies provided by the Internet banking website. In this study, he also examined the relative importance of perceived ease of use, privacy, and security. Perceived ease of use is of lesser importance than privacy and security. Security is the most important factor influencing user adoption. A particular risk arises with the attempt to integrate new channels with existing channels [20].
Slowly but steadily, bank customers are moving towards internet banking. An important step that banks must take before undertaking any kind of transformation is to ensure that online banking risk is properly addressed. This is very difficult for both customers and banks to determine the best way to use online banking. Also trust plays a very important role. It is very difficult to analyze trust as a phenomenon and it can be almost impossible to analyze trust in the context of e-commerce because of the complexity and risk of e-commerce. Trust will be the deciding factor for the success or failure of e-banking.

3. The risks associated with electronic banking

Customers perceive greater risks when performing services than when purchasing tangible goods [21]. Zeithaml [22] sees services as riskier than products because services are intangible, non-standardized, and often sold without warranty. Customers can rarely return a service they have already consumed to the service provider moreover some services are so technical or so specialized that customers have neither the knowledge nor the experience to assess whether they are satisfied, even after they have consumed the service [1].

Perceived risk has been considered as an important feature that affects the decision-making process of customers when they buy a product or consume some services [1]. Electronic banking is a channel that uses technology and customers perceive the use of banking electronic as a risky decision because services that apply technology present unknown and ambiguous incentives [2]. Therefore, when customers decide to use electronic banking, they are exposed to uncertainties such as the availability, compliance, and performance of electronic banking channels [23].
Ho&Ng [3] and Lockett&Littler [4] empirically support the fact that the use of the electronic banking system is associated with risk. Davidow, W. H. [2], suggested that customers perceive the existence of risk as present in the use of electronic banking services. Similarly, Sarin, S., Sego, T., and Chanvarasuth, N. [23] identified risk as an important characteristic of electronic banking.

3.1 Operational risk

Operational risk is the risk of loss resulting from inadequate or failed internal processes, systems and people, or external events and actions. As a result, the bank is unable to offer high quality products and services. Risk is present in every product or
Operational risk is the risk of loss resulting from inadequate or failed internal processes, systems and people, or external events and actions. As a result, the bank is unable to offer high quality products and services. Risk is present in every product or service offered. The level of risk is a consequence of the structure of the institution as well as the surrounding environment. Also, the risk will be determined by the nature and complexity of the products and services offered. Systems, processes and technology on which all these products rely will be the main indicator of the level of risk to which the institution is exposed.

Banks face three types of operational risk:

- Prediction the volume of transactions
- Information System Management
- Transfer, delegation (outsourcing)

3.1.1 Forecasting the volume of transactions

Forecasting the volume of transactions is difficult, therefore one of the biggest challenges that banks operating through the Internet will face is predicting the number of customers and the volume of transactions they will face. Experience has shown that many of the banks that offer electronic services have made a bad forecast of the volume and of course in such a case the bank may face financial and reputational damages and often compromises in terms of security as often to cope with the excessive demand they implement

inappropriate and previously untested systems. In order to avoid this category of risk as much as possible, banks should:

 do occasional market research
 implement database systems that ensure sufficient and flexible capacities to cope with changes in demand
 undertake promotional campaigns and
 Ensure sufficient staff and development of a suitable business plan

3.1.2 Information System Management

The second type of operational risk that accompanies e-banking is related to the management of the information system. Banks may face the difficulty of an adequate information management to monitor the electronic services they provide as there may be difficulties in configuring a new system that will provide the generated information. So it is necessary that the information generated is complete and available in understandable formats.

3.1.3 Transfer, delegation (outsourcing)

Recently a significant number of banks delegate some related business functions such as security. This is done for cost reduction purposes, but also due to the fact that the bank lacks sufficient expertise to provide it on its own. Transfer is an important function which can create material risks by potentially reducing the bank's control ability over security. Of course, the delegation of functions is not something new, nor is it uncontrollable, but banks should be more careful about the risks that accompany it.

Operational risk is a consequence of inefficient internal procedures and systems. Also, losses caused due to human errors or technical errors can lead to significant amounts of losses and are included in this category, intentional damage to computer systems (hacking damage), theft of information, etc. The problem with these types of risks lies in the fact that it is quite difficult to assess and quantify them. Since the 1990s, the financial sector has experienced losses exceeding $100 billion estimated as a result of operational losses. In addition, banks must assess all operational risks across products, activities, processes and systems. Banks identify and assess operational risk in all relevant products, activities, processes and their systems. Banks, in order to effectively identify operational risk, consider both internal factors (such as the entity's structure, nature of activities, the quality of human resources, organizational changes and employee turnover) and external factors (such as changes in the industry and technological advances) that may adversely affect the achievement of the bank's objectives.

Also, banks must ensure that any new product, activity, process or system goes through an operational risk assessment process before being put into operation. They should build a system for continuous monitoring of risk profiles and loss exposures. There should be a continuous reporting of information related to the issue of risk analysis in order to take preventive measures in a timely and appropriate manner. Banks should also have appropriate policies, processes and procedures for controlling and mitigating operational risks identified during the risk analysis process. These procedures should be reviewed on an ongoing basis so that risk assessments are always up-to-date. It is also very important for banks to have contingency plans and business continuity plans (BCP: Business Continuity Plan) in place in order to ensure business continuity capability in the event of a crisis or an event that would affect the serious way in the good functioning of all bank processes.

3.2 Risk related to the operational system

With the invention of the electronic "space", a new phenomenon called Electronic Crime appeared. Computer systems or the Internet can be thought of simply as instruments used to carry out well-known criminal acts such as theft, fraud, etc. The birth of the computer and in particular the Internet created entirely new spaces in the market economy and enabled the rapid movement of information within and outside the borders of the European Union. But the Internet brought with it many other negative phenomena related to the creation of new opportunities and spaces to commit fraud and theft using this new technology. Through special equipment and in-depth knowledge in this field, many people managed to interfere with electronic systems and perform unauthorized transactions for financial gain. This situation led to the issuing of new laws which aimed to regulate all these new phenomena.

In a communication from the European Commission, the term electronic crime refers to three categories.

The first category includes types of traditional crimes such as fraud or theft but always committed through the use of computer systems.

1. Fraud: Knowingly telling or telling false facts or events as if they were true for the purpose of financial gain.

2. Identity Theft: Identity theft means stealing someone else's identity information (such as the personal number on credit cards). As in the case of fraud, identity theft is done to help commit other crimes such as stealing bank accounts, paying for various purchases on the Internet, etc.
The second category includes the publication of illegal content on the Internet
The third category includes new types of crimes that are committed precisely as a result of the development of new technologies such as computers and the Internet. Examples of these crimes are:
Spamming - These are advertisements that appear automatically during normal browsing on the Internet or various e-mails that may come to our e-mail address that have an advertising content.
Hacking - Hackers are individuals who possess special computer skills and who manage to intervene inside systems, computer programs or websites by discovering and exploiting the cracks that may be in their security systems.
Malware - Is a category of harmful programs that include viruses, logic/time bomb/Trojan horse, sniffer programs, denial of service attacks, data manipulation, Web spoofing, and Web site defacements. Generally these are carried out by anonymous individuals who can mask their IP addresses, and use someone else's identity.
Investigating such matters is almost impossible, and requires the most trained computer experts who are usually hackers employed by the state itself.

3.3 Credit risk

Credit risk is the case when the client does not pay the obligations to the bank, according to the contract he signed with him. Through the Internet, the bank does not personally contact customers who apply for loans. Therefore, this constitutes a challenge for the bank to verify the "authenticity" of the client.
In general, the credit risk of a financial institution is not increased by the fact that the loan originates from an e-banking channel. However, management must take additional precautions when approving loans electronically, including ensuring management information systems are effectively in place to track portfolio performance originating from e-banking channels. Credit risks may increase in the future if the relationship with customers becomes more distant and transient, and if banks do not pay attention to credit standards due to competitive pressures.
The following aspects of online loan origination and approval tend to make the credit risk management process more challenging. If these aspects are not managed properly, the credit risk can increase significantly.

- Verification of the client's identity for online credit applications and the execution of a binding contract;
- Monitoring and control of the growth, prices and continuous quality of the loan created through e-banking channels;
- Collateral evaluation and collateral refinement over a wide potential geographic area;
- Collection of loan payments from individuals over a potentially wider geographical area; AND
- Monitoring of any increase in volume, and possible concentration outside the lending area.

3.4 Interest rate risk

Interest rate risk is the result of interest rate fluctuations. From an economic point of view, a bank focuses on the sensitivity of assets, liabilities and income to changes in interest rates.
Interest rate risk is caused by:

- differences between the moment of interest rate change and the moment of current flows (pricing risk);
- from the change of relations between different interest curves that affect banking activities (basis risk);
- from the change of rate relationships along the spectrum of maturities (yield curve risk);
- from interest rate related options included in banking products (options risk).

The assessment of interest rate risk should take into consideration the impact of complex, illiquid strategies or products as well as the potential impact that changes in interest rates will have on commission income. In these situations where trading is managed separately, this refers to structural positions and non-tradable portfolios.
Electronic banking can attract deposits, loans and other relationships from a larger pool of potential customers than other forms of marketing. A greater access to customers who primarily demand the best rates or terms, forces managers to create appropriate asset/liability management systems, including the ability to quickly adapt to changing market conditions.

3.5 Liquidity risk

Liquidity risk is the risk arising from the bank's inability to repay its obligations and the bank's inability to manage unplanned changes in financing resources. Online deposits have the potential to attract customers

who focus exclusively on rates. An institution can control this potential volatility and extended geographic reach through its deposit contracts and open account practices, which may include face-to-face meetings or the exchange of correspondence.
Internet Banking can increase the volatility of deposits for customers who keep their accounts only based on rates or terms. Assets/Liabilities and loan portfolio management system should be suitable for products offered through internet banking. Increased monitoring of liquidity and changes in deposits and loans may be necessary depending on the volume and nature of accounts opened online.

3.6 Price risk
Price risk is the risk of earnings or capital derived from changes in the value of tradable portfolios of financial instruments. This type of risk originates from market making, agreements and taking positions in interest rates, foreign exchange, capital and commodity markets.
Banks may be exposed to price risk if they establish or expand deposit brokerage, loan sales or securitization programs as a result of electronic banking activities. Appropriate management systems are needed to monitor measure and manage price risk if assets are actively traded.

3.7 Exchange rate risk
Foreign exchange risk is the case when a loan is disbursed in a currency other than the local currency. Currency risk can be caused by political, social and economic developments. The consequences can be unfavorable if the currency becomes subject to frequent exchange rate fluctuations. Banks are exposed to currency risk if they accept deposits or give loans in currencies other than the local one. Therefore, banks that use internet banking must install sophisticated systems if they are involved in activities that contain currency risk.

3.8 Transaction Risk
Transaction risk is the risk arising from an error, fraud or the inability to deliver products and services, maintain a competitive position and manage information. Transaction risk is evident in every product and service offered as well as in the internal banking control system.
A high level of transaction risk can also exist in internet banking products, especially in those products/services that are not well planned, implemented and monitored. Banks that offer financial products and services via the Internet must be able to meet consumer expectations. Banks also need to ensure that they have the right product, the capacity to deliver it quickly and on time, and the provision of reliable services to enhance reputational trust.
Attacks or interventions in the network of the banking system are one of the main concerns. Studies have shown that banking systems are more exposed to internal than external attacks. This is because internal users have knowledge of the system and can access it very easily. Therefore, banks must have protective audit systems in order to protect Internet banking from external and internal attacks.
The drafting and implementation of the contingency and/or fallback recovery plan is necessary for a bank, because through this plan the bank ensures that it can offer banking products and services even in unfavorable circumstances.

3.9 Reputational risk
Reputational risk is the case when laws, rules or ethical standards are broken. This risk exposes the bank to the payment of fines, penalties, damages and contract cancellations. This risk lowers the bank's reputation. An institution's decision to offer e-banking services, especially complex transactional services, significantly increases its level of reputational risk. Some of the ways in which e-banking can affect the institution's reputation are:

- Loss of trust as a result of unauthorized activity in customer accounts,
- Disclosure or theft of confidential customer information by unauthorized parties (eg, hackers),
- Failure to provide reliable service due to the frequency or duration of service interruptions from temporary systems failure;
- Consumer complaints regarding difficulties in using e-banking services and the institution's inability to solve problems.

Risk of damage to the bank's reputation may arise, even if customers do not suffer any actual damage. If a hacker successfully accesses a bank's website and makes changes, the bank in question may suffer substantial damage to its reputation even though customer balances are secure and the hacker has not

received any financial benefit. This affects not only the bank in question, but can also undermine confidence in the security of e-banking in general and therefore slow down development in this area.

3.10 Strategic risk

Before the bank offers an internet banking product, management must consider whether the product and technology match the banking objectives. Also, the bank should take into account whether the resources are sufficient and able to identify, monitor and control the risk in internet banking.

Technology experts along with marketing and operations experts should contribute to the planning and decision-making process for internet banking. New technologies, and in particular the Internet, can lead to rapid changes in competition. Therefore, the strategic vision should define how a product to be offered on the Internet is designed, implemented and monitored. The freedom and global reach of the Internet opens the threat of increased competition from new members who will no longer need a network of branches to operate effectively in any given market. This competition may have started across national borders. Meanwhile, existing players are faced with the problem of what to do with the branch networks they have built up over the years.

Poor investment planning and decisions for e-banking can increase a financial institution's strategic risk. For this, financial institutions should pay attention to the following problems:

- Suitability of management information systems (SIM) to track the use of e-banking and profitability;
- Costs involved in the creation of e-banking technology;
- Designing, providing, and pricing services appropriate to generate sufficient customer demand;
- Costs and availability of staff to provide technical support for dislevels involving multiple operating systems, web browsers, and communication devices;
- Competition from other e-banking providers; AND
- Technical suitability, operational, harmony, or marketing support for e-banking products and services.

3.11 Image risk

If a banking institution decides to offer e-banking service, it must take into account that the degree to which its image is exposed to risk increases due to the complex nature of this service.

Image risk is the actual and anticipated impact on earnings and equity arising from negative public opinion. This affects the institution's ability to create new relationships or services or to continue existing relationships. This risk may expose the institution to litigation, financial losses or a decline in the customer base. Exposure to reputational risk is present throughout the bank and includes the responsibility to exercise due care in dealing with customers as well as to provide accurate and timely services to the community.

The effects that e-banking can have on the image of the bank:

- Loss of credibility in case of unauthorized actions on the client's account
- Violation of customer privacy (electronic piracy)
- The difference between customer expectations and the level of service provided
- Difficulty of using e-banking
- Leakage of confidential customer information to third parties
- Not providing the service due to frequent interruptions.
- Customer complaints regarding the use of services and the inability of the contact point to respond to customer questions and uncertainties.

In order to determine what will be the impact of e-banking on traditional banks, the board must assess the effect on the following areas:

- Strategy
- Level of customer service
- Profits and costs
- Advertising expenses
- Financing cost
- Opportunities and threats

It is noted that none of these risks are completely new and unknown. The sector of the bank that analyzes the risk treats all the risks mentioned above as risks present in the activity of traditional banks. The difference is made when e-banking gives a different weight to all these risks. Some of these risks assessed as not very important in the activity of the traditional bank have a different importance in the e-banking dimension.

Well-designed marketing is a way to educate potential customers and limit image risk. Customers should understand what they can expect from a product or service as well as what specific risks and benefits are incurred while using the system. In this way, marketing concepts should be closely coordinated with open statements. A national bank should not market its electronic banking system based on features or attributes

that the system does not have. The marketing program must present the product accurately and fairly. National banks should carefully consider how links to third parties are presented on their Web sites. Hypertext links are often used to enable customers to connect to a third party. These links may represent an endorsement of third-party products or services in the eyes of customers. It should be made clear to customers when they leave the bank's Web site, so that there is no confusion about the specific service or product provider or about the security and confidentiality standards that apply. Likewise, statements must be made so that customers can distinguish between insured and uninsured products. Parent banks should ensure that their business continuity plans (BCPs) include the e-banking business. Regular testing of the business continuity plan, including press and public communications strategies, will help the bank ensure that it can respond effectively and quickly to adverse customer or media reactions.

3.12 Legal risk

Legal risk has become an important issue in e-banking, and one aspect of this is how any loss from a security breach should be distributed between banks and their customers. Customers must be responsible for any security breach or any system problem that is due to negligence on their part, and this must be reflected in the conclusion of contracts for internet banking services. But if the damage occurred due to system breakdown, negligence of bank employees, attack by hackers or other parties; the bank should be responsible to cover the damages.

4. Conclusions

The rapid development of information technology after the 70s of the last century and especially its use in society in the framework of the technical-scientific revolution could not leave out the banking sector. Every day it is used more and more by banks to serve customers with speed, convenience, efficiency and at an ever lower cost. E-banking has become an integral part of modern banking due to lower transaction costs, twenty-four hour services, increased control over transactions, higher volume of transactions in less time, facilities remote transactions and a much wider group of banking products and services. But in addition to these possibilities, e-banking operations increase the different levels of risk for banks. Furthermore, clients who rely on e-banking services may have a greater lack of tolerance for a system that is unreliable or that does not provide accurate and current information. Through online services, clients have a greater choice and do not need to be connected to one financial institution or another. Clearly, the longevity of e-banking depends on its security, reliability and accountability.

One of the biggest problems with e-banking seems to be the security and protection of information exchanged between the client and the bank. In fact, banking systems always express concern that the use of electronic banking may expose banks, customers and their transactions to electronic interception and possibly fraud interventions. Therefore, banks need to carry out regular risk assessments, keep customers informed and, possibly, prepare to offer compensation if private information becomes public. For this reason, all risks related to e-banking will be recognized, addressed and managed by banking institutions in a careful manner. These risks can be mitigated by adopting a comprehensive risk management program that includes a sound strategic plan. It is important that the extent of the risk management program in a financial institution should be proportional to the complexity and sophistication of the activities in which it engages. E-banking requires new administrative controls and potentially increases the importance of existing controls. Management should evaluate its administrative controls to maximize the availability and integrity of e-banking systems. Effective incident response mechanisms are important to minimize operational, legal and reputational risks arising from unexpected events, including internal and external attacks that may affect the provision of e-banking systems and services.

New technologies, especially the Internet, can lead to rapid changes in competition. Therefore, the strategic vision should determine the way a product that will be offered on the Internet is designed, implemented and monitored. The freedom and global reach of the Internet opens up the threat of increased competition from new members who will not need a network of branches to operate effectively in any given market. Poor investment planning and decisions for e-banking can increase the strategic risk of a financial institution. For this, financial institutions should pay attention to the problems of continuous investments in IT. Electronic (cyber) crime, which is getting stronger every day, is today a phenomenon that also accompanies electronic banking, therefore, to protect against it, continuous cooperation with the information technology bodies, as well as those specialized for the fight against cybercrime. The information technology systems designed for electronic banking must be audited continuously, giving constant importance to their audit, why not also using hackers to prove its stability against attacks of any kind. Continuous cooperation with the Bank of

Albania, as the highest specialized and independent regulatory entity in the banking system, is a continuous necessity for electronic banking as a whole.

