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# *Scientia Iuventa 2025*

Proceedings from international scientific conference of doctoral students and young scientists

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## FOREWORD

Dear ladies and gentlemen, dear doctoral students,

It is my sincere pleasure to welcome you to the Proceedings of the International Scientific Conference of Doctoral Students and Young Scientists – Scientia Iuventa 2025. This year marks the twentieth occasion on which doctoral students and young researchers have had the opportunity to present the results of their scientific work at this conference. The event was organized by the Centre for Research and Development of Doctoral Students in cooperation with the Faculty of Economics of Matej Bel University in Banská Bystrica.

Scientia Iuventa 2025 reflected contemporary doctoral research in the fields of Tourism, Business Economics and Management, Finance, and Public Economics and Politics, both in Slovakia and abroad. The conference created a space for multidisciplinary, mutual inspiration, and the discovery of new perspectives. Over time, Scientia Iuventa has developed into a platform where young researchers can demonstrate their talent, enhance their research through valuable feedback, and contribute to the advancement of scientific knowledge.

The main output of the conference is this collection of peer-reviewed scientific papers. All contributions included in these Proceedings underwent an anonymous review process.

I would also like to extend my gratitude to the organizers of this year's conference for their dedication, hard work, and successful coordination of Scientia Iuventa 2025.

Dear participants, on behalf of both the Scientific Committee and the Organizing Committee, thank you for choosing our conference as a place to present your work. I wish you every success in your research, studies, and future endeavours.

prof. Ing. Zdenka Musová, PhD.

*Guarantor of the conference*

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## LANGUAGE AS A FORM OF CAPITAL IN THE GLOBALIZED WORLD OF THE 21ST CENTURY

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### ABSTRACT

#### **Purpose:**

This paper explores the evolving role of language as a form of capital in the context of 21st-century globalization. Drawing on ecolinguistic theory, it examines how linguistic competence influences social mobility, identity construction, and access to global networks. The paper investigates the dominance of English as a global lingua franca and its impact on linguistic diversity, alongside the ways multilingualism shapes individual agency in an interconnected world.

#### **Design/methodology:**

The research is based on a comprehensive literature review, synthesizing key contributions in ecolinguistics, sociolinguistics, and globalization studies. It employs a transdisciplinary approach to analyze how language functions as symbolic and economic capital, using Bourdieu's theory of linguistic capital as a conceptual framework.

#### **Findings:**

The paper finds that language proficiency, particularly in English, has become a critical asset for global participation, but this dynamic also reinforces linguistic hierarchies and threatens local languages. It highlights the dual nature of language as both an enabler of global mobility and a potential force of cultural homogenization, influencing individual identity and community cohesion.

#### **Research/practical implications:**

The study underscores the need for language policies that balance global communication with linguistic diversity. It suggests future research on promoting multilingual education and fostering symbolic competence to help individuals navigate complex global linguistic landscapes without eroding local identities.

#### **Originality/value:**

This paper contributes to the discourse on language ecology by framing language as a dynamic form of capital in globalized contexts. It offers a novel perspective on how linguistic ecosystems are shaped by power dynamics, and how fostering linguistic diversity can mitigate the adverse effects of globalization.

**Keywords:** Linguistic capital, globalization, multilingualism, mobility, modern identities

**JEL Classification:** F01, J24, J60



## 1. Introduction

In an increasingly globalized world, language has transcended its traditional role as a mere medium of communication to become a key factor in shaping individual and collective experiences. The rise of global interconnectivity, transnational mobility, and digital communication networks have elevated language to a central position in economic, educational, and sociocultural domains (Giddens, 1990; Block and Cameron, 2002). Ecolinguistics, an emerging field that examines the intricate relationships between language and its broader ecological and social contexts, offers a powerful framework for understanding these developments (Haugen, 1972; van Lier, 2004; Steffensen and Fill, 2014, Stibbe, 2015, 2021). Within this framework, language is increasingly conceptualized not just as a system of signs, but as part of a dynamic ecosystem - interconnected, interdependent, and shaped by human and environmental interactions (van Lier, 2004; Steffensen and Fill, 2014; Finke, 2017).

Despite the growing interest in language's role in globalization, relatively little research has examined how language functions as a form of capital through the lens of ecolinguistics. While Bourdieu's (1991) notion of linguistic capital has laid the groundwork for understanding the power dynamics of language in social structures, fewer studies have integrated this sociological perspective with the ecological dimensions of language acquisition and use. Moreover, the dominance of English as a global lingua franca raises questions about the sustainability of linguistic diversity and the symbolic positioning of multilingual speakers within globalized networks. There is a pressing need to explore how learners navigate this complex linguistic landscape, where language acts simultaneously as a commodity, a tool of identity negotiation, and an agent of social mobility.