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THE RELATIONSHIP BETWEEN FORMS OF BULLYING AND ACADEMIC SUCCESS OF HIGH SCHOOL STUDENTS IN THE REGION OF PRISHTINA, KOSOVO

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Abstract
This study investigates the relationship between various forms of bullying and school success among high school students in the Municipality of Prishtina, Kosovo. A total of 204 respondents from six different high schools participated in this research. The study focused on four primary forms of bullying: physical, verbal, social (emotional), racist, sexual, and cyberbullying, and how these experiences influence students' academic performance, including grade point average (GPA), and attendance.
Using a quantitative, cross-sectional research design, data were collected through a structured, self-administered questionnaire. The results revealed that verbal and social bullying were the most commonly reported forms, and these were significantly associated with lower academic achievement and reduced school engagement. Students exposed to frequent bullying, particularly social and cyber forms, showed a notable decline in motivation, classroom participation, and attendance.
The findings emphasize the negative impact of bullying on academic outcomes and highlight the urgent need for targeted interventions in schools. The study concludes that addressing bullying in all its forms is essential for improving students' academic success and creating a safer, more supportive school environment in Prishtina.

Keywords: bullying, academic success, high school students, verbal bullying, cyberbullying

JEL Classification: I21, I28, I31, Z18

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1. Introduction

Bullying in schools has become a global concern that impacts students' well-being, behavior, and academic performance. While numerous international studies have explored the implications of bullying on student outcomes, there is limited research on this issue within the specific context of Kosovo. In the Municipality of Pristina, the capital and largest urban center of Kosovo, secondary school students may encounter various forms of bullying – verbal, physical, social, and cyberbullying – which can significantly impact their academic journey.

Academic success is often shaped by a complex interplay of psychological, social, and environmental factors. Among these, peer interactions play a critical role. Negative peer experiences, particularly bullying, have been linked to poor concentration, school absenteeism, emotional distress, and low academic motivation. Given Kosovo's ongoing educational reforms and efforts to improve student well-being, understanding how bullying is related to academic outcomes is essential for developing targeted interventions.

This study aims to investigate the relationship between different forms of bullying and academic performance among secondary school students in Prishtina. The findings will provide valuable insights for educators, policymakers, and mental health professionals working to create safer and more supportive school environments.

2. Relevant Research

The relationship between bullying and academic achievement has been the subject of increasing empirical investigation globally, with consistent findings indicating negative academic, psychological, and behavioral outcomes for students involved in bullying – whether as victims, perpetrators, or both. While international research provides a broad foundation, there is a growing need for context-specific studies that explore how these dynamics play out in local education systems such as those in Kosovo.

Olweus (1993), one of the pioneers in bullying research, established that victims of bullying often experience fear, low self-esteem, and academic disengagement, leading to lower school performance and increased dropout rates.

Glew et al. (2005) found that bullied students were more likely to have poor academic performance, experience difficulty concentrating, and feel unsafe in school, which contributed to a decline in classroom performance.

Juvonen, Wang & Espinoza (2011) showed that victims of cyberbullying reported higher levels of depression and anxiety and showed a significant decrease in academic motivation and school attendance.

2.1 Regional and Balkan Research

Although limited, several regional studies provide insights into bullying and academic challenges in Southeastern Europe:

• UNICEF (2017) found that in the Western Balkans, including Kosovo, up to 50% of students reported experiencing some form of bullying. The report highlighted links between victimization and reduced school performance and attendance.

• A study conducted in Albania by Zhilla et al. (2019) found that verbal and emotional bullying significantly predicted reduced academic outcomes among secondary school students, especially in urban settings.

• Stojanovic and Djordjevic (2018) analyzed bullying trends in Serbia and found that school climate and teacher attitudes play a mediating role between bullying and students' academic performance.

2.2 Research in Kosovo

The empirical picture of school violence in Kosovo is unclear (Arënliu et al., 2021). The few studies that have examined school violence among Kosovo adolescents have been narrowly limited to specific forms of violence or specific geographical areas (UNDP, 2015; Zaplluzha & Shahini, 2016). Consequently, there is a need for more representative studies that cover a wider range of school violence behaviors. Kosovo's unique history of war may increase susceptibility to higher rates of school victimization. On the other hand, Kosovo's strong family and cultural support systems foster resilience and resilience (Arënliu & Landsman, 2010; Kelmendi & Hamby, 2022) may produce different patterns of violence from other European countries (Ammermüller, 2007). Consequently, we expect lower levels of victimization compared to neighboring countries with similar histories and socio-economic characteristics. The findings from this study may be relevant to other low-income and post-conflict countries with different socio-historical dynamics than those reported in the current literature on school violence. Of all the factors, students' perceptions of dangerous

peers had the most significant impact on school victimization. The authors recommend that a multidisciplinary approach is required to address the complexity of school victimization in Kosovo.

There is a growing body of literature examining school safety and bullying in Kosovo, although specific links to academic outcomes are still emerging:

• Kosovo Education Center (KEC) surveys from recent years indicate that bullying is prevalent in both primary and secondary schools, with verbal and psychological bullying being the most common

• A 2021 study by Rugova & Shala found that students who reported higher levels of peer victimization also showed lower academic motivation and attendance in urban schools in Prishtina and Gjakova.

• Findings from the Faculty of Education, University of Prishtina (2022) highlighted the lack of sustainable anti-bullying programs and the need for teacher training, particularly in managing classroom dynamics and identifying early signs of academic decline related to bullying.

2.3 Purpose of the Study

The main purpose of this study is to explore and analyze the relationship between different forms of bullying and academic success of secondary school students in the Municipality of Prishtina, Kosovo. This research aims to identify how different types of bullying - such as physical, verbal, emotional, sexual, racist and cyberbullying - affect students' academic performance, school attendance, class participation and overall motivation to succeed in school. By examining this relationship in the specific cultural, social and educational context of Prishtina, the study aims to:

• Assess the prevalence of different forms of bullying among secondary school students.

• Determine the impact of these forms of bullying on academic achievement and school engagement.

• Identify potential differences in the effects of bullying based on gender, age, grade level or socio-economic background.

• Contribute empirical evidence to inform school policies, educational interventions, and mental health support programs.

• Raise awareness among educators, parents, and policymakers about the importance of addressing bullying as a barrier to academic success.

Ultimately, the study aims to support the development of safer, more inclusive, and academically supportive school environments in Prishtina, where all students - regardless of background or social status - can thrive without fear of bullying or exclusion.

2.4 Research Problem

Bullying remains a persistent and complex problem in schools worldwide, and its consequences are particularly damaging during adolescence – a critical period for academic, emotional and social development. In the Municipality of Prishtina, Kosovo, anecdotal reports, NGO findings and limited national surveys suggest that various forms of bullying – physical, verbal, emotional, sexual, racist and cyberbullying – are common in secondary school settings. However, there is a notable lack of empirical research that specifically examines how these forms of bullying affect students' academic success.

While educational reforms in Kosovo have prioritized curriculum development and teacher training, the issue of school safety and peer victimization has received relatively less attention. Most schools do not have comprehensive anti-bullying programmes, and many educators are ill-equipped to recognise or address the subtle but damaging effects of bullying on academic performance. As a result, many students may suffer in silence from decreased academic motivation, difficulty concentrating, school absences, and lower academic achievement—problems that are rarely associated with experiences of bullying.

The central research problem, then, is the lack of data and systematic analysis on the relationship between specific forms of bullying and academic outcomes of secondary school students in Prishtina. Without such data, schools and policymakers are unable to design targeted interventions that address the social and academic consequences of bullying.

Key questions that arise include:

• Which forms of bullying are most prevalent among secondary school students in Prishtina?

• How does exposure to these forms of bullying correlate with academic performance and engagement in school?

• Are there differences in the impact of bullying based on demographic factors such as gender, grade level, or socioeconomic status?

Addressing this research problem is essential for improving school climate, promoting student well-being, and supporting academic success for all students in the Kosovo secondary education system.

2.5 Study Hypotheses

A set of well-formulated Hypotheses for the study on the relationship between forms of bullying and academic success among high school students in the Municipality of Prishtina, Kosovo:
These hypotheses are divided into the main hypothesis and several sub-hypotheses based on specific forms of bullying: Main Hypotheses (H_0 and H_1)

• Null Hypothesis (H_0):

There is no statistically significant relationship between forms of bullying and academic success among high school students in the Municipality of Prishtina.

• Alternative Hypothesis (H_1):

There is a statistically significant relationship between forms of bullying and academic success among high school students in the Municipality of Prishtina.
Using the same scales as previous studies (Roland and Idsøe, 2001; Fandrem et al. 2009), and following the general trend of the phenomenon of Bullying in most studies, the following hypotheses were formulated:

H1: Adolescents who are verbal bullies have poorer academic success than adolescents who are not verbal bullies.

H2: Adolescents who are victims of verbal bullying have poorer academic success than adolescents who are not victims of verbal bullying.

H3: Adolescents who are victims of cyberbullying have poorer academic success than adolescents who are not victims of cyberbullying.

H4: Adolescents who are victims of physical bullying have poorer academic success than adolescents who are not victims of physical bullying.

H5: Adolescents who are victims of sexual bullying have poorer academic success than adolescents who are not victims of sexual bullying.

H6: Female adolescents who are verbally bullied have poorer academic achievement than male adolescents who are verbally bullied.

H7: Female adolescents who are physically bullied have poorer academic achievement than male adolescents who are physically bullied.

The research is designed in general to analyze the general tendency of the phenomenon of bullying in the majority of students.

3. Methodology

This section describes the research methods used to investigate the relationship between different forms of bullying and academic achievement among secondary school students in the Municipality of Prishtina, Kosovo. The study aimed to identify how different types of bullying – physical, verbal, social, racist, sexual and cyberbullying – affect students' academic performance, school engagement and overall educational experience. A quantitative research approach was chosen to collect and analyze measurable data from a representative sample of students, ensuring that the findings could be generalized within the local educational context. The study used a quantitative, cross-sectional, research design, allowing data to be collected at a single point in time to identify correlations between bullying and academic outcomes. This approach was appropriate for assessing the prevalence of bullying and its potential impact on students' academic performance. Participants included students aged 16 to 17 from 6 public high schools in the Municipality of Pristina. A stratified random sampling technique was used to ensure diversity in terms of school type, gender, and grade level. The final sample consisted of 204 students, providing a broad perspective on students' experiences across the region. Data collection occurred over a period from January to March 2025, with formal approval obtained from school authorities and ethical review bodies. Students were informed about the purpose of the study and participation was strictly voluntary. Written informed consent was obtained from both students and their parents or guardians (when applicable). Surveys were administered during school hours in a supervised setting to ensure privacy and address any need for clarification.

3.1 Data Design and Analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics (frequencies, means, and standard deviations) were used to summarize the prevalence and forms of bullying. The data were analyzed using and were used to summarize demographic data and general trends (mean, standard deviation, frequency), while Inferential Statistics such as: a. Pearson Correlation Coefficient to assess the relationship between bullying and school success, b. Cronbach's Alpha is used to assess the internal consistency of each subscale, c. Independent Samples t-Test to compare differences between subgroups (e.g., gender, school type).

4. Results

This research included 204 students from the 11th grade in high schools in Prishtina. Gender representation is equal, with 50% female and 50% male. The school with the highest number of students is Sami Frashëri High School with 28.4%, followed by Xhevdet Doda High School (20.1%) and Ahmet Gashi High School (17.6%). The average age of the students is 16.14 years old with a standard deviation of 1.05 years. The average grade point is 3.81, indicating a good level of academic performance, with a standard deviation of 0.58.

Table 1. Demographic Data

Shkolla	**N**	**%**
"Ahmet Gashi" High School	36	17.6%
"Eqrem Qabej" High School	35	17.2%
"Sami Frasheri" High School	59	28.4%
"Xhevdet Doda" High School	41	20.1%
SH.M.T. School “28 November”	17	8.3%
“Hoxhe Kadri Prishtina” School	16	7.8%
Municipality	**N**	**%**
Pristina	204	100.0%
Gender	**N**	**%**
Female	102	50.0%
Male	102	50.0%
Class	**N**	**%**
Class 11	204	100.0%
Year	**Average**	**Standard Dev.**
	16.14 years	1.05 vjeç
Average grade	**Average**	**Standard Deviation**
	3.81	.58

4.1 Places where bullying occurred

The results show that the classroom is the main place where bullying occurs, with 65.7% of students reporting negative experiences there. School corridors are also problematic, with 57.4% of cases reported. The schoolyard includes 42.2% of cases, while toilets and public transport show fewer incidents, with only 19.6% and 19.1% respectively. A significant percentage of students, 29.9%, have experienced bullying on the way to or from school, indicating the need for safety measures outside the school environment as well.

Table 2. Places where bullying occurred

Places where bullying occurred	Yes		No	
	N	%	n	%
In the schoolyard	86	42.2%	118	57.8%
In Class	134	65.7%	70	34.3%
In the corridors	117	57.4%	87	42.6%
In the toilet	40	19.6%	164	80.4%
Other places in school	55	27.0%	149	73.0%
On the way to/from school	61	29.9%	143	70.1%
On public transport	39	19.1%	165	80.9%

4.1 Gender Comparison in relation to academic success

From the results of the gender comparison in relation to academic success, it can be observed that females have a higher average grade than males, with an average of 3.9147 compared to 3.7087 for males. This shows that females have better academic performance compared to males.

Table 3. Gender Comparison in relation to academic success

Group Statistics

Sex	N	Mean	Std. Deviation	Std. Error Mean

Average Grade	Female	102	3.9147	.57997	.05743
	Male	102	3.7087	.57120	.05656

The independent samples t-test showed that there is a statistically significant difference between the two groups (t = 2.556, p = 0.011), confirming that the mean difference is significant at the 95% confidence level. The confidence interval for the mean difference (0.04706 to 0.36491) also suggests that this difference is statistically significant. These data suggest that gender has an impact on academic achievement, with females showing better average results than males.

Table 4. Independent Samples Test

		Levine's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Average Grade	Equal variances assumed	.000	.992	2.556	202	.011	.20598	.08060	.04706	.36491
	Equal variances not assumed			2.556	201.953	.011	.20598	.08060	.04706	.36491

Reliability Test – Cronbach's Alpha

The results show a high reliability of the questionnaire on forms of bullying:
• Forms of bullying by students have an Alpha Cronbach's = .869, which indicates an excellent level of internal consistency.
• Forms of bullying towards students have an Alpha Cronbach's = .811, which also indicates good reliability.
• The average reliability for both groups is 0.840, suggesting that the questions used are valid and stable for measuring the phenomenon of bullying.

Table 5. Reliability Test – Cronbach's Alpha

Group of questions	**Number of variables**	**Alpha cronbach's**
Forms of bullying by students	6	.869
Forms of bullying against students	6	.811
Average reliability		0.840

4.3 Hypothesis testing

To test the hypotheses, Spearman and Pearson correlation tests were used to assess the relationship between different forms of bullying and adolescents' academic success. For hypotheses involving ordinal variables, Spearman's coefficient was applied, while for interval variables, Pearson's coefficient was used. The results showed that all forms of bullying had a significant negative relationship with grade point average, confirming that adolescents who experience or practice bullying have poorer academic success. Furthermore, gender-separated analysis showed that bullied girls face more pronounced consequences in school results compared to boys.

H1. Adolescents who are verbally bullies have poorer academic success than adolescents who are not verbally bullies.

To analyze the relationship between verbal bullying and academic achievement, Spearman's rho correlation coefficient was used. This test is suitable for measuring the relationship between two ordinal variables or non-normal data, indicating the direction and strength of the relationship between them.

The independent variable in this analysis is verbal bullying, which is measured based on the frequency of verbal harassment, such as name-calling, gossiping, or persistent bullying. This variable affects the results of adolescents' academic achievement. The dependent variable is the adolescents' average grade point average, which represents their academic achievement. This indicator serves to understand whether verbal bullying behaviors have a negative effect on students' academic performance.

Table 6. Hypothesis H1 Correlations

Did you verbally bully others by teasing others or "calling" them things? (name-calling, spreading rumors, or constant teasing).				Average grade
Spearman's rho	Did you verbally bully others by teasing others or "calling" them things? (name-calling, spreading rumors, or constant teasing).	Correlation Coefficient	1.000	-.203**
		Sig. (2-tailed)	.	.004
		N	204	204
	Average grade	Correlation Coefficient	-.203**	1.000
		Sig. (2-tailed)	.004	.
		N	204	204

**. Correlation is significant at the 0.01 level (2-tailed).

The results of the Spearman correlation test show a negative and significant relationship between verbal bullying and academic achievement (rho = -0.203, p = 0.004). This indicates that adolescents who engage in more verbal bullying tend to have lower average grades.

The negative value of the correlation coefficient (-0.203) indicates that the more an adolescent engages in verbal bullying, the lower his average grade. Although the relationship is weak, it is statistically significant.Since p = 0.004 is less than the 0.01 significance level, we can conclude that this effect is not random. Therefore, there is a real negative impact of verbal bullying on the academic achievement of adolescents.

H2. Adolescents who are victims of verbal bullying have poorer academic performance than adolescents who are not victims of verbal bullying.

This analysis used the Pearson correlation, which measures the linear relationship between two continuous variables. This test determines the magnitude and direction of the relationship between experiencing verbal bullying and academic achievement (grade point average). The independent variable in this analysis is experiencing verbal bullying, which is measured by asking whether an adolescent has been a victim of verbal harassment, including name-calling, gossiping, or persistent bullying. The dependent variable is the adolescents' grade point average, which represents their academic achievement. This variable is used to assess whether victims of verbal bullying have poorer academic performance.

Table 7. Hypothesis H2 Correlations

Have you been verbally bullied by others by teasing you or "calling" you things? (name calling, spreading rumors, or constant teasing).			Average grade
Have you been verbally bullied by others by teasing you or "calling" you things? (name calling, spreading rumors, or constant teasing).	Pearson Correlation	1	-.194**
	Sig. (2-tailed)		.006
	N	204	204
Average grade	Pearson Correlation	-.194**	1
	Sig. (2-tailed)	.006	
	N	204	204

**. Correlation is significant at the 0.01 level (2-tailed).

The results of the Pearson correlation analysis show a negative and significant relationship between experiencing verbal bullying and academic achievement (r = -0.194, p = 0.006). This indicates that adolescents who are victims of verbal bullying tend to have lower average grades.

The negative value of the correlation coefficient (-0.194) suggests that experiencing verbal bullying is associated with a small but significant decrease in academic achievement. Since p = 0.006 is less than the 0.01 significance level, we can conclude that this relationship is statistically significant and not coincidental. Hypothesis H2, which states that "Adolescents who are victims of verbal bullying have poorer academic achievement than those who are not victims of verbal bullying," is supported by the data.

H3. Adolescents who are victims of cyberbullying have poorer academic achievement than adolescents who are not victims of cyberbullying.

This analysis used the Pearson correlation, which measures the linear relationship between two continuous variables. This test is used to determine whether there is a relationship between experiencing cyberbullying and academic achievement, as measured by grade point average. The independent variable in this case is experiencing cyberbullying, which includes threats, harassment, or humiliation that occur via the Internet, email, or social media. The dependent variable is the adolescents' grade point average, which represents their academic achievement.

Table 8. Hypothesis H3 Correlations

Have you been cyberbullied by other students via computers and mobile phones, threatened, harassed, humiliated? (email, websites, chat rooms, instant messages and SMS)			Average grade
Have you been cyberbullied by other students via computers and mobile phones, threatened, harassed, humiliated? (email, websites, chat rooms, instant messages and SMS)	Pearson Correlation	1	-.171*
	Sig. (2-tailed)		.014
	N	204	204
Average grade	Pearson Correlation	-.171*	1
	Sig. (2-tailed)	.014	
	N	204	204

*. Correlation is significant at the 0.05 level (2-tailed).

The results of the analysis show a negative and statistically significant correlation between the experience of cyberbullying and academic achievement (r = -0.171, p = 0.014).

The negative value of the correlation coefficient (-0.171) suggests that the more an adolescent is a victim of cyberbullying, the lower his or her average grade. Furthermore, since p = 0.014 is less than the 0.05 significance level, this relationship is statistically significant, meaning that the effect is not random.

H4. Adolescents who are victims of physical bullying have poorer academic achievement than adolescents who are not victims of physical bullying.

This analysis used the Pearson correlation, which measures the linear relationship between experiencing physical bullying and academic achievement, as measured by grade point average. This test determines whether there is a statistically significant relationship between these two variables. Independent variable: Experiencing physical bullying, which includes acts such as kicking, hitting, biting, pinching, or hair pulling. Dependent variable: The adolescents' grade point average, which measures their academic achievement.

Table 9. Hypothesis H4 Correlations

Have you been physically bullied by other students at school? (kicking, hitting, biting, squeezing, hair pulling, etc.)			Average grade
Have you been physically bullied by other students at school? (kicking, hitting, biting, squeezing, hair pulling, etc.)	Pearson Correlation	1	-.153*
	Sig. (2-tailed)		.029
	N	204	204
Average grade	Pearson Correlation	-.153*	1
	Sig. (2-tailed)	.029	
	N	204	204

*. Correlation is significant at the 0.05 level (2-tailed).

The results show a negative and statistically significant correlation between experiencing physical bullying and academic achievement (r = -0.153, p = 0.029). The negative value of the correlation coefficient (-0.153) indicates that the more an adolescent experiences physical bullying, the lower their grade point average. Since p = 0.029 is less than the 0.05 significance level, the result is statistically significant. This means that the relationship between physical bullying and grade point average is not random and suggests a real impact of physical bullying on the academic achievement of adolescents. Hypothesis H4 ("Adolescents who are victims of physical bullying have poorer academic achievement than those who are not victims of physical bullying") is supported by the data.

H5. Adolescents who are victims of sexual bullying have poorer academic performance than adolescents who are not victims of sexual bullying.

This analysis used the Pearson correlation, which measures the linear relationship between the experience of sexual bullying and academic performance, measured by grade point average. This test helps determine the impact of sexual bullying on adolescents' academic performance. Independent variable: Experience of sexual bullying, which includes unwanted physical contact or the use of abusive words of a sexual nature. Dependent variable: Adolescents' grade point average, which measures their academic performance.

Table 10. Hypothesis H5 Correlations

Have you been sexually bullied by others with unwanted physical contact or abusive words?			Average grade
Have you been sexually bullied by others with unwanted physical contact or abusive words?	Pearson Correlation	1	-.311**
	Sig. (2-tailed)		.000
	N	204	204
Average grade	Pearson Correlation	-.311**	1
	Sig. (2-tailed)	.000	
	N	204	204

**. Correlation is significant at the 0.01 level (2-tailed).

The results show a negative and statistically significant correlation between experiencing sexual bullying and academic achievement (r = -0.311, p = 0.000).

The negative value of the correlation coefficient (-0.311) indicates that the more an adolescent experiences sexual bullying, the lower their grade point average. Compared to the other forms of bullying analyzed previously, this relationship is stronger, suggesting a greater impact of sexual bullying on academic achievement. Since p = 0.000 is less than the 0.01 significance level, the result is statistically highly significant. This means that the relationship between sexual bullying and grade point average is not random and has a significant impact on the academic performance of adolescents. Hypothesis H5 ("Adolescents who are victims of sexual bullying have poorer academic achievement than those who are not victims of sexual bullying") is strongly supported by the data.

H6. Female adolescents who are verbally bullied have poorer academic achievement than male adolescents who are verbally bullied.

This analysis used the Pearson correlation, which measures the linear relationship between experiencing sexual bullying and academic achievement, as measured by grade point average. This test helps determine the impact of sexual bullying on adolescents' academic performance. Independent variable: Experiencing sexual bullying, which includes unwanted physical contact or the use of sexually abusive language. Dependent variable: The adolescents' grade point average, which measures their academic achievement.

Table 11. Hypothesis H6 Correlations

Gender	Have you been verbally bullied by others by teasing you or "calling" you things? (name calling, spreading rumors, or constant teasing).			Average grade
Female	Have you been verbally bullied by others by teasing you or "calling" you things? (name calling, spreading rumors, or constant teasing).	Pearson Correlation	1	-.347**
		Sig. (2-tailed)		.000
		N	102	102
	Average grade	Pearson Correlation	-.347**	1

		Sig. (2-tailed)	.000	
		N	102	102
Male	Have you been verbally bullied by others by teasing you or "calling" you things? (name calling, spreading rumors, or constant teasing).	Pearson Correlation	1	-.194
		Sig. (2-tailed)		.051
		N	102	102
	Average grade	Pearson Correlation	-.194	1
		Sig. (2-tailed)	.051	
		N	102	102

**. Correlation is significant at the 0.01 level (2-tailed).

The results show a negative and statistically significant correlation between experiencing sexual bullying and academic achievement (r = -0.311, p = 0.000).
The negative value of the correlation coefficient (-0.311) indicates that the more an adolescent experiences sexual bullying, the lower their grade point average. Compared to the other forms of bullying analyzed previously, this relationship is stronger, suggesting a greater impact of sexual bullying on academic achievement. Since p = 0.000 is less than the 0.01 significance level, the result is statistically highly significant. This means that the relationship between sexual bullying and grade point average is not random and has a significant impact on the academic performance of adolescents. Hypothesis H5 ("Adolescents who are victims of sexual bullying have poorer academic achievement than those who are not victims of sexual bullying") is strongly supported by the data. Hypothesis H7 ("Female adolescents who are physically bullied have poorer academic achievement than male adolescents who are physically bullied") is supported by the data.

H7. Female adolescents who are physically bullied have poorer academic achievement than male adolescents who are physically bullied.
For this analysis, the Pearson correlation was used, which measures the relationship between physical bullying and the academic achievement of adolescents, taking into account the differences between the female and male genders. This test provides an assessment of the strength and directions of the relationship between these two variables. Independent variable: Experiencing physical bullying, which includes acts such as kicking, hitting, biting, pinching, and hair pulling by other students.
Dependent variable: The average grade of adolescents, which measures their academic achievement. Second variable: Gender (Female/Male) as a modifiable factor in the impact of physical bullying on academic achievement.

Table 12. Hypothesis H7 Correlations

Gender	Have you been physically bullied by other students at school? (kicking, hitting, biting, squeezing, hair pulling, etc.)			Average grade
Female	Have you been physically bullied by other students at school? (kicking, hitting, biting, squeezing, hair pulling, etc.)	Pearson Correlation	1	-.391**
		Sig. (2-tailed)		.000
		N	102	102
	Average grade	Pearson Correlation	-.391**	1
		Sig. (2-tailed)	.000	
		N	102	102
Male	Have you been physically bullied by other students at school? (kicking, hitting, biting, squeezing, hair pulling, etc.)	Pearson Correlation	1	-.324**
		Sig. (2-tailed)		.001
		N	102	102

Average grade	Pearson Correlation	-.324**	1
	Sig. (2-tailed)	.001	
	N	102	102

**. Correlation is significant at the 0.01 level (2-tailed).

The results show a negative and statistically significant correlation between physical bullying and academic achievement for both genders.

• For females: The correlation coefficient is -0.391, with $p = 0.000$, indicating a strong negative association between physical bullying and academic achievement.

• For males: The correlation coefficient is -0.324, with $p = 0.001$, also indicating a negative association between physical bullying and academic achievement, but weaker compared to females.

In both cases, $p < 0.01$, meaning that the results are statistically significant and that the association between physical bullying and academic achievement is not due to chance.

5. Conclusions

In conclusion, the results of this study show a significant and negative association between bullying and adolescent academic achievement. Regardless of the type of bullying — verbal, cyber, physical, or sexual — all forms of bullying have a significant negative impact on adolescent academic performance. The data suggest that the more an adolescent is a victim of bullying, the lower their average grades. This result is particularly important for parents, teachers, and health professionals to consider, as bullying can have lasting consequences on adolescent development, including a direct impact on their academic achievement and mental health.

The study examined the correlation between different forms of bullying — physical, verbal, social, and cyberbullying — and academic achievement among high school students in the Municipality of Prishtina, Kosovo. Findings indicate that bullying, in all its forms, is significantly associated with students' academic performance and overall school experience.

Verbal and social bullying were reported as the most prevalent forms among students, often occurring in the classroom and in social settings. These forms of bullying had a particularly negative impact on students' motivation, concentration, and participation in class, contributing to lower academic performance and reduced engagement in school. Cyberbullying, although less frequently reported, showed a strong correlation with increased school absenteeism and emotional distress, further hindering academic success.

Furthermore, students who reported being bullied frequently showed lower grade point averages and a reduced sense of belonging in school compared to their non-bullied peers. In contrast, students in more supportive school environments with effective anti-bullying policies showed higher resilience and better academic outcomes.

These results highlight the urgent need for comprehensive, evidence-based interventions in Prishtina secondary schools, focusing on bullying prevention, early identification of victims, and support systems for affected students. Schools need to engage not only students and teachers, but also parents and the wider community in creating a safer and more inclusive learning environment. Addressing bullying in all its forms is essential to promoting students' academic and emotional well-being.

6. Recommendations

Based on the findings of this study, several key recommendations can be made to help reduce bullying/bullying and improve academic success among high school students in Prishtina:

- Implementing Comprehensive Anti-Bullying Policies

Schools should develop and implement clear and consistent anti-bullying policies that address all forms of bullying, including physical, verbal, social, racist, sexual and cyberbullying. These policies should include procedures for reporting, investigating and responding to incidents.

- Raising Awareness and Providing Bullying Education

Educational programs should be introduced to help students, teachers and parents understand the different forms of bullying, their consequences and ways to respond. This could include workshops, seminars, peer education initiatives and classroom discussions.

- Establishing Support Systems for Victims

Schools should provide counseling services and mental health support for students who have experienced bullying. Access to trained school psychologists or counselors can help affected students regain self-confidence and academic focus.

- Encouraging Positive School Climate and Peer Relationships

Schools should promote an inclusive and respectful environment through extracurricular activities, peer mentoring programs, and initiatives that foster empathy and collaboration among students.
- Training Teachers and Staff
Teachers and school staff should receive regular training on how to identify signs of bullying, how to intervene effectively, and how to support both victims and perpetrators in positive behavior change.
- Promoting Parental Involvement
Parents should be actively engaged in efforts to combat bullying through regular communication with schools, participation in awareness programs, and reinforcement of positive values at home.
- Use Monitoring and Evaluation Tools
Schools and educational authorities should regularly monitor the prevalence and impact of bullying through anonymous surveys and feedback mechanisms. This data can inform ongoing improvements in anti-bullying strategies.
- Integrating Bullying Prevention into the Curriculum
Life skills and civic education curricula should include content on emotional intelligence, conflict resolution, and digital citizenship to help students face social challenges responsibly.
By implementing these recommendations, schools in the Municipality of Prishtina can create safer learning environments where all students have the opportunity to progress academically and personally.

7. Study Limitations

While this study provides valuable insights into the relationship between different forms of bullying and academic success among high school students in Prishtina, several limitations must be acknowledged:
Self-reported data: The study relied on self-reported questionnaires from students, which may be subject to bias. Respondents may under- or over-report their experiences with bullying or academic performance due to fear of judgment, misunderstanding of questions, or a desire to present themselves in a certain way.
Limited geographic scope: The research was conducted only in the Municipality of Prishtina, which may limit the generalizability of the findings to other regions of Kosovo or countries with different social, cultural, or educational contexts.
Cross-sectional design: The study used a cross-sectional design, capturing data at a single point in time. As a result, it cannot establish causal relationships between bullying and academic success – only associations can be identified.
Lack of qualitative data: The study focused primarily on quantitative data and did not include qualitative methods such as interviews or focus groups that could have provided a deeper insight into students' personal experiences, coping strategies and perceptions of bullying and school support.
Potential under-representation of certain groups: Some student populations – such as those with disabilities, students from minority ethnic backgrounds or those who have dropped out of school due to bullying – may not have been sufficiently represented in the sample, potentially skewing the findings.
Variation in school policies and environments: Differences in how schools address and report bullying were not fully taken into account, which could affect students' willingness to disclose their experiences or their perception of school safety and support.
Academic success narrowly measured: Academic success was measured primarily through grade point average and attendance. Other important indicators such as motivation, class participation, or emotional well-being related to learning were not explored in depth.
Acknowledging these limitations is important for the accurate interpretation of the findings and for guiding future research that can build on and address these gaps.

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REGIONAL INEQUALITIES: KNOWLEDGE FRONTIERS AND DEBATES

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Abstract
Regions are coherent spatial units (i.e., sub-national level) that share common (natural or artificial) features and consist of actors that share common goals. The regional problem exists when there are marked inequalities in the standard of living enjoyed by people in different regions. Regional science, the interdisciplinary scientific locus that is concerned with regional phenomena, aims, precisely, at dealing with the regional problem, and provides insight not only into science *per se* but also into policy making. The paper provides a comprehensive review of the literature on regional inequalities aiming at identifying current knowledge frontiers and debates. The study of regional inequalities is, apparently, at the heart of regional science.

Keywords: regional inequalities, literature review, knowledge frontiers and debates

JEL classification: R10

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1. Introduction

Space – together with time – supports the existence of the world (Massey, 2005). Regions are coherent spatial units (i.e., sub-national level) that share common (natural or artificial) features and consist of actors that share common goals (Paasi, 1998). The regional problem exists when there are marked disparities in the standard of living enjoyed by people in different regions (Le Grand and Robinson, 1976). Regional science, the interdisciplinary scientific locus that is concerned with regional phenomena, aims, precisely, at dealing with the regional problem, and provides insight not only into science *per se* but also into policy making.

Fueling the relative academic debate and providing insight to the evaluation of the relative policies, the evolution of regional inequalities is an issue of utmost importance. This applies even to the smallest spatial entities in terms of population (Petrakos et al., 2005a; Kallioras, 2010). Hence, the study of regional inequalities – in particular, the study of regional convergence / divergence – is at the heart of regional science. From the policy viewpoint, the study of regional convergence / divergence may interpret as a sign with respect to the evaluation of the effectiveness and the efficiency of the implemented regional policy mix. Regional policy aims, precisely, at reducing the level of regional inequalities in a growth-enhancing environment. From the theory viewpoint, the study of regional convergence / divergence may serve as an empirical exercise with respect to the affirmation of regional development theories. Questioning the position of the neoclassical theory (Heckscher, 1919/1991; Ohlin, 1933/1966; Solow, 1956; Swan, 1956; Greenwood, 1975; Borjas, 1991; *inter alia*) that inequalities are bound to diminish with growth through the activation of market-emanating convergence mechanisms in a policy-free environment, theories with sharply different policy implications (Myrdal, 1957; Romer, 1986; Lucas, 1988; Krugman, 1991; Fujita, 1993; Rebelo, 1991; Venables, 1996; *inter alia*) stress the argument that growth is a spatially selective and cumulative process.

Nevertheless, achieving convergence is not a sufficient – even though it is a necessary – condition for achieving economic, social, and territorial cohesion (Barca, 2009). Encapsulated in the homonymous EU policy (i.e., Cohesion Policy), cohesion is a topmost EU political priority. Cohesion is not an easy notion to define, and, although there is often a tacit understanding of what it means, it is open to a variety of interpretations (Hooghe and Keating, 1994; Begg, 2003). Largely, economic cohesion is related to economic performance indicators (Cappelen et al., 2003; Bradley, 2006), social cohesion is related to shared values and equal opportunities (Beauvais and Jenson, 2002; Jeannotte, 2003), and territorial cohesion is related to regions' distinctive potentials for development (Jouen, 2008; Waterhout, 2008). Territorial cohesion has been added next to the 'traditional' pillars of economic and social cohesion as the result of a long-lasting process of intergovernmental cooperation in the sphere of spatial planning.

The focus on territorial cohesion stresses out the fact that regional inequalities have an intrinsic territorial dimension and accentuates the pivotal role of territorial capital in the growth process (Camagni, 2007; Camagni, 2008; Camagni and Cappello, 2013; Capello, 2018). Territorial capital consists of the bundle of features that shape the particular territorial identity of regions (Herrschel and Newman, 2002) and emphasize on the role of regions as sources of critical development assets in the form of increasing returns effects and positive externalities (Scott and Storper, 2003). This is so considering that territorial capital confers added value and multiplicative benefits to the structural characteristics of regions (Fratesi and Perucca, 2019). The so-called 'third Italy' (Brusco, 1982) and the concept of 'innovative milieu' (Aydalot, 1986; Camagni, 1991) are reminders of the significance of territorial capital in regional growth process.

Given the extremely unfavorable economic environment in recent years (i.e., post-2010), the concept of regional resilience has attracted academic attention, mainly because of the generalized sense of uncertainty and insecurity, which has necessitated a search for formulas for adaptation and survival (Lagravinese, 2015). The intensity, geographical coverage and multidimensional expression of the consecutive crises (i.e., economic crisis, pandemic crisis, refugee crisis, energy crisis) provide an arena for new research related to the evolution of regional inequalities (Artelaris et al., 2024). Regional resilience is interwoven with the ability to withstand external pressures, the capacity to respond positively to external changes, the longer-term adaptability (or learning capabilities), and the capacities of governmental authorities to engage in the appropriate kinds of planning, action and social learning (Bristow, 2010; Pendall et al., 2010; Simmie and Martin, 2010; Cuadrado-Roura and Maroto, 2016; Eraydin, 2016; Fratesi and Rodriguez-Pose, 2016; Tsiapa et al., 2018).