This paper responds to this gap by examining the evolving role of language as a form of capital in the 21st century through an ecolinguistic perspective. It investigates how linguistic competence - particularly in English - affects social positioning, identity construction, and access to global networks. Drawing on theoretical contributions from ecolinguistics, sociolinguistics, and globalization studies, the study synthesizes existing literature to explore how multilingualism empowers individuals and challenges hegemonic language ideologies. By framing language as an ecosystem (van Lier, 2004; Finke, 2017), this research aims to contribute to a deeper understanding of the dynamic processes that underpin language acquisition, symbolic power, and linguistic diversity in a globalized world.



## 2. Theoretical background

The intersection of language, power, and social structures has long been a subject of scholarly interest. Pierre Bourdieu's (1991) concept of linguistic capital laid a foundational framework for understanding how language operates as symbolic power within social hierarchies. According to Bourdieu, language not only communicates information but also confers social advantage when aligned with dominant linguistic norms. Language proficiency, particularly in prestigious or dominant languages like English, can be converted into economic and cultural capital, enabling upward social mobility.

Building on Bourdieu's work, it can be explored how language functions as a site of ideological struggle and identity construction in an increasingly globalized world. The dominance of English as a global lingua franca is both a product and a driver of globalization (Lukač-Zoranić and Fijuljanin, 2013: 59), reinforcing inequalities while also offering opportunities for transnational communication and identity reshaping (Block and Cameron, 2002).

In parallel, ecolinguistics has emerged as a field that reconsiders language within its ecological and social environment. Influenced by Haugen's (1972) notion of language ecology and Halliday's (1990) emphasis on linguistic influence over environmental consciousness, ecolinguistics proposes that language is part of an interconnected system of meanings that reflect and shape societal values. More recently, scholars like Steffensen and Fill (2014) and Finke (2017) have expanded the field by proposing language as an ecosystem - a dynamic network shaped by sociocultural, psychological, and material interactions.

While previous research has acknowledged the symbolic power of language and the ecological dimensions of linguistic systems, few studies have explicitly integrated these approaches to examine language as both capital and ecological resource in the context of globalization. This study addresses this gap by synthesizing these perspectives to better understand how multilingualism, linguistic competence, and English as a global language influence people's identity, agency, and access to global networks.

## 3. Methods

This study employs a secondary research design grounded in a systematic literature review and a transdisciplinary analytical approach. The paper synthesizes existing theoretical perspectives rather than generating new empirical data. This approach allows for the integration



of insights from ecolinguistics, sociolinguistics, and social theories to explore how language operates as a form of capital in the context of globalization.

The object of this research is the conceptualization of language as a form of capital (symbolic, economic, and ecological) within globalized sociocultural systems. The objective is to analyze how linguistic competence, particularly multilingual and English-mediated proficiency, contributes to social mobility, identity construction, and access to global networks. The research also seeks to reveal how linguistic hierarchies are shaped by power relations embedded in globalization processes.

The study applies a qualitative, interpretive synthesis of academic literature. The review draws on three key disciplinary fields to ensure methodological breadth and avoid overreliance on individual theorists:

- sociology of language and power, examining linguistic capital and globalization (Bourdieu, 1991; De Swaan, 2001; Giddens, 2000; Philipson and Skutnabb-Kangas, 2017);
- ecolinguistics, emphasizing the interdependence of language, environment, and society (Haugen, 1972; Halliday, 1990; Steffensen and Fill, 2014; Stibbe, 2015, 2021; Finke, 2017);
- sociolinguistics and identity studies, addressing multilingualism, symbolic competence, and discourse (Kramsch and Whiteside, 2008; Pavlenko and Blackledge, 2004; Cameron, 2002; Gee et al., 1996).

Each strand of literature was analyzed for thematic convergence on the roles of language as resource, symbol, and ecological system. The review process aimed to trace how these frameworks overlap and diverge in their treatment of linguistic value and global communication.

The analysis follows a transdisciplinary framework, combining conceptual and critical synthesis. It proceeds in three steps: (1) identification of conceptual themes related to language as capital across ecolinguistic and sociological literature; (2) interpretive comparison of how each framework conceptualizes the relationship between language, power, and social structures; (3) integration of findings into a unified analytical framework that illustrates the functions of language in globalization.

Through this synthesis, the analysis identifies three interrelated language functions:

- language as symbolic capital (based on Bourdieu's theory of power and distinction);
- language as an ecological system (informed by ecolinguistic principles);



- language as an economic and social resource (derived from globalization and human capital theories).

These categories form the analytical lens applied in the following section to demonstrate how language mediates access, identity, and agency in the globalized world.

#### 4. Results and discussion

Globalization has become a ubiquitous concept across political discourse, academic scholarship, and popular media, often invoked in discussions related to economics, culture, society, and technology (Block and Cameron, 2002). Although expressed differently across languages - such as *gurôbarizêshon* in Japanese or *globalización* in Spanish - its core meaning is widely understood in line with Giddens' (1990) definition of globalization as the intensification of worldwide social interactions that connect distant localities, allowing global and local events to influence each other. Waters (1995) similarly describes globalization as a process that reduces geographic barriers to social and cultural structures, accompanied by growing awareness of this shift.