Regional resilience highlights that regional economies should possess pre-existing resources and capabilities encompassing diversified economic activities and institutions, the capacity to adapt to changing conditions, the capacity to reorganize in the event of a shock, an emphasis on small-scale, localized activities embedded in the capacities of the local environment, and a healthy core or supporting economy of family, neighborhood, community and civil society that is strong in reciprocity, cooperation, sharing and

collaboration in the delivery of essential activities (Martin and Sunley, 2007; Psycharis et al., 2014; Fromhold-Eisebith, 2015; Giannakis and Bruggeman, 2017). Such an ascertainment necessitates the territorialization of EU Cohesion Policy towards strengthening the territorial capital of regions. Formulating and implementing territorial policies means, on the one hand, enhancing a just spatial distribution of opportunities and outcomes and, on the other hand, alleviating the (generalized) climate of discontent. Both objectives represent important milestones in the course of European integration and showcase (re-)emerging topics in regional science literature.

The need for the enhancement of a just spatial distribution of opportunities and outcomes and the need for the alleviation of the climate of discontent stem from the post-crises emergence of territorial discontinuities that complement the pre-crises-entrenched territorial divisions. Indeed, in the, otherwise, integrated EU space, there are regions that are disconnected from their physical, social, and economic networks (Pérez Soba et al., 2013), experiencing relative or, even, absolute decline. Evidently, space matters and shapes the potential for development not only of territories but also of the individuals who live in them and, consequently, development policies should be imbued with the place-based approach (Barca et al., 2012).

The paper provides a comprehensive review of the literature on regional inequalities aiming at identifying current knowledge frontiers and debates. The study of regional inequalities is, apparently, at the heart of regional science. The current section of the paper is introductory. The next section provides the state of the art. The third section highlights the issues that remain open. The last section of the paper offers the conclusions.

2. Regional inequalities: Knowledge frontiers

The dominant approaches for evaluating regional inequalities are β-convergence and σ-convergence (Baumol, 1986; Barro, 1991; Barro and Sala-i-Martin, 1992; Sala-i-Martin, 1996). Usually, β-convergence and σ-convergence are examined together. The former is a necessary, though not sufficient, condition for the latter (Barro and Sala-i-Martin, 1995). The concept of β-convergence refers to the relation between the levels of a (regional) dataset at a given date and the consequent corresponding growth rates for a given period, either in an unconditional (i.e., absolute) or in a conditional (i.e., *ceteris paribus*) fashion. Positive values of β coefficient imply that regions with higher initial values tend to experience higher growth (i.e., divergence). Negative values of β coefficient imply that regions with higher initial values tend to experience lower growth (i.e., convergence). The concept of σ-convergence may express as the ratio of the standard deviation of a (regional) dataset to the corresponding mean, at a given date. High(er) values of σ coefficient indicate high(er) levels of inequality, whereas low(er) values of σ coefficient indicate low(er) levels of inequality. Increasing values of σ coefficient indicate increasing levels of inequality (i.e., divergence), whereas decreasing values of σ coefficient indicate decreasing levels of inequality (i.e., convergence).

Focusing exclusively on the approaches of β-convergence and σ-convergence runs the danger to provide a misleading picture as regards the evolution of regional inequalities. This is so as both concepts follow the rationale of linearity and thus, unavoidably, rule out the possibility that the regional economies considered may form convergence clubs. In the middle of an imaginable theoretical spectrum, from the neoclassical school to its critics, the concept of convergence clubs lays on theoretical models that yield multiple steady-state equilibria and classify the regional economies considered into different groups with different convergence characteristics (Azariadis and Drazen, 1990; Durlauf, 1993; Galor, 1996; Quah, 1996). In particular, the concept of convergence clubs points out that it is quite natural to expect that regional economies may form convergence clubs that are themselves diverging from each other. In other words, it is quite natural to expect that there is convergence within each convergence club but there is not convergence across convergence clubs. This means that convergence and divergence trends may coexist, although in different proportions and at different strengths. Empirically, notable approaches for investigating for the emergence of convergence clubs are the gaps approach (Chatterji, 1992; Chatterji and Dewhurst, 1996), the regression trees (Durlauf and Johnson, 1995, Postiglione et al., 2010), the stochastic convergence approach (Bernard and Durlauf, 1995; Hobijn and Franses; 2000), and the asymptotic cointegration (Phillips and Sul, 2007; Phillips and Sul, 2009).

Overall, the well-established regional convergence / divergence empirical literature, utilizing a variety of methodological approaches, offers a plethora of studies testing for regional convergence in the EU. Following the tradition of neoclassical thinking, the underlying research hypothesis refers, explicitly or implicitly, to the ability of market forces to generate faster growth in less advanced areas, and thus to allow them to catch-up with their more advanced counterparts. Yet, it seems that the EU experience does not support the neoclassical claim. This is so as core EU regions generate advantages, leading to differential growth performance, through the entrenchment of agglomeration economies and operate as hubs for

economic activities associated with increasing returns to scale. Conversely, peripheral EU regions mainly host activities associated with constant returns to scale. Engaged in an integration process with more advanced partners, peripheral EU regions tend to develop the inter-industry type of trade relations. The latter imposes specialization, typically, in labor- and / or resource-intensive economic activities. This is the outcome of the inability of the peripheral, less advanced, EU regions to be competitive in the markets of capital- and knowledge-intensive economic activities (Brülhart and Elliott, 1998). Even though it provides an alternative – and perhaps the only feasible alternative – route for the exploitation of the available skills, it is doubtful whether such a structural differentiation can produce convergence in the long-run (Kallioras and Petrakos, 2010; Petrakos et al., 2012).

The vast majority of the empirical regional convergence / divergence studies is conducted in terms of per capita GDP. This is the case, despite the fact that the necessity for constructing 'beyond GDP' composite indicators has been, extensively, highlighted (Costanza et al., 2009; Stiglitz et al., 2009; Stiglitz et al., 2018; *inter alia*). Such a necessity reflects the recognition that development is based on the 'economy-society-environment' triptych, and it cannot be seen as a mere economic concept (Meadows et al., 1972; Brundtland, 1987; Sen, 2001; *inter alia*). The rationale for the construction of composite indicators for the measurement of regional development, and consequently for the assessment of regional inequalities, is that composite indicators are the 'appropriate' tools for evaluating multidimensional phenomena. Composite indicators lie in the algebraic combination of individual variables, each of which can assess a single dimension of the relevant multidimensional phenomenon (Nardo et al., 2005; Saisana et al., 2005). Therefore, composite indicators are more understandable, as they provide the general picture, and possibly more interesting, as they 'compress' the information. Even though, in principle, there is unanimity about the indisputable importance of composite indicators (Becker et al., 2017; Dialga and Giang, 2017), there is, still, a lack of unanimity regarding the acceptance of the 'appropriate' composite indicators (due to subjective choices that are made for the compilation).

Against the backdrop of the 'beyond GDP' discussion, studies conducted at the country level (Martin and Sanz, 2003; Yin et al., 2003; Crespo Cuaresma et al., 2008; Böwer and Turini, 2010; Halmai and Vásáry, 2010; Cavenaile and Dubois, 2011, *inter alia*) confirm that, prior to the eruption of the economic crisis, the EU has experienced a persistent convergence process. However, such a process may mask a pattern of divergence inside each country. This is because convergence at the European level has been partly driven by the dynamism of the metropolitan centers, causing dualistic phenomena at the national level (Dunford, 1994; Abraham and van Rompuy, 1995; Puga, 2002; Barrios and Strobl, 2005; Petrakos et al., 2005b; Mora, 2008; *inter alia*). These seemingly conflicting results may simply indicate that, in reality, there is a concomitance of regional convergence and regional divergence trends (Giannetti, 2002; Ezcurra and Rapún, 2006; Artelaris and Petrakos, 2016). After the eruption of the economic crisis, empirical studies indicate that the EU started to experience either trends of reverse convergence or trends of divergence (Pina and Sicari, 2021; Capello and Cerisola, 2023). Particularly, it has been unveiled that the process of convergence that took place among the EU countries prior to the economic crisis was driven primarily by public policies and not by market forces (as the neoclassical doctrines suggest) (Petrakos et al., 2021).

The body of empirical literature on the evolution of regional inequalities reveals facts that are relevant for explaining the emergence of the so-called 'places that don't matter' and the geography of discontent in the EU (Dijkstra et al., 2019; McCann, 2020). The discontent stems, mainly, from the feeling of left-behind. Such a feeling is stronger in regions that during the economic crisis have experienced income decline, job losses, and brain-drain both because of inherent structural weaknesses and because of the implemented austerity policies. In the ballot-box, discontent is expressed as 'the revenge of places that don't matter' (Rodriguez-Pose, 2018), with the vast majority of people voting in favour of populist and nationalistic parties. Brexit is, apparently, the most evident case of discontent (Becker et al., 2017; Schimmelfenig, 2018; Petrakos and Sotiriou, 2021) and represents a historically unprecedented fact that is associated with the withdrawal of a country from a deep integration area. Given the central place of the UK in the commercial and financial relations through its complex cross-border supply chains and its intense trade relations with the EU, Brexit is associated with an unexpected, unique, and large trade shock, and a capability to bring serious disruptions to trade, to dense production networks and to the global value chains (McCann, 2018; Casadei and Iammarino, 2021).

Place-based (or place-sensitive) policies may be the best response to effectively address the adverse effects of the geography of discontent (Iammarino et al., 2017; Iammarino et al., 2019). Place-based policies go beyond mere compensatory measures, concentrating on the turning to good account of the untapped potential of the left-behind places. Instead of designing and implementing isomorphic policies (Chien, 2008), place-based policies, recognizing the territorial approach to development, take into consideration that both

the geographical context (i.e., in terms of social, cultural, and institutional characteristics) and knowledge matter in policy intervention. Place-based development policies open the door to development policy models with open-ended spatial boundaries, as a response to the criticism of the supply-side, top-down ('one-size-fits-all') policy paradigm (Abdulai, 2017; Constantin, 2021). The latter that, mostly, represents policies aiming at the provision of infrastructure and at state-aid industrialization have struggled to cope with the more heterogeneous economic reality emerging from globalization (Roberts, 1993), often ending as 'strategies of waste' (Rodriguez-Pose and Arbix, 2001). At the backdrop of the territorialization of EU Cohesion Policy, inequalities are to be arranged so that 'they are to be of the greatest benefit to the least-advantaged members of society' (Rawls, 1971).

The turn to place-based policies accentuates the importance of multi-level governance (Hooghe and Marks, 2001; Hooghe and Marks, 2003; Hooghe and Marks, 2010). The latter may encapsulate the coordination of actions by the different tiers of government (i.e., the EU, the EU member-states, and the regional authorities) in order to create and implement the (place-based) EU policies. Multi-level governance may mediate the effects of Cohesion Policy in ways that affect its performance and impact (Surubaru, 2017). A couple of major trends in the evolution of the governance systems of European states can be highlighted (Vedrine, 2018). On the one hand, the EU member-states create supranational organizations and bodies aiming at their economic and political integration (within the EU). On the other hand, the EU member-states seek to improve public sector efficiency by locating decision-making power as close as possible to citizens. Literature suggests that the quality of governance (i.e., administrative capacity) at the regional level support effective delivery in Cohesion Policy (Bachtrögler et al., 2020; Mendez and Bachtler, 2024). Administrative capacity results from the combinations of skills and resources, while the interplay between different competencies, at each administrative level, can explain cases of policy failure or success (El-Taliawi and van der Wal, 2019).

Evidently, inequalities are first and foremost a lack of fair equality of opportunities and a just democracy is a society where all individuals have similar access to the resources which will allow them to be better off (Drozdz, 2014). To this end, the concept of spatial justice (re-)emerges. While spatial inequalities focus on the existing disparities across different spatial units, spatial justice is concerned with addressing these disparities and promoting fairness and equity in spatial distribution. The concept of spatial justice challenges the notion that access to resources and opportunities is evenly distributed, and, instead, focuses on how space influences social and economic outcomes. Spatial justice lies on the premise that the organization of space is a crucial dimension of human societies and reflects social facts and influences social relations (Lefebvre, 1968; Lefebvre, 1972; Lefebvre, 1974; Soja, 2010). In essence, tackling social injustices through formulating territorial policies means tacking the feeling of being 'trapped in space' (Harvey, 1989) or being 'chained to a place' (Bourdieu, 1999), together with avoiding the risk of 'lost territories' throughout Europe, despite their untapped economic and social potential. Spatial justice is thus a crucial challenge and an imperative; an end in itself as well as a catalyst for enhancing the process of European integration. Indeed, emerging from the recognition that the shift towards sustainability should not leave certain groups or regions behind or exacerbate existing inequalities (Sovacool et al., 2018; Jänicke, 2018; Green and Gambhir, 2020), the concept of just transition is at the forefront. Just transition represents a place-based set of principles, processes, and practices that build economic and political power to shift from an extractive economy to a regenerative economy and emphasizes the need to develop strategies in order to ensure that vulnerable groups and places are not disproportionately burdened (Giannakopoulos et al., 2022; Petrakos et al., 2022).

Although economic integration has greatly enhanced the mobility of products, people, and money this does not imply the ubiquity of economic activity (Scott et al., 2001). In the course of time, the EU has managed, in a series of enlargements, to expand, first southwards and then eastwards, integrating economies less and less (technologically) developed. Europe is gradually moving from a 'space of States' to a 'State of spaces' (Karanika and Kallioras, 2018) and from a 'space of places' to a 'space of flows' (Castells, 2020). In a nutshell, the pure essence of the European economic integration process is the gradual 'thinning' of (the artificial) border impediments. Thus, as the process of European economic integration is in full swing, European territories have been experiencing a period of unprecedented change (Brülhart et al., 2004; Crescenzi et al., 2014), being transformed into integral parts of the European economic space. Yet, the latter, instead of getting 'flat', is getting more 'curved', as it appears to be, simultaneously, characterized both by European 'flattening' and local 'steepening', and thus more 'sticky' (McCann, 2008). Such 'stickiness' may even reinforce spatial externalities (Harvey, 2011; Kemeny, 2011; Piketty, 2014), and thus it becomes apparent why geography 'matters' so much (Gertler, 2003). Technological change – a (or the) main force 'behind perpetually rising standards of living' (Grossman and Helpman, 1994) – becomes endogenous and changes 'differently in different territories' (Rodriguez-Pose and Crescenzi, 2008; Faggian and McCann 2006; Kallioras et al., 2021). Thus, the unique aspects of a locality and the ability to create and strengthen a

comparative advantage are at the heart of economic development and success (Storper, 1997; Acemoglu and Robinson, 2000; Rodrik et al., 2004; Boschma, 2005; Ertur and Koch, 2007; Storper, 2011; Lu and Wang, 2015; Caragliu and Nijkamp, 2016). This is especially so taking into consideration the enormous impacts that modern globalization trends (or global mega-trends) (Bhandari and Heshmati, 2005; Ferguson, et al., 2010) are playing in shaping regional economic geography.

During the recent years, a wave of novel concepts, such as the related variety (Frenken et al., 2007; Hassink et al., 2014; Aarstad et al., 2016; Boschma et al., 2023; *inter alia*), the innovation systems (Lundvall, 2007; Asheim, 2012; McCann and Ortega-Argilés, 2013; Tsvetkova et al., 2020, *inter alia*), the entrepreneurial ecosystems (Stam, 2015; Acs et al., 2017; Spigel, 2017; Stam and van de Ven, 2021; *inter alia*) and the economic complexity (Hidalgo and Hausmann, 2009; Tacchella et al., 2013; Hausmann et al., 2014; Balland et al., 2022; *inter alia*), has emerged aiming at offering a (more) sophisticated understanding of the regional growth processes. The concept of related variety indicates that not only the stock of inputs affects growth but also the precise composition in a qualitative sense. Thus, regions specializing in a particular composition of complementary sectors experience higher growth rates than regions specializing in sectors that do not complement each other. Innovation systems refer to the wider organizations and institutions affecting and supporting learning and innovation. The concept of innovation systems focuses on learning, knowledge, networks and institutions as central elements in enabling (or hindering) innovation. The concept of entrepreneurial ecosystems is used for understanding the context for entrepreneurship in particular territories. The entrepreneurial ecosystem comprises a set of interdependent actors and factors that are governed in such a way that they enable productive entrepreneurship. The concept of economic complexity supports the idea that growth, development, technological change, income inequality, spatial disparities, and resilience are the visible outcomes of hidden systemic interactions. Thus, the thorough understanding of economic phenomena presupposes the thorough understanding of the systemic interactions that produce them. The aforementioned concepts – even though different *inter se* – may shed light on the growth paths of both more advanced and less advanced regions taking into consideration the fundamental growth mechanisms that refer to the uniqueness of knowledge and to the diversity at the individual, organizational and system levels.

The experience of the EU regions highlights that regional inequalities are the outcome of the interaction of economy-wide forces and regional characteristics. On the one hand, there is technological progress that – together with the process of globalization – has inverted the geography of jobs. The inversion concerns the fact that many rural areas and middle-to-small metropolitan areas that were once quite prosperous have been characterized by a combination of job loss, declining labor-force participation or declining per capita income relative to the national average. This is so as output is, now, based on cutting-edge technologies and finance services that favor large metropolitan areas and draw from pools of skilled workers in high-turnover labor markets. On the other hand, there are the place-specific endowments of people and firms, the formal and informal institutions, the capacities for innovation, and the reaction to changes. Overall, regional development theories suggest that regions benefiting from internal or external economies of scale and a favorable geography, having significant endowments of natural resources or high-quality human resources, large market size and a favorable structure, or simply enjoying favorable initial conditions are able to compete in the new integrated economic environment and do well in terms of growth performance.

3. Regional inequalities: Debates

The theoretical debate on regional inequalities is driven by the competition between the so-called convergence (i.e., the proponents of the neoclassical theory) and divergence (i.e., the critics of the neoclassical theory) schools of thought. The major divide between the two schools of thought is the relation of regional inequality to national development. The convergence school predicts that higher levels of development are eventually associated with lower levels of inequality, while the divergence group claims the opposite. Particularly, proponents of the neoclassical theory argue that development eventually (i.e., in the long run) leads to a reduction of regional inequalities, through the activation of three equilibrating mechanisms: declining marginal productivity of capital, interregional trade, and interregional factor movement. In contrast, critics of the neoclassical theory claim that growth is a spatially selective and cumulative process, stressing the role of policies in balancing development patterns. Concerning the necessity for the implementation of regional development policies (i.e., Cohesion Policy), the regional convergence / divergence literature presupposes the ability of market forces to generate growth. Thus, the salient (though neglected) issue is that convergence models have been tested in a way that does not make

clear whether (or to what extent) convergence occurs because of market dynamics or / and because of public policies. Yet, such an issue is critical for economic policy. To the extent that market economies have, indeed, embodied mechanisms of convergence, social peace and political stability can be maintained without the need for large-scale public interventions.