Within this global landscape, language plays a pivotal role. Block and Cameron (2002) highlight language as a "vital commodity," not only essential for communication but also as a medium for building and maintaining social relationships. Moreover, effective global communication requires not just common platforms but also shared linguistic systems. Consequently, the global economy - fueled by the information age and service industries - demands higher levels of linguistic competence. The need for individuals to learn additional languages or refine their existing language use is driven by transnational mobility, cultural exchange, and migration, which simultaneously increase linguistic diversity.

In the context of a post-industrial economy, language proficiency has become increasingly valued as a form of linguistic capital (Bourdieu, 1991). Communication skills, along with digital and multimodal literacies, are now indispensable in the workforce (Block and Cameron, 2002). Competency in multiple languages enhances one's competitive advantage, turning linguistic ability into a marketable asset. While economic motivations for language learning are not new, the demands of the global job market have elevated the significance of linguistic capital in both professional and personal realms.

Drawing on Giddens' (2000) notion of reflexive modernity, the erosion of traditional social structures, coupled with increased access to information, enables individuals - even those from marginalized backgrounds - to shape their own social realities. Another key development is the rise of the so-called "ideology of effective communication" (Block and Cameron, 2002), which



emphasizes communicative genres and styles over specific languages. As Cameron (2002) notes, globalization has transformed how communication skills are conceptualized and taught, particularly in language learning contexts. In turn, language acquisition now extends beyond grammar and vocabulary to include navigating the complex sociocultural dimensions of global interaction. This aligns with evolving labor market expectations, where communication is increasingly treated as a separate, essential skill distinct from traditional literacy or digital competencies.

This emphasis on communicative adaptability is central to the “new work order” described by Gee et al. (1996), in which employees are expected to demonstrate advanced interpersonal and cross-cultural communication abilities. Linguistic proficiency alone is not enough - global workers must also exhibit cultural sensitivity, empathy, and flexibility. As Cameron (2002) argues, the ability to switch languages, understand diverse cultural frameworks, and adapt communicative behavior across contexts is now a defining feature of professional success.

It could thus be inferred that language in globalization operates foremost as symbolic capital - a resource that carries prestige, legitimacy, and authority across social and economic domains (Kramsch and Whiteside, 2008). Pierre Bourdieu’s (1991) theory of cultural capital, particularly in the realm of language, illustrates how language serves as a crucial mechanism for reinforcing social hierarchies and distributing power. In *Language and Symbolic Power*, Bourdieu posits that language is not merely a communicative tool but a form of symbolic capital that can significantly shape one's social standing. He suggests that certain modes of speaking carry more legitimacy and prestige, thereby granting authority to those who align with dominant linguistic norms. Linguistic competence, especially in socially valued varieties, enables individuals to gain recognition and assert influence within structured social environments (Bourdieu, 1991: 37).

Importantly, Bourdieu (1991: 76) distinguishes linguistic competence from simple grammatical knowledge. It encompasses the ability to engage and participate in social situations appropriately by adhering to the implicit communicative expectations of each context. This adaptability - knowing when and how to shift between registers and speech styles - constitutes a powerful form of cultural capital that grants individuals access to higher status and opportunity. Aligned with this view, Kramsch and Whiteside (2008) suggest that in a world characterized by globalization and migration, individuals increasingly derive distinction not from a single linguistic or cultural heritage, but from their capacity to move between traditions. Bourdieu’s (1997) concept of symbolic capital becomes central here - referring to one’s ability



not only to adopt another's language but also to shape the very context in which communication occurs. Kramsch and Whiteside (2008) further define symbolic competence as the capacity to influence multilingual interactions by reshaping meaning and context. Drawing on Weedon (1987), they note that each language positions its speakers within unique symbolic spaces, shaping how they relate to others. Multilingual individuals can thus harness these spaces to challenge dominant power structures and create alternative realities (Bourdieu, 1991; Rampton, 1999).

Darvin and Norton (2015) expand the afore-mentioned Bourdieu's framework by linking linguistic capital with investment - the process by which individuals commit effort and identity to language acquisition to gain symbolic and material returns. Yet, the scholars argue that this investment is not equally rewarded. The value of linguistic capital depends on ideology and recognition within specific social fields. As Huang (2013) and Kramsch (2014) note, multilingual speakers often need to negotiate legitimacy within systems that privilege monolingual English norms, which necessitates understanding language itself functioning as a system.

Accordingly, drawing from ecolinguistic theory (Haugen, 1972; van Lier, 2004; Steffensen and Fill, 2014; Stibbe, 2015, 2021), language can be seen as part of a sociocultural ecology - an interdependent network linking discourse, identity, and environment. Within this framework, languages coexist much like species in an ecosystem, each contributing unique perspectives and communicative functions. The dominance of English disrupts this equilibrium by reducing linguistic diversity and narrowing the range of cultural worldviews. From this standpoint, policies that promote only English as a lingua franca risk creating what van Lier (2004) refers to semiotic impoverishment - a condition where communicative uniformity erodes symbolic diversity. Conversely, supporting multilingual environments fosters interactional balance within the global linguistic ecosystem.

Steffensen and Fill (2014) describe language as an adaptive system sensitive to social and environmental change. In this view, multilingualism contributes to ecological resilience, sustaining diversity in meaning-making practices. Stibbe (2021) extends this perspective by emphasizing the ethical role of discourse, whereby language not only represents the world but actively constructs it. Thus, maintaining multiple linguistic repertoires is not merely a cultural preference but a form of ecological responsibility.

Like other forms of capital, linguistic capital can be accumulated and transformed into tangible benefits such as professional advancement, increased income, and greater social



mobility (Bourdieu, 1991: 66), which elucidates the function of language as an economic and social resource. According to Bourdieu, any linguistic act is inherently an economic exchange, embedded in a symbolic relationship between the speaker (or ‘producer’) and their audience or social market (ibid.). The widespread dominance of English in domains such as commerce, science, and education exemplifies this principle. English holds symbolic value not because of linguistic superiority, but due to historical, political, and economic factors (Kaplan, 2017: 95). As a result, English proficiency often grants individuals privileged access to global opportunities, reinforcing its role as a highly valued linguistic asset (Bourdieu, 1991: 43).

From an economic standpoint, Chiswick and Miller (1995: 248) frame language skills as a form of human capital - personal attributes that are productive in economic terms, require investment to develop, and yield returns in employment and consumption. Extending this idea, Grin (1994: 35) argues that language itself constitutes a market. Traditional economic models define a market through the presence of commodities, prices, and the forces of supply and demand. Within this framework, language can be viewed both as a product and a medium of exchange. For instance, language education and translation services operate as commercial sectors where the value of linguistic skills fluctuates according to demand for specific languages and the availability of qualified providers.

It can thus be concluded that globalization has fundamentally altered the role of language, transforming it into a central mechanism for identity formation, social navigation, and professional mobility. The following paragraphs explore the expanding role of English as both a consequence and a driver of globalization. It considers how English shapes global communication, affects local linguistic ecologies, and influences the construction of identities.

De Swaan (2001) suggests that humanity is progressing toward the formation of a global linguistic network, signaling the emergence of a new ecolinguistic world order. In discussions of globalization and intercultural communication, English consistently dominates as the default language, widely recognized as essential for global engagement. The influence of Anglo-American cultural production has positioned English as the prevailing lingua franca of the 21st century (Lukač-Zoranić and Fijuljanin, 2013: 57). Philipson (2000: 198) traces this dominance back to coordinated efforts by the United States and the United Kingdom, beginning in the 1930s, to promote English as a “world” language and to establish institutional structures to support its global diffusion.

Today, English carries undeniable prestige and symbolic power across a range of fields including the arts, sciences, and international commerce (Lukač-Zoranić & Fijuljanin, 2013:



57). It has evolved into a global communicative standard, no longer confined to its native English-speaking countries (ibid.: 59). Competence in English often leads to recognition and rewards, solidifying its status as a valuable cultural and economic asset (ibid.: 57, 59). The widespread demand for English proficiency in professional and institutional settings continues to grow, particularly across Europe, Asia, the Middle East, and the Pacific islands (Kaplan, 2017: 95). Interestingly, in numerous former colonies, English is no longer seen merely as a relic of colonial rule, but rather embraced for its perceived neutrality (ibid.). Fishman et al. (1996: 8) argue that English can be recontextualized - not solely as an imperial tool - but as a multinational language. In this light, Pavlenko and Blackledge (2004: 2) describe English as a “supranational” language, one that transcends territorial boundaries while remaining deeply embedded in global capitalism.

Lukač-Zoranić and Fijuljanin (2013: 59) argue that English and globalization reinforce each other in a mutually dependent relationship - globalization has fueled the expansion of English, while the ubiquity of English has facilitated deeper global integration. According to Crystal (1997, in Lukač-Zoranić and Fijuljanin, 2013), English can thus be seen as “the language of globalization.” However, Kaplan (2017: 95) challenges this assumption, suggesting that English’s current dominance results more from historical and geopolitical contingencies than any intrinsic linguistic quality. Advances in global media, technological development, and economic restructuring have all contributed to English’s rise as the lingua franca and, in many contexts, a de facto second national language (Kaplan, 2017: 99).