Undoubtedly, there is a complex interaction between international and intranational inequalities as the level of regional inequalities may relate to the process of national (European) development. On the one hand, it is argued (Williamson, 1965) that regional inequalities widen in the early stages of development (i.e., low-income levels), but as soon as the national economy enters the mature stage of economic development (i.e., high-income levels), inequalities tend to diminish. This overall process results in an inverted U-shaped curve. Particularly, in the earlier stages of development, factors of production are concentrated into relatively few growth poles. Labor and capital migration is extremely selective, flowing from poor to rich areas. In parallel, there is absence of interregional linkages resulting in minimization of spread effects. The central government's policy is focused on strengthening aggregate national growth, supporting growth poles, and thus increasing regional inequality. However, this situation is unlikely to persist indefinitely. In the latter stages of development, both capital and labor migration become less selective, as the national labor and capital markets become more sophisticated. Furthermore, interregional linkages are reinforced, strengthening spread effects, whereas central government pursues a redistributive policy transferring resources from richer to poorer regions. On the other hand, it is supported (Petrakos et al., 2011) that regional inequalities tend to diminish in the early stages of development (i.e., low-income levels), but as soon as the national economy enters the mature stage of economic development (i.e., high-income levels), inequalities tend to increase. This overall process results in a mirror-image J-shaped curve. Particularly, regions at earlier stages of development are more likely to be characterized by a productive system in which resource-intensive activities dominate, markets are relatively shallow or fragmented, and quality, diversity and factor-augmenting technology are limited. These characteristics possibly describe constant returns to scale environments, where capital productivity is declining. The productive system in advanced regions is more likely to be characterized by economies of scale, positive externalities and agglomeration, higher levels of research and development, a higher quality of human resources, a more advanced market structure, a better mix of activities and larger size. The combination of these characteristics may generate a favorable environment in which increasing returns to scale and home-market effects yield higher growth rates over time.

Another strand of literature associates regional inequalities with business cycles. Considering that the aggregate business cycle creates the economic environment for an individual region, the most important aspect in understanding the connection between aggregate and regional cycles is the economic, or industrial, structure of national and regional economies (Isard, 1982). Indeed, regions are affected by aggregate cycles differently because their industrial structures differ from each other. This means that all regions do not necessarily grow at times when the aggregate economy is growing, or contract during national recessions (Fischer and Nijkamp, 1987; Temple, 1994). On the one hand, from a theoretical viewpoint, a pro-cyclical behaviour can be explained by the fact that expansion cycles begin at the poles of economic activity, where the interaction of agglomeration effects and market size provides a lead over other regions; on the contrary, during a recession period, these poles are more exposed to demand and supply contractions and, therefore, are more likely to be negatively affected than the rest of the regions, resulting in decreasing regional inequality (Berry, 1988). Under an alternative perspective, regions that are less developed, more isolated, and more dependent on factors such as public investment and employment (i.e., the so-called 'sheltered regions') are unable to catch up with the more advanced regions in periods of expansion, mainly because they are less exposed to changes in market conditions; the opposite was true for a period of contraction (Rodriguez-Pose and Fratesi, 2007). On the other hand, a counter-cyclical behaviour can be explained by the facts that the mobility of labor is higher and regional policies are more efficient in the periods of expansion, thus resulting in a more spatially balanced distribution (Pekkala, 2000; Kangasharju and Pekkala, 2004).

Although there is still a high level of complexity in spatial processes to be dealt with, it is clear in terms of observable outcomes that leading regions are performing better, while weaker regions are still struggling to catch up. Yet, regional development theories still cannot provide a convincing response to the fact that some regions are, in growth terms, persistently underperforming (i.e., the laggards of the past tend to be the laggards of today). Persistency in underperformance seems to take the form of a path-dependent process largely driven by some unspecified, but certainly interacting, internal forces and dynamics and it seems that it does not respond to typical policy prescriptions (Polese and Shearmur, 2006). Is this the result of a regional market failure, policy failure, geography, institutional and cultural rigidities, some type of a 'missing factor' in the regional base, a combination of all these, or something else? Why persistently underperforming regions cannot learn and benefit from 'good practices' examples and from the 'success

stories' of other regions? This is mostly associated with the fact that regional development theories, and the consequent policy prescriptions, are rarely informed by the experience of the persistently underperforming regions (Petrakos, 2008; Freeman and Soete, 2009).

Apparently, without unique knowledge resources and diverse contexts, it is unlikely to generate growth (Trippl et al., 2016; Marques and Morgan, 2021). Yet, unique knowledge resources and diverse contexts cannot exist everywhere because their ubiquity would deny their uniqueness. Given this, it behoves regional scientists to carry on the responsibility of dealing with regional inequalities, especially if regional convergence is no longer seen as the ultimate goal. Considering that the causal mechanisms behind inequalities are institutions and policies (Milanovic, 2019), the evolution of regional inequalities reflects the effectiveness of regional policies to enhance the efficiency of regional institutions.

4. Conclusions and Thoughts

The study of regional inequalities has been gaining (inter-)disciplinary status since the end of WW II (Isard, 2003; Boyce, 2004; Pike et al., 2016). The discipline has, mostly, focused on understanding the dynamics of growth centers assuming that the lessons learnt can be used to assist poor(er) regions to converge with the rich(er) ones (Hadjimichalis, 2006; Peck et al., 2022). The argument is that if a set of policies have contributed to the success of the rich(er) regions, then they should be capable to do the same in the poor(er) ones. This line of thought is based on two salient assumptions that are rarely made explicit: on the one hand, that poor(er) regions are in the same trajectory (though in an earlier phase of development) with the rich(er) ones; on the other hand, that success and failure are symmetric processes (i.e., if the presence of a factor contributes to success in one place, its absence from another place would explain failure).

The pre-crisis EU experience, in particular, indicates the entrenchment of an unbalanced territorial pattern of development. On average, core, western and northern, EU regions are more advanced than peripheral, eastern and southern, EU regions, respectively. The economic crisis and the consequent pandemic crisis have affected the productive bases of places and the income levels of households and enterprises. The EU economy experienced full-scale recession – the most dramatic after WW II – as a consequence of the meltdown of financial markets, the credit crunch and the, overall, deterioration of confidence. Entering into a post-crisis environment – and as a complex set of theoretical propositions, ideological preoccupations, policy options and institutional arrangements are confronted with the hard evidence of the market and policy failures (Petrakos and Psycharis, 2016; Niavis et al., 2021) – understanding the drivers of EU regional growth is an important task not only to theory but also to policy. The persistence of regional inequalities has transformed the crisis in Europe into a – far more alarming – crisis of Europe. The loss of trust in the EU project seems to be particularly prominent in the no-prospect young generation and the socially excluded parts of population, in general. Trends of disintegration start to emerge, and Europeanism loses strength (instead, Euroscepticism has gained prevalence). The European project has, in fact, reached a critical point, where a discussion on the fundamental objectives of the European Union has entered public debate (Hartleb, 2012). It seems that Europe needs to rediscover its roots so as to reinvent itself in the foreseeable future. To this end, the role of regional science is extremely important.

The emerging European reality necessitates the thorough understanding (re-examination) of the spatial dynamics that are generated and / or reproduced within the framework of the European economic integration process. Apparently, access to (high-quality) data is a necessary condition for undertaking the required analyses and deriving the corresponding conclusions on the interrelations among European regions. Interregional spillovers usually exceed contiguity relations, since they are also linked to the upward/downward sectoral linkages driving the regional economies (Perez et al., 2009). Unfortunately, data on flows (i.e., trade, investments, remittances, migration, commuting flows, *inter alia*) is scarce and available only at the national level. With a handful of exceptions (Manetos et al., 2022; Kapitsinis et al., 2023; Adamakou et al., 2024; Tsiapa et al., 2025), data on interregional flows, practically, do not exist. Thus, due to this limitation, important issues regarding the success and the impact of the European economic integration process and policies remain, rather, unexplored and unsolved, for both scholars and policy makers. This is an important drawback, especially in the light of the global mega-trends that are currently taking place.

The emerging European reality necessitates, also, the adoption of a revised Cohesion Policy. The EU launched the NGEU (Next Generation EU) recovery instrument. The objective is to address the economic and social damage caused by the pandemic and facilitate the transition toward a modern and sustainable Europe, with a particular emphasis on digital and green economic growth (Celi et al., 2020; Christie et al., 2021; de la Porte and Jensen, 2021; McCann et al., 2021). At the core of the NGEU is the RFF (Recovery

and Resilience Facility), which provides grants and loans to support reforms and investments in EU member states. The process of mitigating regional inequalities, if and when it happens, happens at an extremely slow pace, despite the long-term implementation of the EU Cohesion Policy and the allocation of a significant amount of funds. This fact raises concerns for the effectiveness of the Cohesion Policy. These concerns are magnified in an environment in which achieving efficiency seems to prevail over achieving equality (Avdikos and Chardas, 2016). Reasonably, the question arises as to whether and under what conditions the RFF can contribute towards the revision of the Cohesion Policy. It is, indeed, the first time in which a policy with redistributive, developmental, and stabilizing characteristics includes, symmetrically, the entire territory of all EU member-states. It is, therefore, also the first time that the conditions are created for the EU Cohesion Policy to acquire its full scope, which goes beyond the mitigation of regional inequalities and extends to the approach of cohesion as *affectio societatis* (i.e., the consolidation of a bond which will connect EU member-states and EU citizens on the basis of sharing common values, common goals, common effort and common benefit) (Kallioras and Kritikos, 2023). In this view, the RFF can be considered a harbinger of a revised Cohesion Policy. In any case, it is clear that the dialogue for the adoption of a revised Cohesion Policy has already started.

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DETERMINANTS OF DEMAND FOR CITIES WITH HIGHER EDUCATION INSTITUTIONS: AN APPROACH BASED ON FRACTIONAL REGRESSION

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Abstract
Higher education institutions are typically situated in urban areas, making them appealing destinations for students seeking advanced education. This paper aims to explore the factors influencing the demand for cities with these institutions, focusing on the Portuguese context. By analysing distance and the quality of life in municipalities, we can better understand what attracts students to these university cities. Our findings, based on a fractional regression model, reveal that proximity to home and the disparity in rental and accommodation expenses play a significant role in the appeal of these cities for students and their families.

Keywords: *higher education institutions, fractional models, market areas, distance, housing costs*

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1. Introduction

The democratization of higher education (HE) and the access to this level of education for a greater number of young people – in addition to the "*numerus clausus*" mechanisms that constraint the supply of vacancies in each higher education institution (HEI) – implies that, in Portugal, many students must leave their parents' home to be able to attend HE in a city far from their usual residence.

Thus, we are dealing with an educational, social and economic phenomenon with specific characteristics: young people who want to pursue their studies in HE and who, to do so, move from their parents' home to live in another city. That said, for this study, several contributions must be considered: on the one hand, the factors that determine the choice of HEI and, among them, aspects related with students' travel behaviour; on the other, the characteristics of cities, particularly those that host HEIs, mainly in terms of access to housing and the labour market.

Research on the factors that promote the demand for HE emphasize personal and family reasons, characteristics of a contextual nature (in particular, demographic, social and economic issues), and motivations linked with the institutional characteristics of HEIs (among others, Azzone & Soncin, 2020; Brigs, 2006; Fonseca et al., 2020; Lourenço and Sá, 2019; Rolim et al., 2024; Sá & Tavares, 2018; Sá et al., 2004; Simões & Soares, 2010; Spiess & Wrohlich, 2010;Vieira & Vieira, 2014). Well-known studies highlight distance as an important determinant in the decision to leave the family and move to another city. The studies related to the Portuguese case refer that most HE students prefer to continue living at their parents' homes; those who leave their parents' home prefer to stay in nearby HEIs. So, there turns out to be a negative relationship regarding the distance between the location of the HEIs and the family residence.

Due to their economic, social and institutional importance, HEIs are often blended in with the cities where they are located. It is generally accepted that "universities are "good" for cities and cities are "good" for universities" (Russo et al., 2003, p.22). The presence of an HEI, even a medium-sized one, is associated with the presence of a few thousand students, many of whom have moved from their family homes and who, for most of the year, come to reside in the city where they study. In the Portuguese case, the availability of accommodation for displaced students is very narrow: about 9%, i.e., 15,000 beds in the residences of public HEIs, to accommodate more than 175,000 displaced students (PNAES, n.d.[1]). So, the greater demand for housing by university students (but also by teachers and staff), from different origins, with a temporary or even permanent nature, puts pressure on the real estate market, causing an increase in the value of house rents as well as the value of properties (Rego et al., 2022). This finding is in line with the results of studies carried out in other European countries. Sá et al. (2012) shows that narrow housing markets reduce the probability of choosing a given university. "Rents play a major role in students' choice of university" (Sá et al, 2012, p.662); in the Netherlands, the choice of a particular university is negatively impacted by house rents. Also in this sense, for Germany, Goehausen and Thomsen (2024) concluded that "housing costs is the largest component of students' expenditures and a key location factor, which have contributed to the slowdown in HE expansion and reduced the skill-binding effect of universities, exacerbating regional inequality" (Goehausen and Thomsen, 2024). These authors quantified the effect of rising housing costs and concluded that "a one standard deviation increase in apartment rents decreased per-capita college enrollment by 1.1 percentage points on average" (Goehausen and Thomsen, 2024). This effect of rising prices in the real estate market is studied in Russo et al. (2003), who highlight also the characteristics of rigidity and segmentation in the housing market for HE students. Berry and Glaeser (2005), highlight the elasticity of housing supply effect for the accommodation of highly qualified workers. Munro et al. (2009), in turn, besides the characteristics of spatial segregation of students' location – in general student accommodation is mainly found in areas of the city close to the buildings of the universities – emphasize the effects of turnover, as well as those associated with disruption and a deterioration in the living conditions for local neighbours. In brief, increased pressure on demand for housing in cities, for students but also for other permanent or temporary residents, along with the global shortage of supply of new or renovated construction for residential purposes, gives rise to the reduction of the supply of accommodation to the university community. This can constrict the ability of HEIs to evolve and of their students to all have accommodation.

Access to adequate and affordable housing, both for permanent and temporary residence, is a crucial element for well-being and the development of inclusive and resilient societies. This aspect is often considered a key determinant of the quality of life in cities, as highlighted by various studies (Amado et al., 2019; Barreira et al., 2021; OECD, 2022).

[1] Available on https://pnaes.pt/sobre-o-pnaes/ (accessed September, 2024).

Furthermore, research conducted by these authors suggests that the presence of universities plays a significant role in enhancing the quality and prestige of cities. Additionally, the availability of well-paid job opportunities in urban areas has been identified as a major factor driving highly skilled migration and contributing to the growth of cities (Amado et al., 2019; Faggian, 2009; Romão et al., 2018).
In conclusion, access to housing, the presence of educational institutions, and job opportunities are crucial factors that influence the liveability and appeal of cities, ultimately impacting their growth and development. A unique approach in research is to use municipal characteristics to analyse the demand for cities with HEIs. Traditionally, studies have focused solely on HEI characteristics to analyse demand. However, it is the aim of this study to delve deeper by exploring the determinants of the demand for cities with HEIs. This will be achieved by examining variables related to the housing market, purchasing power, employment, and delineation of HEIs market areas, as outlined in Rolim et al. (2024).
In addition to the importance of distance, this study aims to provide a comprehensive understanding of the factors influencing the demand for cities with HEIs. By incorporating a fractional regression model, in this research the aim is to improve the accuracy of the model in predicting the response variable. This innovative approach will provide valuable insights into the field and enhance our understanding of the dynamics that drive the demand for cities with HEIs. Estimating fractional regression models is a crucial advancement in understanding the demand for cities with HEIs. By fully considering the nature of the response variable, this contribution enhances our understanding of urban dynamics and the factors influencing city preferences.
After this introduction, Section 2 presents the method and data used in this study and the main results are identified and discussed in Section 3. A brief section of final remarks concludes the paper.

2. Methods and data

In order to better understand the factors influencing students' choice of city for HEIs, we will be examining the distance between the HEIs and students' family homes, as well as the market areas of cities with HEIs. Additionally, we will be exploring a range of attributes related to the characteristics of cities and the quality of life they offer to residents.
Drawing on the findings of ESDA research conducted by Rolim et al. in 2024, in this article, we seek to identify the key determinants that drive students to choose a particular city with an HEI for their education. By analysing urban characteristics and market areas, we aim to shed light on the factors that influence students' decisions in selecting a city for their HE pursuits.
In his 2009 study, Maier utilized a logit model to identify the factors influencing the market areas of Austrian universities offering business education. Our research also employs a similar modelling approach, albeit with a different focus. Our study examines the proportion of students enrolled in public HEIs in Portugal, considering both the municipality of the HEI and the municipality of the students' permanent residence. Unlike Maier's study, our dependent variable is not binary, but rather a continuous variable that can take on any value within the unit interval.

2.1 The fractional approach

The utilisation of fractional response variables is a prevalent practice within the field of economics. The inherent limitations of these variables, such as the capacity to observe values at the boundaries, give rise to significant concerns regarding functional form and inference. The utilisation of this particular type of data underscores the necessity for novel models and reliable estimation methodologies. Papke and Wooldridge (1996) introduced a set of econometric methods for fractional response variables, which were then developed in several research works, namely Ramalho, Ramalho and Henriques (2010), Ramalho, Ramalho and Coelho (2018), and Ramalho, Ramalho and Murteira (2011).
In order to better illustrate the methodological issues that arise from the use of a fractional dependent variable, consider y_i, $0 \leq y_i \leq 1$, which will be explained by a $1 \times K$ vector of independent variables (x_i);

the global linear model can be described by

$$E(y|x) = \beta_1 + \beta_2 x_2 + \cdots + \beta_K x_K = \mathrm{x}\beta \quad (1)$$

where β is a $K \times 1$ vector. This specification model rarely provides the best description for $E(y|x)$ because

the dependent variable is bounded between 0 and 1 and the expected value of the dependent value rarely respects such boundaries (Papke and Wooldridge, 1996). An alternative commonly used for modeling this type of problem is utilizing the log-odds ratio as a linear function, known as logit and probit models.

However, despite some advantages, logit/probit modeling has limitations, particularly when the dependent variable has a positive probability of taking on the values 0 or 1. For more detailed information, refer to Papke and Wooldridge (1996) and Ramalho et al. (2011).

To ensure robust and unbiased estimations for determining the market area of Portuguese Higher Education Institutions (HEIs), we employ cross-sectional fractional models. In a cross-sectional context, the standard fractional regression model can be defined as:

$$E(y|x) = G(x_i\theta), \quad (2)$$

where θ is the vector of parameters of interest and $G(\cdot)$ is a nonlinear function based on the unit interval.

This $G(\cdot)$ function may assume different forms: (i) logit; (ii) probit; (iii) loglog; (iv) cloglog; and (v) cauchit.

Papke and Wooldridge (1996) introduced the concept of Quasi-Maximum Likelihood (QML) for estimating Eq.(2) using the Bernoulli log-likelihood function. They demonstrated that the estimated parameter, $\hat{\theta}$, is consistent, asymptotically normal, and efficient within a class of estimators that includes linear exponential family-based QML and weighted nonlinear least estimators.

Given the characteristics of our data, a significant portion of limit values in the fractional data, specifically 0s, are likely to be observed. The occurrence of the value 1 is highly improbable due to the nature of the response variable being a proportion of the whole. While Papke and Wooldridge (1996) and Ramalho et al. (2010) suggest that simple fractional regression models can still be utilized, they may not be optimal when dealing with a large number of corner observations.

In light of this, we have also conducted estimations using the two-part fractional regression model proposed by Ramalho et al. (2011). This model involves a binary regression model to predict the probability of specific corner values (0 or 1), followed by a conditional mean model to explain the remaining fractional values.