This linguistic shift has implications for identity construction in the global era. For instance, Block and Cameron (2002: 7) reflect on Japan’s discourse of internationalization in English language education, citing Tokyo subway graffiti that reads: “If you dream in English, you are an international person.” This highlights a redefinition of identity where ethnic affiliation becomes secondary to a global, English-mediated self-image - a theme explored further in the following chapter.

Yet, the rise of English also raises concerns about its impact on linguistic diversity. Critics argue that English acts as a “killer language” (Kaplan, 2017: 99), threatening the survival of minority languages (Skutnabb-Kangas, 2000). Others maintain that English's global spread reflects its economic utility rather than intentional linguistic imperialism (Brutt-Griffler, 2002). Nevertheless, the rising dominance of English is reshaping global linguistic ecologies, often at the expense of other languages (Kaplan, 2017: 99). Philipson and Skutnabb-Kangas (2017: 128)



contend that English serves to consolidate global power imbalances, marginalizing speakers of less dominant languages.

Efforts to regulate this dominance through policy, such as the European Union's commitment to multilingualism, face significant challenges. While EU institutions promote trilingualism among schoolchildren to preserve linguistic diversity, English continues to gain ground due to market pressures (Philipson and Skutnabb-Kangas, 2017: 129-130). Kirkpatrick (2007: 35-37) notes that while English acquisition is often framed as a matter of personal choice, it is influenced by broader sociopolitical forces - what Philipson and Skutnabb-Kangas (2017: 130) describe as a "push and pull" dynamic. Collins (1999) further argues that, despite academic support for linguistic equality, political and mainstream discourses frequently position dominant or "standard" varieties as inherently superior.

Coulmas (1990: 107-127) offers a market-based perspective, likening global languages to commodities whose value fluctuates with demand. In his metaphorical "language stock exchange," English emerges as the most secure investment. This is supported by Weinrich (2001: 96), who observes that the focus on English as a primary foreign language often reduces learner motivation to pursue additional languages, given the immediate economic benefits tied to English proficiency.

In sum, analyzing English as a lingua franca illuminates critical issues at the heart of ecolinguistics - such as the consequences of globalization, the commodification of language, the preservation of linguistic diversity, and the role of language in identity formation. The notion of becoming an "international person" (Block, 2002:7) through English acquisition exemplifies the power of language to reshape both personal and collective identities. While English has become the dominant linguistic currency of the globalized world, this paper contends that its value should not be equated with universality. English functions as an essential medium of global exchange, yet its concentration of symbolic and economic capital risks producing linguistic inequality and ecological imbalance. The global spread of English must therefore be understood not as a neutral process, but as a redistribution of linguistic power that privileges certain speakers and identities over others.

From this standpoint, multilingualism represents a sustainable and equitable model of linguistic capital. It diversifies communicative resources, allowing individuals and communities to engage globally without forfeiting local identity or cultural autonomy. Furthermore, rather than viewing English and multilingualism as opposing forces, they should be seen as complementary - English facilitates global participation, while multilingualism



ensures inclusivity and symbolic balance within the linguistic ecosystem. Thus, English is both a driver and product of globalization, but sustainable linguistic futures depend on plural economies of language, where multiple forms of capital - symbolic, ecological, and economic - circulate without domination. Multilingual competence thus emerges as the most adaptive form of linguistic capital for the 21st century, uniting global reach with cultural depth.

## 5. Conclusion

As this article has demonstrated, in the context of 21st-century globalization, language has emerged not only as a means of communication but as a powerful form of symbolic, ecological, and economic capital. Grounded in Bourdieu's (1991) theory of linguistic capital and framed through ecolinguistic and sociolinguistic perspectives, this study has shown that linguistic competence - particularly in English - functions as a key determinant of access to social mobility, cultural legitimacy, and global opportunity. Language shapes identity, constructs hierarchies, and mediates participation in transnational flows of knowledge, commerce, and culture.

The dominance of English as the global lingua franca exemplifies the interdependence between language and global power structures. Its rise reflects both historical forces and contemporary market dynamics that position English as the gateway to success. In this sense, English operates simultaneously as a unifying communicative tool and as a symbol of privilege, influencing how individuals conceptualize belonging, modernity, and global citizenship.

At the same time, the global spread of English generates critical tensions. While English facilitates international participation, it can marginalize minority languages and reinforce structural inequalities. Language thus becomes a site of both empowerment and exclusion - a resource that opens access while also reproducing hierarchies of value. From an ecolinguistic perspective, these dynamics highlight the need to recognize linguistic diversity as an ecological necessity, not simply a cultural ideal. Linguistic ecosystems, like natural ones, require balance to sustain multiple forms of life, meaning, and knowledge.

From this standpoint, English should be viewed as a powerful yet context-bound resource rather than a universal linguistic ideal. Its instrumental role in global communication must be balanced by the preservation of multilingualism, which ensures symbolic diversity and equitable participation. Multilingualism represents a more sustainable model of linguistic capital, redistributing communicative power and maintaining the vitality of local languages. Rather than positioning English and multilingualism as opposites, they should be seen as



complementary - English as a bridge for global interaction, and multilingualism as the foundation for cultural and cognitive resilience. True global competence in the 21st century lies not in monolingual mastery but in the ability to navigate and value multiple linguistic worlds.

This study has also recognized its own limitations, since it is conceptual and interpretive, relying on secondary sources and theoretical synthesis rather than empirical data. Future research should therefore examine how linguistic capital operates in specific sociocultural and professional settings, exploring the concrete mechanisms through which language proficiency translates into social mobility or symbolic recognition. Further investigation is also needed into how digital communication and emerging artificial intelligence technologies reshape linguistic hierarchies and symbolic value in global contexts. Studies on multilingual policy implementation and the relationship between language and ecological sustainability would also deepen our understanding of language as a living, adaptive form of capital.

In conclusion, language in the globalized 21st century functions as both resource and regulator or a medium through which access, identity, and agency are continually negotiated. Recognizing language as a multifaceted form of capital allows for a deeper understanding of how globalization restructures communication and power. Sustaining multilingualism and fostering critical awareness of linguistic hierarchies are essential for building an equitable and linguistically diverse future - one in which global interconnectedness is matched by respect for the multiplicity of voices that compose it.

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## NAVIGATING POVERTY: THE IMPACT OF SOCIAL POLICIES ON SINGLE-PARENT FAMILIES IN HUNGARY AND EUROPE

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### ABSTRACT

#### **Purpose:**

The aim of the study is to examine the risk of poverty among single-parent families and the social policies targeting these households and their members in Hungary and Europe. The study aims to explore the factors that affect the financial situation of single-parent families (families in which the mother or father lives alone with her child/children) in contemporary society and to present a comprehensive picture of the support systems in different European countries and societies. Understanding the risk of poverty can also contribute to understanding the resilience of these family forms.

#### **Design/methodology:**

The paper draws mainly on existing literature and statistical data, such as census and EU-SILC statistics. Particular attention is paid to labour market participation, different forms of family support, child benefits, which can contribute to reducing the risk of poverty. In addition, different European social policies are presented through case studies.

#### **Findings:**

The analysis provides insights into the causes of poverty risk in single-parent families. In Hungary, according to the 2011 census data, 20% of single-parent household and 61,5% of them are at risk of poverty according to Eurostat. Flexible working hours, childcare facilities and the sharing of family responsibilities play a key role in improving the financial situation of families. However, social policy choices vary widely from country to country to help single-parent families.

#### **Research/practical implications:**

The study highlights the need for targeted social policy measures to reduce the risk of poverty for single-parent families. It emphasizes the importance of flexible working arrangements for a variety of quality childcare services. The paper also notes the need for further research to further adapt good practices.

#### **Originality/value:**

Family poverty risk is a rich area of research for economists and social scientists. At the same time, the study of the poverty risk of single-parent families, and single-parent families in general, is a marginalized group in Hungarian society. The paper attempts to shed light on why single-parent families should be taken into account in contemporary politics, social policy and economics.

**Keywords:** Single-parent families, poverty risk, social policy.

**JEL Classification:** I32, J12, J18



## 1. Introduction

In today's society, the diversity of family forms - such as the nuclear family, the single-parent family, the extended family, the childless family, the mosaic family, the grandparent family - is increasingly accepted and a number of alternative structures have emerged alongside traditional family models. Single-parent families, as specific family units, are increasingly appearing in census and statistical data not only in Hungary but also within the European Union (KSH, 2022). From a sociological point of view, such families can be defined as households where one parent - the mother or father - raises her minor or dependent child(ren) (Csoboth-Susánszky, 2010). However, as we will see later, this is only one approach among many other definitions.

Within this family form, statistics such as those from the Hungarian Central Statistical Office and Eurostat show a significant over-representation of single mothers compared to men. In more than 90 % of single-parent families, mothers take on the burden of child-rearing and everyday responsibilities. In recent decades, the number of single-parent households has increased steadily both at national and European level (Janzen et al., 2006).

In Hungary, there are currently around 300-350 thousand families where one parent is the breadwinner and his or her income provides for the whole family. Parents in this situation often face social and economic challenges. Lone parents have to cope with family and social demands at the same time. They are responsible for the financial, emotional and social well-being of their children, while at the same time having to perform in the labour market. This double burden places a considerable mental and physical strain on them, increasing the risk of, for example, parental burnout (Csoboth-Susánszky, 2010).

Single-parent families are often marginalised because government support and policies have long failed to prioritise this type of family model. In the past, these families were excluded from various support and development programmes.

The aim of this paper is to provide a non-exhaustive overview of governmental and policy support for single-parent families and how it can be effective - or not - in addressing the poverty risk faced by single-parent families.