The two-part fractional regression model can be defined as:

$$E(y|x) = Pr(y_i > 0|x_{ib}).E(y_i|x_{if}, y_i > 0) = G(x_{ib}\theta_b).G_f(x_{if}\theta_f), \quad (3)$$

where x_{ib} and x_{if} are the explanatory variables used in the binary and in the fractional parts of the model, θ_b and θ_f are vectors of variables coefficients and $G_b(\cdot)$ and $G_f(\cdot)$ are specified in the same way as $G(\cdot)$, both functions are bounded between 0 and 1. It is commonly understood that the two components of the model in Equation (3) are independent. Therefore, they are estimated separately, with the binary component estimated using maximum likelihood and the fractional component estimated using quasi-maximum likelihood. When we use nonlinear regression models, the magnitude of the regression coefficients cannot be compared across models based on different functional forms. In order to answer this problem, we calculate the partial effects that have comparable interpretation. The partial effects are given by

$$\frac{\partial E(y_i|x_i)}{\partial x_{ij}} = \theta_j g(x_i\theta) \quad (4)$$

where $g(x_i\theta)$ is given by $G(x_i\theta)[1 - G(x_i\theta)]$ for logit; $\phi(x_i\theta)$ for probit; $e^{-x_i}\theta G(x_i\theta)$ for loglog; $e^{-x_i}\theta[1 - G(x\_i\ \theta)]$ for cloglog; and $\frac{1}{\pi}\frac{1}{(x_i\theta)+1}$ for cauchit modelling.

For the two-part models, the partial effects are given by the conjugation of the involved models:

$$\frac{\partial E(y_i|x_i)}{\partial x_{ij}} = \theta_{bj} g_b(x_i\theta).G_f(x_{if}\theta_f) + \theta_{fj} g_f(x_i\theta).G_b(x_{ib}\theta_b) \quad (5)$$

where $g_b(x_i\theta) = \partial G_b(x_i\theta)/\partial(x_i\theta)$ and $g_f(x_i\theta) = \partial G_f(x_i\theta)/\partial(x_i\theta)$.

Ensuring the accurate specification of the conditional mean of y_i is a critical assumption that must be validated through rigorous testing methods. Two recommended tests for this purpose are: (i) the RESET-type test proposed by Papke and Wooldridge in 1996; and (ii) the P test for general non-nested hypotheses, specifically adapted for fractional modeling by Ramalho et al. in 2011. These tests are essential in ensuring the reliability and validity of the model's predictions.

The RESET test is based on the results of a standard approximation for polynomials, assuming as null: $H_0: \phi = 0$, ϕ being a vector composed by the sum of the polynomials inserted. This test can be utilized to assess the functional form within the individual components of two-part models, even though it does not provide information on alternative specifications. Given these considerations, the P test will be employed in this research study. The P test is capable of evaluating model specifications, both independently and in comparison, to one-part models and other two-part models (or vice versa).

2.2. Data

In this research work, as already defined, the dependent variable, y_i, represents the proportion of higher education students from city j who chose to attend city i. The explanatory variables include the following:

Dij, = distance between city i and city j, in km;
DHH = dummy for market area municipalities of high-high clusters[2];
DLL = dummy for market area municipalities of low-low clusters;
CDHb = difference in bank valuation of properties per m^2 between destination city i and city j, in euros (source: INE 2017);
AC = accommodation cost – rental (difference between the destination city i cost and the city j, in euros (source: INE, 2017);
PP = index of purchasing power (difference between purchasing power of destiny city i and city j (source: INE 2017); and
EMP = employability rate of each city j compared to the employability rate of the destiny city i (source: INE 2018 and 2019).

We expect it to be possible to ascertain whether the market areas for each HEI under analysis are determinants of the proportion of HE students from city j who opted for city i.

The proportion of HE students from city j who opted for city i is in line with the methodology adopted in Rolim et al. (2024, p.89) where it is described in detail.

Formalizing,

$\sum_{i=1}^{n} a_{ij}$ = distribution of the students of the municipality i between the j university cities (1.1)

However, to perform spatial analysis, it is necessary to relativize these values. An auxiliary indicator could do this. This indicator, r_{ij}, indicates the proportion of students from each municipality in Portugal[3] among the university cities considered. Thus, each *aij* will be divided by the total of the students of the municipality *i* that went to the mainland university cities.

$$r_{ij} = \frac{a_{ij}}{\sum_{i=1}^{k} a_{ij}} \quad (1.2)$$

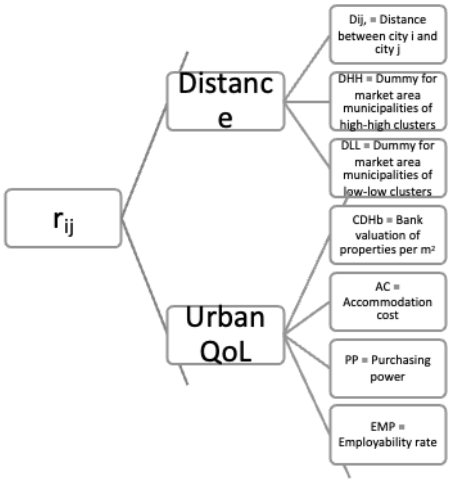
r_{ij} = proportion of students from municipality i to the university cities k.

Figure 1 presents the expected relation between the variables explored in this research work.

Figure 1. Relation between the variables of the model

[2] Dummy variables DLL and DHH were obtained using local indicators of spatial association – LISA (Rolim et al., 2024).

[3] In the present exercise only, the municipalities on the mainland.



Source: Own elaboration.

The dependent variable and the explanatory variables show differences between the cities where the HEIs are located (cf. Table 1). The average of the dependent variable shows that the cities of Lisbon and Porto (the two largest Portuguese cities) have the highest proportion of HE students and the results among the medium-sized cities with a university/HE (Braga, Covilhã, Évora and Vila Real) are similar. In the case of explanatory variables, analysis of distance shows that Bragança (a city located in the far north of the country, close to the border with Spain) stands out as being at the greatest distance from the students' family home. The difference in housing costs (be it bank evaluation of properties per m^2 or accommodation cost) is particularly high in the cases of the cities of Lisbon and Porto, where demand pressure is higher. The medium-sized cities of Bragança and Guarda present values that reflect the existence of cheaper accommodation. The differences in the purchasing power and employability variables are also significant, with the cities of Lisbon and Porto standing out positively in both cases. In the case of differences in the employability rate, the cities of Bragança and Vila Real (medium-sized cities in the north of the country) reveal a less evident dynamic than the average of the cities of origin of the young people who chose them to study.

Table 1. Descriptive of the variables

		Braga	Bragança	Covilhã	Évora	Guarda	Lisbon	Porto	Vila Real
r_{ij} (%)	Mean	0.038	0.0332	0.0395	0.0451	0.0174	0.2027	0.0803	0.0344
	St. Dev	0.0947	0.0857	0.0639	0.09	0.0394	0.1924	0.1297	0.076
	Max.	0.6186	0.7128	0.5815	0.5599	0.2632	0.839	0.6946	0.5331
	Min	0	0	0	0	0	0.0215	0	0
Dist (km)	Mean	256.373	330.452	233.721	274.037	233.379	247.419	222.551	254.939
	St. Dev	158.745	170.202	108.702	146.147	123.279	120.208	143.98	168.128
	Max.	650	774.439	567	561	602.753	506	602	669
	Min	0	0	0	0	0	0	0	0
CDHb (€)	Mean	8412.3	-22154.7	9632.3	33961.3	-159.7	183621.3	72632.3	3097.3
	St. Dev	54784.5	54784.5	54784.5	54784.5	54784.5	54784.5	54784.5	54784.5
	Max.	89063	58496	90283	114612	80491	264272	153283	83748
	Min	-529372	-559939	-528152	-503823	-537944	-354163	-465152	-534687
PP	Mean	26.48	15.98	6.08	36.78	15.68	139.08	77.28	17.58
	St. Dev	18.68	18.68	18.68	18.68	18.68	18.68	18.68	18.68

	Max.	51.7	41.2	31.3	62	40.9	164.3	102.5	42.8
	Min	-112.6	-123.1	-133	-102.3	-123.4	0	-61.8	-121.5
AC (€)	**Mean**	0.45	-0.68	-0.41	1.43	-0.44	6.28	3.43	0.01
	St. Dev	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
	Max.	2.19	1.06	1.33	3.17	1.3	8.02	5.17	1.75
	Min	-5.83	-6.96	-6.69	-4.85	-6.72	0	-2.85	-6.27
EMP (%)	**Mean**	0.092	-0.002	0.001	0.074	0.048	0.429	0.253	-0.006
	St. Dev	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
	Max.	0.206	0.112	0.116	0.189	0.163	0.543	0.368	0.108
	Min	-0.337	-0.431	-0.427	-0.355	-0.380	0.000	-0.175	-0.435

Source: Own elaboration.

3. Results – Determinants of proportion of students from municipality (market areas)

To gain insight into the factors influencing students' choices of higher education institutions (HEIs), fractional models were utilized in our analysis. Various functional forms including logit, probit, loglog, and cloglog were considered to determine the best specification. The Cauchit functional form was not applicable due to the absence of 0s and 1s in the observations.

In cities where zeros were prevalent, particularly Lisbon which had a mix of both 0s and 1s, two-part models were also estimated using the same functional forms. The complexity of the models required a thorough examination of specifications, starting with the RESET test to ensure accuracy. The results of the test led to the rejection of the null hypothesis in all cases.

Additionally, pseudo-R^2 values for each model and specification were included in Tables 2, 3, 4, and 5 to provide a comprehensive overview of the analysis. To determine the optimal model type and functional form, the P test was conducted. This rigorous approach allowed for a thorough evaluation of the determinants influencing students' choices of HEIs.

Table 6 summarizes the results obtained for the P tests of the one-part and two-part fractional models. This table should be read as follows: the columns present the null hypothesis of the P test, and the lines present each of the alternative hypothesis evaluated. The values in the table refer to the p-values for each hypothesis.

As an example of interpretation, we can analyse the results presented in Table 3, which indicate that only a few specifications are admissible. For Braga, the P test rejects all the null hypotheses, and for Bragança, the best alternative is logit for a one-part model. Given the fact that the small number of determinants could be the reason for the misspecification, we also use the pseudo-R^2 to select the best model. Given this, the specification for Braga would be a one-part cloglog model (pseudo-R^2 is 0.8390).

Table 2. Specification test for one-part and two-part models (p-values) for Braga and Braganca

Braga

P test	**One-part model**				**Two-part model**			
Braga	**Logit**	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
H_1: Logit	-	0.000***	0.000***	0.0001***	-	0.0002***	0.0002***	0.0010***
H_1: Probit	0.0007***	-	0.0000***	0.0020***	0.0002***	-	0.000***	0.0002***
H_1: Loglog	0.0009***	0.0001***	-	0.0050***	0.0002***	0.0001***	-	0.000***
H_1: Cloglog	0.0007***	0.000***	0.000***	-	0.002***	0.0003***	0.0003***	-
Pseudo-R^2	0.8390	0.7957	0.7547	0.8514	0.8019	0.7541	0.7169	0.8166

Braganç a

One-part model				**Two-part model**			
Logit	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
-	0.0019***	0.0776**	0.0567*	-	0.000***	0.0002***	0.0104**
0.0003***	-	0.0083***	0.0071**	0.000***	-	0.0004***	0.0009***
0.0002***	0.000***	-	0.0054***	0.000***	0.0002***	-	0.0002***
0.0120**	0.0026***	0,0781*	-	0.000**	0.0008***	0.0004***	-
0.8732	0.8297	0.7666	0.8834	0.8515	0.8021	0.8641	0.8230

Note: ***, ** and * refer to statistic tests which are significant at 1, 5 or 10%, respectively.

For Table 3, using the same approach, we use the one-part cloglog model for Covilhã (pseudo-R^2 is 0.6267) and for Évora (pseudo-R^2 is 0.8273).

Table 3. Specification test for one-part and two-part models (p-values) for Covilhã and Évora

Covilhã

P test	**One-part model**				**Two-part model**			
	Logit	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
H_1: Logit	-	0.0002***	0.0008***	0.0015**	-	0.0001***	0.0004***	0.0007**
H_1: Probit	0.0005***	-	0.0002***	0.0002***	0.0005***	-	0.000***	0.0002***
H_1: Loglog	0.0017***	0.0004***	-	0.0015***	0.0002***	0.0009***	-	0.0002***
H_1: Cloglog	0.0026**	0.0008***	0.0011***	-	0.0002**	0.0005***	0.0002***	-
Pseudo-R^2	0.6163	0.5807	0.5535	0.6267	0.5769	0.5499	0.5769	0.6244

Évora

One-part model				**Two-part model**			
Logit	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
-	0.0000***	0.000***	0.0001***	-	0.0001***	0.000***	0.0002***
0.000***	-	0.000***	0.0003***	0.000***	-	0.0001***	0.0002***
0.000***	0.000***	-	0.000***	0.000***	0.0001***	-	0.0002***
0.0002***	0.000***	0.0001***	-	0.000***	0.0000***	0.0002***	-
0.8315	0.8031	0.7770	0.8415	0.7894	0.7690	0.7646	0.8273

Note: ***, ** and * refer to statistic tests which are significant at 1, 5 or 10%, respectively.

According to the results presented for Guarda and Porto (Table 4), using the same approach, we use the one-part cloglog model. Pseudo-R^2 for Guarda is 0.7466 and for Porto 0.8402.

Table 4. Specification test for one-part and two-part models (p-values) for Guarda and Porto

Guarda

P test	**One-part model**				**Two-part model**			
	Logit	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
H_1: Logit	-	0.0026***	0.0017***	0.1052	-	0.0002***	0.0004***	0.0002***
H_1: Probit	0.0187**	-	0.0017***	0.0286*	0.000**	-	0.0002***	0.0002**
H_1: Loglog	0.0411**	0.0071***	-	0.0572*	0.000**	0.0005***	-	0.0001**
H_1: Cloglog	0.0783*	0.0029***	0.0019***	-	0.0002***	0.0090***	0.0001***	-
Pseudo-R^2	0.7432	0.7144	0.6432	0.7466	0.6932	0.6721	0.7278	0.7233

Porto

	One-part model				**Two-part model**			
	Logit	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
H_1: Logit	-	0.0000***	0.0000***	0.0000***	-	0.0000***	0.0000***	0.0000***
H_1: Probit	0.0000***	-	0.0000***	0.0000***	0.0000***	-	0.0000***	0.0000***
H_1: Loglog	0.0000***	0.0000***	-	0.0000***	0.0000***	0.0000***	-	0.0000***
H_1: Cloglog	0.0000***	0.0000***	0.0000***	-	0.0000***	0.0000***	0.0000***	-
Pseudo-R^2	0.8591	0.8368	0.8001	0.8684	0.8253	0.7864	0.8608	0.8402

Note: ***, ** and * refer to statistic tests which are significant at 1, 5 or 10%, respectively.

Finally, according to the results in Table 5, we use the one-part cloglog model for Vila Real (pseudo-R^2 is 0.7773) and Lisbon (pseudo-R^2 is 0.8677).

Table 5. Specification test for one-part for Lisbon and two-part models for VilaReal (p-values)

Vila Real

P test	**One-part model**				**Two-part model**			
Vila Real	**Logit**	**Probit**	**Loglog**	**Cloglog**	**Logit**	**Probit**	**Loglog**	**Cloglog**
H_1: Logit	-	0.007***	0.0002***	0.0015***	-	0.0005***	0.000***	0.0005***
H_1: Probit	0.0026***	-	0.0003***	0.0027***	0.000***	-	0.000***	0.0001***
H_1: Loglog	0.0077***	0.0006***	-	0.0098***	0.000***	0.0001***	-	0.0002**
H_1: Cloglog	0.0017***	0.0006***	0.0002***	-	0.0007***	0.0002***	0.0021***	-
Pseudo-R^2	0.7661	0.7232	0.6876	0.7773	0.6831	0.6498	0.7391	0.7420

Lisbon

	One-part model			
	Logit	**Probit**	**Loglog**	**Cloglog**
H_1: Logit	-	0.0000***	0.0000***	0.2435
H_1: Probit	0.0000***	-	0.0000***	0.0000***
H_1: Loglog	0.0000***	0.0000***	-	0.0008***
H_1: Cloglog	0.0004***	0.0039***	0.0024***	-
Pseudo-R^2	0.8650	0.8581	0.8406	0.8677

Note: ***, ** and * refer to statistic tests which are significant at 1, 5 or 10%, respectively.

Table 6 reports the regression results for each city. The selection of the presented models was based on the P tests and on the pseudo-R^2, as above.

Table 6. Estimation results for fractional regression models

	Braga		**Bragança**		**Covilhã**		**Évora**		**Guarda**		**Porto**		**Vila Real**		**Lisbon**	
	One-part Cloglog		One-part Cloglog		One-part Cloglog		One-part Cloglog		One-part Cloglog		One-part Cloglog		One-part Cloglog		One-part Cloglog	
Distance	- 0.0131	***	-0.0160	***	-0.0066	***	-0.0108	***	-0.0114	***	-0.0070	***	-0.0135	***	-0.0041	***
	(0.0015)		(0.0019)		(0.0016)		(0.0011)		(0.0017)		(0.0009)		(0.0022)		(0.0004)	
DHH	1.4363	***	0.5289	**	0.8763	***	0.9400	***	1.058	***	1.0394	***	1.0038	***	0.3866	***
	(0.2003)		(0.2249)		(0.2185)		(0.1569)		(0.2284)		(0.1213)		(0.1723)		(0.0747)	
DLL	-0.4261		-0.4334		-0.5259	***	-0.5214	**	-0.3484		-1.672	***	-0.0225		-0.9926	***
	(0.2938)		(0.3677)		(0.1694)		(0.2641)		(0.2639)		(0.1884)		(0.46134)		(0.0821)	
CDHb	-4.07e-06	**	-3.93e-06	**	-9.27e-07	*	2.76e-07		4.02e-06	*	6.38e-07		9.60e-07		1.04e-07	
	(1.98e-06)		(1.71e-06)		(5.40e-07)		(3.61e-07)		(2.35e-06)		(1.56e-06)		(2.91e-06)		(3.18e-07)	
PP	-0.0025		0.0172	*	0.0143		0.0162	***	0.0073		-0.0133	**	0.0113		-0.0009	
	(0.0123)		(0.0103)		(0.0088)		(0.0052)		(0.0095)		(0.0067)		(0.0127)		(0.0029)	
AC	0.2088		-0.1154		0.1013		-0.0298		0.0329		-0.0488		-0.05123		-0.1423	***
	(0.1409)		(0.1387)		(0.1044)		(0.0810)		(0.1312)		(0.0999)		(0.1417)		(0.0376)	
EMP	2.7586	*	0.5323		-2.8895		-3.1059	***	-1.504		2.5164	***	-0.0545		0.1792	
	(1.4817)		(2.1572)		(1.8403)		(0.9723)		(1.9856)		(0.9448)		(1.7366)		(0.5189)	
CONS	-2.2557	***	-0.8615	*	-2.1581	***	-1.7456	***	-2.6562	***	-1.003	***	-2.1164	***	0.4027	**
	(0.3154)		(0.4771)		(0.3460)		(0.2266)		(0.3443)		(0.1922)		(0.4178)		(0.1556)	
N	278		278		278		278		278		278		278		278	
Log_pseudolikelihood	-22.053		-20.248		-31.315		-27.988		-15.069		-42.829		-23.109		-80.694	
Pseudo-R2	0.8514		0.8834		0.6267		0.8415		0.7466		0.8684		0.7773		0.8677	

Note: ***, ** and * refer to statistic tests which are significant at 1, 5 or 10%, respectively. All models were estimated with robust standard deviations (in brackets).