## 2. Single-parent families – sociology of the family

The evolution of family structures has undergone significant social and demographic changes from the mid-20th century to the present. The increase in the prevalence of single-parent families, particularly mother-headed households, deserves particular attention.



According to the microcensus of the Hungarian Central Statistical Office (2016), the share of marriage-based relationships has decreased to 36%, while the share of people in partnerships has increased to 9.9%. The prevalence of single-parent families increased from 4.3% in 1990 to 5.1% in 2016. The age of childbearing has lengthened significantly in recent decades and the forms of relationships, including cohabitation, are changing. The OECD (2011) reports that the prevalence of single-parent families is expected to increase in the coming decades, particularly in Europe.

Sociological research on the family focuses on the social and economic dimensions of single-parent families, as these family forms pose specific problems and challenges. The emergence of single-parent and mosaic families can be interpreted as a response to social and economic change, alongside traditional nuclear family models. According to pluralisation theory, the institution of the family in modern society is becoming increasingly diversified, and single-parent households are also emerging in the light of socio-economic and demographic changes. The increasing prevalence of these family models also indicates the flexibility and adaptability of the family institution (Monostori, 2013; Monostori, 2015; Harcsa-Monostori, 2014; Ambrus-Gergely, 2009).

The functioning of single-parent families is closely related to the family life cycle, as the reordering of the roles and responsibilities of family members is particularly important in such families. The transformation of family structures poses challenges not only at the individual but also at the societal level. The transition to a single-parent household is often associated with socio-economic difficulties, in particular an increase in the mental and emotional burden on parents. The combination of running a single-parent family and finding a place in the labour market increases the risk of parental burnout and emotional exhaustion (Tomka, 2000; Schadt-Póto, 2014; Földházi, 2008; Vaskovics, 2002; Vaskovics, 2014; Monostori, 2015; Harcsa-Monostori, 2014; Murinkó, 2012; DePaulo-Morris, 2005).

In addition, single-parent families often face social stigma, financial insecurity and mental health problems (Herke, 2022).

According to the most recent statistics and research, there were more than 300,000 single-parent families in Hungary in 2016, raising nearly half a million children (KSH, 2016). In the majority of single-parent families, the mother is the head of the household and the family's livelihood is largely based on her earnings. Single-parent households are at higher risk of poverty and social exclusion, and parents often suffer from labour market disadvantages due to economic hardship. Single mothers bear a particularly heavy burden, as their income is lower



and the costs of raising a child add to stress and exhaustion (Szelényi, 2001; Fodor, 2001; Monostori, 2019; Farkas, 2010; Herke, 2022).

Family policies and social support play a key role in improving the situation of single-parent families, but these family forms often require specific roles and responsibilities from parents, which places mental and physical burdens on them. The risk of poverty in single-parent families is also significantly higher than in two-parent households in the EU, and members of these families often face an increased risk of financial exclusion (Eurostat, 2021).

The analysis of the situation of single-parent families is therefore relevant not only from an economic point of view, but also from a social and political one. Future social policy measures must take into account the specific needs of single-parent families in order to reduce their social exclusion, improve their quality of life and promote their social integration.

The situation of single-parent families can be further understood in depth through the theory of the triple bind of single-parent families, which is inspired by the work of Nieuwenhuis and Maldonado (2018). This theory argues that the situation of lone parents is best understood through a combined focus that takes into account their resources, their employment and the context of social policy. The triple-bind theory is particularly applicable to research on welfare states, where the relationship between family, market and state, as well as the issue of poverty, are all important. In poverty research, the social situation of families is seen as the combined effect of individual, structural and political causes, so that the disadvantages of single-parent families cannot be attributed to a single cause but to the interaction of all three. The theory also shows that there is considerable variation between single-parent families, so that each case requires a specific approach.

The resource dimension of the triple bond is a key element of the problems of single parents. For single-parent families, income resources are often limited due to the lack of a second earner and the need for the parent to provide for the family entirely on his or her own. Research has also shown that mothers with lower educational attainment are more likely to become single-parent families, which may be a major cause of the so-called educational gradient. However, research conducted over the past decades warns that individual reasons are not sufficient to explain why single-parent families perform better in some countries and not in others.

Employment is also a key source of income, and research shows that a large proportion of single-parent families are actively working. However, the fact of being employed does not in itself guarantee that poverty will be avoided, even if it is well paid. According to Esser and



Olsen (2018), it is much more difficult for single-parent families to maintain a work-life balance, and job security is not as secure as for two-parent households. At the same time, being a single parent is not always a stable situation, as the circumstances in the lives of single parents are constantly changing: parents often find themselves in different family situations, temporarily or long-term.

Our present study focuses on the social policies for single-parent families in different European countries and their impact on the lives and social situation of single-parent families.