For each explanatory variable, we provide the coefficient along with its standard deviation in brackets. Additionally, the pseudo-R2 for each model is included, demonstrating that the chosen models effectively capture the data compared to alternative models. Regarding the significance of the explanatory variables, it is evident that most models share a similar interpretation. Distance consistently exerts a significant and negative impact on the response variable across all cities examined, while DHH exhibits a positive and significant effect on student distribution by municipality. Conversely, DLL demonstrates statistical significance in Covilhã, Évora, Porto, and Lisbon, consistently yielding a negative influence.

As regards the value of properties per m^2, a negative influence can be seen for Braga, Bragança and Covilhã and slightly positive for Guarda. If we add the results for AC (accommodation cost) we find a negative impact only in Lisbon. These results may show that Lisbon is penalized in terms of demand by the high rental prices for accommodation. Cities such as Braga, Bragança and Covilhã, on the other hand, are essentially affected by the sale prices of properties, which may be due to their geographic location and the fact that rental values do differ much from the country average.

Another issue that may be a determinant of the proportion of HE students from city j who opted for city i is the difference in the level of employability from the destination city i from the origin city j. We found a positive and significant impact in Braga and Porto as destination cities and a negative impact in Évora. These results seem to suggest differences in the dynamism of labour markets in these cities. While Porto and Braga are cities where there is a predominance of employment in private companies, many of which are medium-sized and large, in the case of the city of Évora, public employment prevails, meaning that the dynamics of creating new jobs are less significant. This result is in line with what Fonseca (2023) had already concluded: the existence of a movement of graduates from small and medium-sized cities to larger urban areas, due to the fragility of the job market in these cities, where there is a temporary effect of over-education.

Given the fact that we have non-linear models, the direct interpretation of the coefficients it is not possible, with the calculus of the partial effects being necessary.

In Table 7, for each model we report the respective partial effects, which were calculated as the mean of partial effects for each municipality in the sample.

Table 7. Sample averages of partial effects

	Braga	Bragança	Covilhã	Évora	Guarda	Porto	Vila Real	Lisbon
Distance	-0.0004	-0.0005	-0.0002	-0.0004	-0.0002	-0.0005	-0.0004	-0.0006
DHH	0.0479	0.0154	0.0329	0.0381	0.0176	0.0714	0.0318	0.0610
DLL	-0.0142	-0.0127	-0.0198	-0.0212	-0.0058	-0.1148	-0.0007	-0.1567
CDHb	-1.36e-07	-1.15e-07	-3.48e-08	1.12e-08	6.70e-08	4.38e-08	3.04e-08	1.64e-08
PP	-0.00008	0.0005	0.0005	0.0007	0.0001	-0.0009	0.0004	-0.0001
AC	0.007	-0.0034	0.0038	-0.0012	0.0005	-0.0034	-0.0016	-0.0225
EMP	0.0919	0.0155	-0.1085	-0.1260	-0.0251	0.1728	-0.0017	0.0283

The analysis presented in Table 7 clearly indicates that distance plays a significant role in determining the distribution of students across municipalities. This impact is particularly noticeable in cities like Lisbon and Porto. Conversely, the availability of dormitory housing (DHH) has a positive effect on student distribution, with larger cities such as Lisbon, Porto, and Braga experiencing the greatest influence.

Additionally, the variable DLL consistently shows a negative impact across all models, with Lisbon and Porto being the most affected cities. Other factors such as CDHb, AC, PP, and EMP exhibit varying effects on student distribution. However, as demonstrated in Table 7, many of these coefficients are statistically insignificant, suggesting that these variables do not significantly impact the demand for a particular university city.

In conclusion, while distance and dormitory housing availability are key determinants in student distribution, other factors may not play as significant a role in shaping demand for specific university cities.

4. Final remarks

Understanding the motivations behind HE students choosing to study at institutions located in cities other than their hometowns is crucial for both these academic institutions and public policy decision-makers,

especially in the fields of HE and urban planning. The aim of this study was to identify the determinant factors in the demand for cities where HEIs are located, presented as the proportion of HE students from city *j* who opted to study in city *i*. In this sense, the model is estimated using a fractional response variable. The econometric methodology relies on fractional models, which enable regression models to be applied to continuous variables within a specific range. One key benefit of this approach is that it eliminates the need for researchers to make strong assumptions about all data aspects when developing a model to achieve reliable parameter estimates. Therefore, we recognize the importance of the response variable and strive to achieve consistency in our results, leading to significant gains. To achieve the objective of the study, two sets of potential determinants were used as explanatory variables: one related to the distance between the city where the HEI is located and the city where the student's family lives, and another associated with quality of life. The results lead to the conclusion that, on one hand, the distance between the city of family residence and the cities where the HEIs are located is the main factor that explains the choice made by students: in general, the greater the distance between the two cities, the lower the demand. These results are aligned with others already obtained, which identified the negative relationship associated with the distance between the family's city of residence and the city where HEI is located. This arises from the fact that many students prefer to continue their HE studies close to their family home. On the other hand, the difference in housing costs also proved to be decisive, as expected, particularly in the case of Lisbon, and diminishes demand. The greater difference in rental prices between this city and other locations may be affecting the demand for HE in institutions located there. High housing costs increase the total cost of attending HE and therefore also discourage people from leaving their parents' home and choosing larger cities, where these prices are higher. The cost of accommodation is one of the main costs for those studying away from home and the increase in this has led many young people to adapt their choice of cities for HE studies to the possibility of paying for housing. In the most extreme cases, the cost of accommodation for displaced students can make it impossible to stay and continue studying in HE. These effects penalize equity among students.

This study highlights the importance of knowledge in the field as it confirms previous findings in both Portugal and other regions. It shows that the demand for HE and the likelihood of students staying in this level of education is positively influenced by proximity to HEIs and the availability of affordable accommodation for displaced students.

Public policy must consider that a more widespread network of HEIs can help democratize access to HE and improve territorial cohesion. This can also increase the availability of public university accommodation, which in turn can boost demand and retention rates in HE.

Additionally, the methodology used in this study is more robust in econometric terms, as the response variable is not unbounded and the consistency of estimators is a significant achievement in this research.

Acknowledgements

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Announcements, Conferences, News

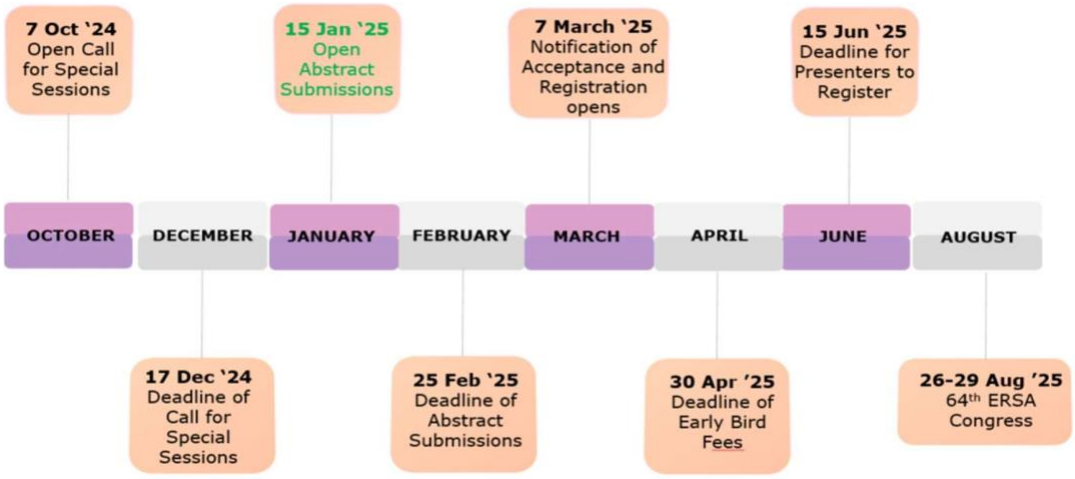
64th ERSA Congress
"Regional Science in Turbulent Times. In search of aresilient, sustainable and inclusive future"
26 to 29 August 2025 (onsite participation only).

Event Overview

The 64th ERSA Congress will be held from 26 to 29 August 2025 with onsite participationonly. The ERSA2025's edition will focus on "Regional Science in Turbulent Times. In searchof a resilient, sustainable and inclusive future". This theme is explicitly related to the contemporary challenges that people and places are facing today and to how Regional Science can reflect and interact with these challenges. The economic crisis, the refugee crisis and the pandemic are some representative examples of the unprecedented intensity and prolonged duration of the sequential crises that have been experienced. The field of Regional Science is made up of a dynamic association of scientists and policy makers who are engaged inunderstanding, analyzing, and promoting policy proposals that will lead to a more resilient and inclusive future for people and places across the globe.

With approximately 800 participants every year from all continents, the ERSA Congress has become the largest academic conference in regional science worldwide, providing a place to present your research results, get precious feedback and network as well as find out about new developments in the field, and also meet colleagues and friends.

Currently, the Congress is accepting proposals for Special Sessions, with a submission deadline of December 17, 2024. Key dates for subsequent phases of the Congress are outlinedin the timetable below:



The Congress Chair, Professor Yannis Psycharis, and the Organizing Committee cordially invite members of the Regional Science community to participate in the 64th ERSA Congress in Athens. This event will bring together diverse perspectives to foster creative and innovative solutions to regional challenges. Attendees will benefit from a dynamic environment, gaining insights from keynote speakers and colleagues alike, while building connections, sharing experiences, and exchanging ideas.
For more information, please visit: https://ersa.eventsair.com/ersa2025/

Event overview edited by Dimitrios Tsiotas,
Assistant Professor, SRDSJ.

7th Global Conference on Economic Geography "Governance Challenges for a Sustainable and Inclusive Future" June 4–8, 2025 | Clark University | Worcester, Massachusetts, USA.

Event Overview[1]

The 7th Global Conference on Economic Geography (GCEG 2025) will take place from June 4 to 8, 2025, at Clark University in Worcester, Massachusetts, bringing together scholars, policymakers, practitioners, and students from across the globe, for the largest international gathering dedicated to Economic Geography.

The theme of this year, "Governance Challenges for a Sustainable and Inclusive Future", will spotlight forward-thinking research and global dialogue addressing the most pressing socio-economic and spatial challenges of our time. The Global Conference on Economic Geography is the largest international conference dedicated to Economic Geography. Highlights for the GCEG 2025 will include cutting-edge research concerning the sources and drivers of socio-economic change, an assessment of the economic geography of places in a multi-scalar and multi-dimensional context; implications for businesses, policymakers, planners, and teaching; plenary sessions and debates with eminent scholars, policymakers and practitioners; hundreds of presentations on a variety of relevant themes, incl. inequality, development, finance, technological change and innovation, knowledge and skills, production and consumption, planning, digital platforms and peripheral places; inspiration, networking and best-practice sharing with close to 1,000 people from around the globe; exhibitions by leading publishers; opening reception, conference gala dinner, and other networking events.

Participants are not required to be members of the American Association of Geographers (AAG) to attend. However, registration requires a free AAG Explorer account.

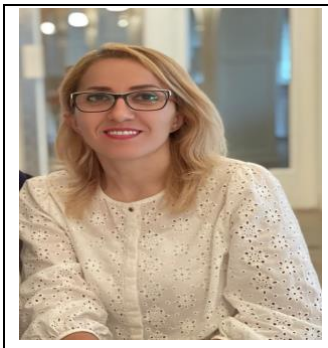
Key Dates:

- Start: June 4, 2025, 8:00 AM (Eastern Time, US & Canada)
- End: June 8, 2025, 5:00 PM (Eastern Time, US & Canada)

More information is available at the websites:
https://www.aag.org/events/7th-global-conference-on-economic-geography/
https://www.aag.org

Event overview edited by:
Ass. Professor Dr. Filipos Ruxho,
Sustainable Regional Development Scientific Journal - SRDS J

Academic Profiles



Prof. Ass. Dr. Sevdie ALSHIQI BEKTESHI

Sevdie Alshiqi Bekteshi is an Assistant Professor at the University of Prishtina "Hasan Prishtina," specializing in Management and Informatics within the Faculty of Economics. She holds dual Doctor of Science degrees in Entrepreneurship and SME Management from the Regional Joint Doctoral Programme in Entrepreneurship and SME Management for Western Balkan Countries (DOCSMES) at St. Climent University Bitola, and a Doctor of Business Administration (DBA) from Université Côte d'Azur in Nice, France. With over 16 years of professional experience, Dr. Bekteshi serves as the co-owner and CEO of Business Kosova Center, focusing on teaching, economic development consultancy, and training in areas such as financial management, human resources, organizational development, and financial strategies for small and medium enterprises (SMEs). She is an accredited counselor and trainer under the Counseling and Training Scheme supported by Vaucher, an initiative of the Agency for Support of SMEs within the Ministry of Trade and Industry. In this capacity, she provides business consulting and training services for SMEs in Kosovo.

Since February 2019, Dr. Bekteshi has pursued professional development in higher education teaching. She completed the "Teaching in Higher Education" training module organized by the University of Prishtina, USAID, and World Learning, followed by the "Planning and Implementation of Teaching in Higher Education" module in May 2019, also supported by USAID and World Learning. Additionally, in May 2018, she participated in workshops on university teaching methodologies, including sessions on "How to Write and Publish a Scientific Manuscript" and "Mentoring Students and Strategies for Graduate Student Success," hosted by the University of Prishtina and the University of Minnesota. Dr. Bekteshi further enhanced her expertise with the "Course Sites: Technology in University Classrooms" module, and in June 2018, completed the "Grant Writing for Research Proposals and Fellowships" workshop, organized by the University of Prishtina and the University of Minnesota.

Between 2008 and 2011, Dr. Bekteshi served as Administrative Coordinator at the Faculty of Economics, University of Prishtina, where she played a pivotal role in the Tempus Project titled "Entrepreneurship and Local Economic Development in Albania, Kosovo, and Macedonia" (Project Number: 145061-Tempus-2008-UK-JPHES). She was also instrumental in organizing the 3rd International Conference of the Faculty of Economics, which focused on "Sustainable Development Goals and Economic Development: Perspectives from the Western Balkans," in November 2020. Dr. Bekteshi was honored with a Reviewer Certificate in September 2020 for her contributions to a study on the economic efficiency of poultry farmers in Rivers State, Nigeria.

Her research contributions are well-recognized, with numerous publications in prestigious journals indexed by Scopus and Web of Science, showcasing her expertise in entrepreneurship, international development, risk management, and SME export performance. She is also a dedicated trainer and consultant, conducting workshops on women's entrepreneurship, financial education, and business strategy for both for-profit and non-profit organizations.

Dr. Bekteshi has enriched her teaching experience through roles at Prishtina International Summer University "Hasan Prishtina," where she has taught courses on Financial Management, Quality Management Systems, and Project Management. She has also taught at various international institutions, including Radboud University, University College of Southeast Norway, Wrocław University of Science and Technology, University of Applied Sciences in Nysa, University of Nice Sophia Antipolis, and Staffordshire University, between February 2011 and August 2017.

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References: Sevdie Alshiqi Bekteshi - Scopus.

Prof. Ass. Dr. Fernando Jose TEIXEIRA

Prof. Ass. Dr. Fernando Teixeira has a PHd in Economic-Business Sciences, with Specialization in Management (UALG – Economics Faculty in the University of Algarve), a master's degree in business management (ISCTE - University Institute of Lisbon) and a bachelor's in management (ISG - Higher Institute of Management). His professional career began in 1997 at Montepio Geral Savings Bank, where he followed an Administrative/Commercial career at the Almirante Reis bank branch (Lisbon) and a Technical career at the Financial Markets Room (Lisbon). He began his career at the Polytechnic Institute of Beja in May 2000. Currently he is a professor at the Polytechnic Institute of Beja. He has been responsible for IPBeja Entrepreneurship since 2011 and Director of the Business Sciences department since July 2014.

He was responsible, representing the Polytechnic Institute of Beja, in the following projects: i) Project "Link Me Up -1000 ideas" (POCI-03-33B5-FSE-072070). The project consists of a support system for the co-creation of innovation, creativity and entrepreneurship; ii) Project "Quality of education and training systems at non-tertiary level - Training of teachers and other education and training agents" (POCH-04-5267-FSE-000827). It is a project that aims to train polytechnic and professional higher education teachers with innovation co-creation methodologies and, iii) Project "PIN Poli Entrepreneurship Innovation" (POCI-02-0651-FEDER-016177). This Project developed an investigation into the impact of teaching entrepreneurship for training business initiatives, with Polytechnic Higher Education students as its target audience and resulted in the publication of four books.

He was a collaborator, on behalf of the Polytechnic Institute of Beja, in the following projects: i) Project "SPEED TAlent – "Talent Accelerator" (ALT20-01-0651-FEDER-000010). This project aims to promote the use of synergies, skills and installed capacity of institutions that are part of the regional innovation ecosystem, project partners, to promote qualified and creative entrepreneurship in the Alentejo region; ii) Project "DinINC_SRTT - Network of Technology-Based Incubators of the Regional Technology Transfer System (SRTT) of Alentejo" (ALT20-01-0651-FEDER-000004). This project aims to consolidate and boost the Technology-Based Incubator Network of the Alentejo Regional Technology Transfer System, fostering a dynamic ecosystem that promotes qualified and creative entrepreneurship in the Alentejo region.

Fernando Teixeira is a member of the Smart Cities Research Center, based in Tomar. Researcher in Financial Markets and Entrepreneurship. Articles published in peer-reviewed international journals. Reviewer of scientific articles for international journals.

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Elizabeth U. CASCIO
Professor of Economics and DeWalt H. 1921 and Marie H. Ankeny Professor in Economic Policy, Dartmouth College
Statement of Purpose: It's an honor to stand for election to the AEA Executive Committee. As a teacher, I am consistently amazed by the potential future of our discipline. As an editor, mentor, colleague, and researcher, though, I've felt some alarm about the recent trajectory of economics as a profession. Rising barriers to entry, growing resource inequality, and poor climate are discouraging the next generation and deepening frustration. The AEA's initiatives to expand the number and publication frequency of Association journals, develop a code of professional conduct, promote inclusion, and invest in the pipeline are steps in the right direction. However, more must be done. I don't claim to have all the answers. But I have some ideas, and if elected will listen and collaborate creatively with others to advance efforts to democratize the profession. I'm grateful and enthusiastic for this opportunity and thank you for your consideration.
Previous and Present Positions: Professor of Economics and DeWalt H. 1921 and Marie H. Ankeny Professor in Economic Policy 2021–, Associate Professor of Economics 2013–21, Assistant Professor of Economics 2006–13, Dartmouth College; Research Associate 2013–, Faculty Research Fellow 2004–13, Programs on Education, Development of the American Economy, and Children, NBER; Research Fellow 2005–, IZA; Assistant Professor of Economics 2003–06, University of California, Davis.
Degrees: Ph.D., Economics, University of California, Berkeley, 2003; A.B. *summa cum laude*, Economics, Franklin and Marshall College, 1997.
Publications: "Teacher Salaries and Racial Inequality in Educational Attainment in the Mid–Century South," (with Lewis), *Journal of Labor Economics*, 2024; "Does Universal Preschool Hit the Target? Program Access and Preschool Impacts," *The Journal of Human Resources*, 2023; "A Century of the American Woman Voter: Sex Gaps in Political Participation, Preferences, and Partisanship Since Women's Enfranchisement," (with Shenhav), *JEP*, 2020; "Distributing the Green (Cards): Permanent Residency and Personal Income Taxes After the Immigration Reform and Control Act of 1986," (with Lewis), *Journal of Public Economics*, 2019; "Valuing the Vote: The Redistribution of Voting Rights and State Funds Following the Voting Rights Act of 1965," (with Washington), *Quarterly Journal of Economics*, 2014; "The Impacts of Expanding Access to High-Quality Preschool Education" (with Schanzenbach), *Brookings Papers on Economic Activity*, 2013;
AEA Offices, Committee Memberships, and Honors: CeMENT Mentor for Junior Faculty, 2021; *Ad Hoc* Search Committee for Editor of *AEJ: Economic Policy*, 2022.
Other Affiliations and Honors: Dean of the Faculty Award for Outstanding Mentoring and Advising, Dartmouth College, 2024; Elected member of the Executive Board of the Society of Labor Economists (SOLE), 2022–24; Editor, *Journal of Labor Economics*, 2024–; International Editorial Board, *ILR Review*, 2019–; National Academy of Education (NAEd)/Spencer Postdoctoral Fellowship Selection Committee, 2021–24; Editorial Board, *Journal of Historical Political Economy*, 2020–23; Co-Editor, *Journal of Human Resources*, 2014–19; Spencer Foundation Small Grants Review Committee, 2014–16; NAEd/Spencer Postdoctoral Fellow, 2009–11; Visiting Scholar, Federal Reserve Bank of San Francisco, 2007–09.

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https://www.aeaweb.org/about-aea/leadership/election-winners

Professor Peter L. ROUSSEAU

Gertrude Conaway Vanderbilt Professor of Natural and Social Sciences, Professor of History; Chair, Department of Economics.

Professor Rousseau is a macroeconomist and economic historian who studies the role of financial markets and institutions in growth and development. He is particularly interested in the monetary history of the United States and Europe, and has published widely in this area. His work also considers how financial markets assist in spreading transformative technological changes through an economy.
Professor Rousseau is a Research Associate at the National Bureau of Economic Research and is Secretary-Treasurer of the American Economic Association.
Introduction to Economic History (Ph.D.); Theory of Money and Finance (Ph.D); Financial Instruments and Markets; Corporate Finance; Money and Banking; Economic History of the United States.
Specializations
Macroeconomic, monetary and financial history; economic history of technological change

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References:
https://as.vanderbilt.edu/economics/bio/peter-rousseau-econ/

Prof. Ass. Dr. Ardita TODRI

Ardita Todri is an experienced Certified Public Accountant and banking professional with a comprehensive background in financial consultancy, risk management, and operational oversight. Since September 2011, Prof. Todri has been self-employed, providing financial and accounting services to clients. Previously, she served as Head of the Organizational & Methodological Department at Credit Agricole Bank Albania from October to December 2011, where she implemented strategic initiatives, analyzed corporate governance, and ensured regulatory compliance. Prior to that, Prof. Todri was the Head of Operational Risk & Permanent Control at Credit Agricole Bank Albania from May 2009 to September 2011, overseeing Basel II-based risk assessments, scenario analysis, and regulatory reporting. Her earlier experience includes roles as an Operational Risk Controller at Raiffeisen Bank Albania (2007–2009), focusing on risk monitoring and fraud prevention, and as a Risk Manager at Credins Bank Albania (2005–2007), managing credit, market, liquidity, and operational risks.

Currently, Prof. Todri serves as a professor in the Finance-Accounting Department at the Faculty of Business and Law at "Aleksandër Xhuvani" University in Elbasan. Her teaching career began at the Faculty of Economic and Political Sciences at "Our Lady of Good Counsel" University. A highly regarded academic, she is frequently invited to deliver lectures in Italian, English, and French across Europe and beyond.

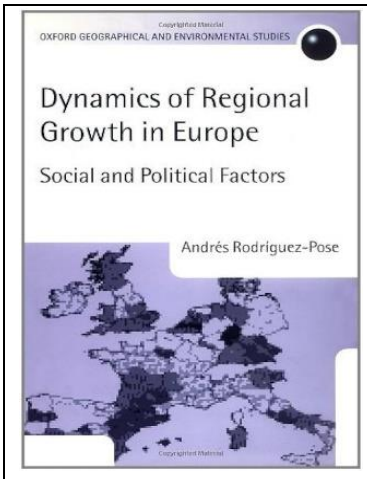
Prof. Todri holds two doctoral degrees in Economic Sciences: one from the Polytechnic Business University of Lugano (2015, Switzerland) and another from the Catholic University of Murcia (2019, Spain).

She holds academic qualifications as a member of the European Social Fund at Padua University. Additionally, she serves as an editorial board member for several scholarly journals, including Management and Organizational Studies, International Finance and Banking, and the Journal of Advertising and Public Relations, among others. She is also actively involved as a member of various COST Actions, contributing to collaborative research initiatives across Europe.
Prof. Todri is the author of numerous research articles published in leading scientific databases, including Web of Science (WoS) and Scopus.

Academic Profile by:
Ass. Professor. Dr. Filipos Ruxho
Sustainable Regional Development Scientific Journal – SRDSJ

References:
https://www.scopus.com/authid/detail.uri?authorId=57214892087

Book Reviews



Dynamics of Regional Growth in Europe: Social and Political Factors by Andrés Rodríguez Pose | Oxford University Press | ISBN: 9780198233831 | Oxford Geographical and Environmental Studies Serie

Dynamics of Regional Growth in Europe: Social and Political Factors by Andrés Rodríguez-Pose is a book offering a comprehensive and analytically rich exploration of the enduring spatial disparities in regional development across Europe. Andrés Rodríguez-Pose is a Professor at the London School of Economics and a reputable academic in Economic Geography. Published by Oxford University Press, as part of the distinguished Oxford Geographical and Environmental Studies Series, this book provides insights into the puzzling question in the field of economic geography regarding why regional inequalities persist despite the structural transformations and integrative forces of globalization, technological change, and capital mobility.

In this book, Rodríguez-Pose presents a multidisciplinary framework that integrates social, political, and institutional dimensions into the analysis of regional growth and development. The book begins by discussing the processes of socioeconomic restructuring and their spatial consequences. It then provides a thorough examination of regional growth patterns, exploring how social conditions, labor market characteristics, education systems, political dynamics, and institutional structures influence the economic dynamics of European regions.

Drawing on comprehensive Eurostat data at the NUTS 2 level, Rodríguez-Pose systematically examines patterns of growth and stagnation across a diverse set of European regions. Tassilo Herrschel (the Geographical Journal) acknowledges added value of the book, first, on the author's comparative approach allowing for the identification of underlying factors explaining persistent divergence between core and peripheral areas and, secondly, on the challenges posed against surficial visions of a "Europe of the regions" whether overlooking the importance of national frameworks in conditioning regional development outcomes.

Each chapter builds a layered and empirically grounded narrative and is structured as follows:

Preface – 1: Introduction: The Process of Socio-economic Restructuring and Its Spatial Consequences - 2: Introducing Social and Political Factors in the Study of Growth - 3:Regions, Nations, and Growth - 4:Regional Growth Patterns - 5:Social Conditions and Regional Growth in Western Europe - 6:Labour Market, Education, and Growth - 7:Politics, Institutions, and Growth - 8:Regional Politics and Growth in the European Context Conclusion.

Bibliography Index. The book of Rodríguez-Pose, Dynamics of Regional Growth in Europe: Social and Political Factors, is particularly valuable for scholars, graduate students, and practitioners in economic geography, regional science, European studies, and political economy. It also holds practical relevance for policymakers engaged in the EU context. Further information and purchase options are available at: https://global.oup.com/academic/product/dynamics-of-regional- growth-in-europe-9780198233831

Book Review by:
Ass. Professor. Dr. Filipos Ruxho
Sustainable Regional Development Scientific Journal - SRDSJ

Guidelines

For the writers & a format model for the articles submitted
to be reviewed & published in the journal

Sustainable Regional Development Scientific Journal

(RePec, EconPapaers, RSAI, BnF) – www.srdsjournal.eu

Guidelines for the Writers & a format model for the Articles submitted to be reviewed & published in thejournal.

The Title of the paper must be centered, and the font must be Times New Roman, size 12, in Uppercase, in Bold

For the writers' personal information use the Times New Roman font, size 11, in bold, and centered. Use lowercase for the first name and uppercase for the last name. The line below the name includes the professional title and workplace; use the Times New Roman font, size 10, centered. In the third line write only the contact e-mail address in Times New Roman 10, centered.

Name LAST NAME
Professional Title, WorkplaceE-mail Address

Name LAST NAME
Professional Title, WorkplaceE-mail Address

Abstract

The abstract consists of a single paragraph, no longer than 250 words. The font must be Times New Roman, size 11. The text must be justified. The title "Abstract" must be aligned left, in Times New Roman, size 11, in bold. A space of one line must be left between the title and the text of the abstract. The abstract must contain sufficient information, be factual, and include the basic data of the paper.
Keywords: Use 3 to 5 keywords, separated by commas
JEL classification: We kindly request that you classify your paper according to the JEL system, which is used to classify articles, dissertations, books, book reviews, and a variety of other applications. The use of the JEL classification is necessary so that your paper be properly indexed in databases such as EconLit. Select the codes that represent your article and separate them by commas. You can find information on the JEL system here: https://www.aeaweb.org/jel/guide/jel.php

1. Introduction

All articles must begin with an introduction, a section which demarcates the theoretical background and the goals of the paper.
The present document provides the necessary information and formatting guidelines for you to write your article. We recommend that you copy this file to your computer and insert your own text in it, keeping the format that has already been set. All the different parts of the article (title, main text, headers, titles, etc.) have already been set, as in the present document- model. The main text must be written in regular Times New Roman font, size 11, justified, with a 0.5 cm indent for the first line of each paragraph.
We recommend that you save this document to your computer as a Word document model. Therefore, it will be easy for you to have your article in the correct format and ready to be submitted. **The only form in which the file will be accepted is MS Word 2003**. If you have a later version of Microsoft Office / Word, you can edit it as follows:

- Once you have finished formatting your text, create a pdf file, and then save your file as a Word "97-2003" (.doc) file.
- Compare the two files – the pdf one and the Word "97-2003" (.doc) one.
- If you do not note any significant differences between the two, then – and only then – you can submit your article to us, **sending both the pdf and the Word "97-2003" (.doc) files** to our e- mail address.

If you use a word processor other than Microsoft Word, we recommend that you follow the same procedure as above, creating a pdf file and using the appropriate add-on in order to save your document in MS Word "97-2003" (.doc) form. Once you compare the two files (and find no significant differences), send us both.

1. General Guidelines on Paper Formatting

1.1. Body

The body of the text consists of different sections, which describe the content of the article (for example: Method, Findings, Analysis, Discussion, etc.). You can use up to three levels of sections – sub-sections. For the Body of the text, use the default format style in Word, selecting the Times New Roman font, size 11, justified, with a 0.5 cm indent for the first line of each paragraph (this is further detailed in the section "Paragraphs").

1.2. References

The references included in the paper must be cited at the end of the text. All references used in the body of the paper must be listed alphabetically (this is further detailed in the section "References").

1.3. Appendices

The section "Appendices" follows the section "References".

2. Page formatting

2.1. Page size

The page size must be A4 (21 x 29,7 cm), and its orientation must be "portrait". This stands for all the pages of the paper. "Landscape" orientation is inadmissible.

2.2. Margins

Top margin: 2,54cm Bottom margin: 1,5cm
Left and right margins: 3,17cmGutter margin: 0cm

2.3. Headers and Footers

Go to "Format" → "Page", and select a 1,25cm margin for the header and a 1,25cm margin for the footer. Do not write inside the headers and footers, and do not insert page numbers.

2.4. Footnotes

The use of footnotes or endnotes is expressly prohibited. In case further explanation is deemed necessary, you must integrate it in the body of the paper.

2.5. Abbreviations and Acronyms

Abbreviations and acronyms must be defined in the abstract, as well as the first time each one is used in the body of the text.

2.6. Section headers

We recommend that you use up to three sections – sub-sections. Select a simple numbering for the sections – sub-sections according to the present model.

2.7. First level header format

For the headers of the main sections use the Times New Roman font, size 11, in bold and underlined, and leave a size 12 spacing before the paragraph and a size 6 spacing after the paragraph. The header must be aligned left. Use a capital letter only for the first letter of the header.

2.8. Second level header format

For second level headers, follow this model. Use the Times New Roman font, size 11, in bold, and leave a size 12 spacing before the paragraph and a size 3 spacing after the paragraph. Select a 0.5 cm indent. The header must be aligned left. Use a capital letter only for the first letter of the header.

2.8.1. Third level header

For third level headers, follow this model. Use the Times New Roman font, size 11, in bold and italics, and leave a size 6 spacing before the paragraph and a size 0 spacing after the paragraph. The header must be aligned left, with a left indent of 1 cm. Use a capital letter only for the first letter of the header.

3. Paragraphs

In every paragraph, use the Times New Roman font, size 11, with single line spacing. We recommend you modify the default (normal) format style in Word and use that in your text. For all paragraphs, the spacings before and after the paragraph must be size 0, and the line spacing single. Use a 0,5cm indent only for the first line of each paragraph. Leave no spacings nor lines between paragraphs.

3.1. Lists

In case you need to present data in the form of a list, use the following format:

- Bullet indent: 1,14cm
- Text:
  - Following tab at: 1,5 cm
  - Indent at: 1,5cm

Use the same format (the above values) if you use numbering for your list.

1. Example of numbered list 1
2. Example of numbered list 1

4. Figures, images, and tables

4.1. Figures and images

Insert your figures and images directly after the part where they are mentioned in the body of text. They must be centered, numbered, and have a short descriptive title.

Figures put together “as they are”, using Office tools, are absolutely inadmissible. The figures used must have been exclusively inserted as images in Word, in gif, jpg, or png form (with an analysis of at least 200dpi), and in line with the text. The width of an image must not exceed 14,5cm so that it does not exceed the margins set above.

The images, figures, and tables must be inserted “as they are” in the text, in line with it.

Figures and images which have been inserted in a text box are absolutely inadmissible.

4.1.1. Reference inside the text

Avoid phrases such as “the table above” or the “figure below” when citing figures and images. Use instead “in Table 1”, “in Figure 2”, etc.

4.1.2. Examples

A model of how to format figures/images follows. For the title, use the Times New Roman font, size 10, in bold. Write the title above the figure, and set a size 6 spacing before the title anda size 0 spacing after it. The line spacing of the title must be 1.5 line. Both the image and its title must be centered.

Image 1: Title

Source: cite the source

Directly below the figure you must cite the source from which you took the image, or any note regarding the figure, written in Times New Roman, size 10. Write it below the figure, leaving a size 0 spacing before and after it, use a line spacing of 1.5 line, and make it centered.

4.2. Tables

For the title, use the Times New Roman font, size 10, in bold. Write the title above the table, and set a size 6 spacing before the title and a size 0 spacing after it. The line spacing of the title must be 1.5 line. Both the table and its title must be centered. The width of the table must not exceed 14,5cm so that it does not exceed the page margins set.

Table 1. Example of how a table must be formatted

Age	Frequency	Percentage %
Under 40	44	32.1
40 - 49	68	49.6
Over 50	25	18.2
Total	**137**	**100.0**

Source: cite the source

If the table needs to continue on the next page, select in the "Table properties" that the first line be repeated as a header in every page, as in the above example of Table 1. **Tables (or figures or images) which are included in pages with a "Landscape" orientation are absolutely inadmissible.**
Every table must have horizontal lines 1 pt. wide at the top and bottom, as shown in the example. The use of vertical lines and color fill at the background of the cells is strictly prohibited.
Directly below the table you must cite the source or any note regarding the table, written in Times New

Roman, size 10. Write it below the table, leaving a size 0 spacing before and a size 6spacing after it, and make it centered.

5. Mathematical formulas

There is a variety of tools in order to insert and process mathematical formulas, such as the "Mathematics", found in the most recent editions of Word, "Math Type", "Fast Math Formula Editor", "MathCast Equation Editor", "Math Editor". Since it is impossible for us to provide youwith compatibility with all these tools in all their editions, **we can only admit your paper if it contains mathematical formulas solely in the form of images.**

Keep a continuous numbering for the mathematical formulas and center them in the page, as shown in the following example:

(1) $$y = ax^2 + bx + c$$

The same stands for formulas or particular mathematical symbols you may have integrated in your text. For instance, if you want to use the term in your text, you must insert it as an imaged, in line with the text. The images containing the mathematical formulas must be legible (at least 300dpi).

In the exceptional case of a text which may contain a great number of mathematical formulas, the writer may send it to us in TeX form if they so wish.

6. References

We recommend that you use the Chicago Manual of Style Author-Date system, as it is recommended by the AEA (American Economic Association) for the journals included in the EconLit database, and it is the dominant style of bibliography in the field of Economics. For more information, you can go to the following links:

- https://www.aeaweb.org/journals/policies/sample-references
- http://www.chicagomanualofstyle.org/tools_citationguide.html
- http://libguides.williams.edu/citing/chicago-author-date#s-lg-box-12037253

6.1. Online references (internet citations)

Check your links again before sending your file, to confirm that they are active.

Avoid long internet links. Where possible, also cite the title of the website operator-owner. Return the font color to black, and remove the hyperlink. Links such as the following are impractical and distasteful, therefore should be avoided.

Example of an inadmissible hyperlink
https://el.wikipedia.org/wiki/%CE%9F%CE%B9%CE%BA%CE%BF%CE%BD%CE%BF%CE%BC%CE%B9%CE%BA%CE%AC

6.2. References Formatting

For your list of references, use the Times New Roman font, size 10, with single line spacing. The paragraph format must include a size 0 spacing before the paragraph and a size 0 spacing after it, aligned left. Use a 0,5 cm indent only for the first line of each paragraph. Leave no spacings or lines between paragraphs.

6.3. Example of how References must be formatted

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