### 3. Analytical framework

This paper addresses and examines the area of the title from two approaches. The first is the existing statistical data in Hungary and in Europe. The second is a comparison and analysis of existing family policies. The study focused on three main dimensions, namely labour market participation, access to childcare and transfers to families.

There is a very rich literature on family policies in Europe and their economic impact, but only a few studies on their impact on different life stages. Some approaches, as Zagel and Lancker (2022) argue in their work, see social policies as risk management tools, which are only a stop-gap solution for uncertain periods in the life course (such as unemployment benefits). Therefore, it can be argued that family policies can only rarely be seen as a permanent help, a way to bridge risks and uncertain periods in the life course. Family policies are linked to the risks that families face, and there are two main routes through which family policies really make their impact felt: maintaining work-family balance and through direct cash transfers.

In terms of statistical data, we primarily examined employment data in our study. We acknowledge and accept the finding that examining employment data and rates alone does not guarantee the avoidance of poverty risk. At the same time, a large number of single-parent families are forced to support themselves on a single income, so this statistic cannot be ignored.

Looking at the latest 2022 domestic census data, we see a steadily increasing trend in the employment of single mothers and fathers. If we compare the data shown in the first graph, we can see that the employment rate for men is higher than that for women in Hungary.

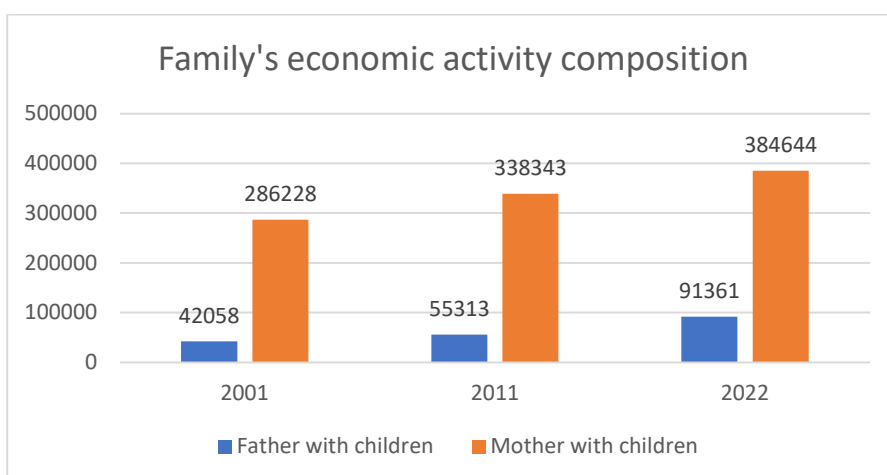


Figure 1: Family's economic activity composition  
Source: own elaboration based on hungarian census

The limitation of our current study and analysis is that we did not have publicly available data on the form of employment.

The OECD's 2023 Family Database data also confirms that the employment rate among parents raising at least one child aged 0-14 is higher in Hungary than the EU average (Figure 2).

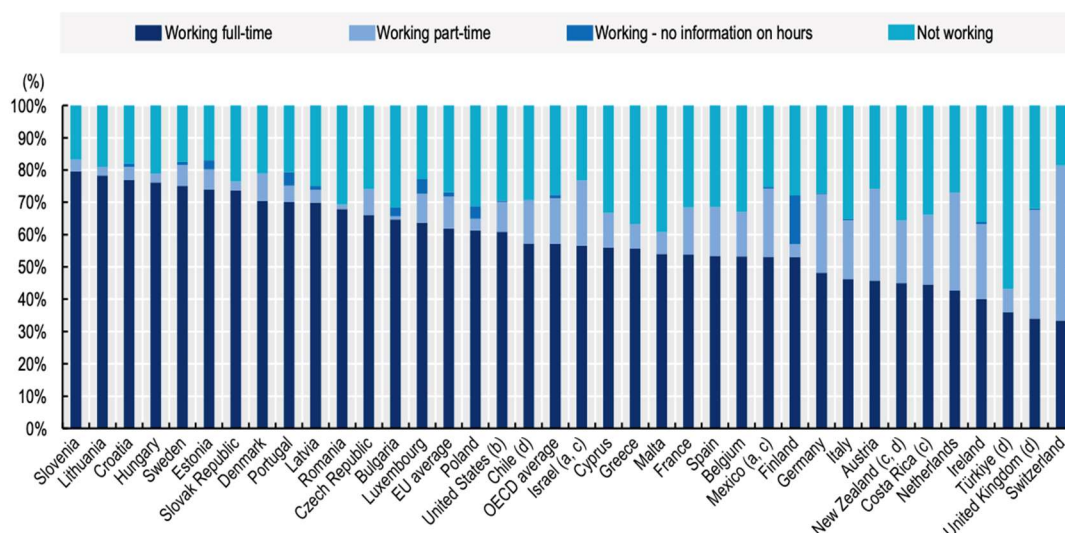


Figure 2: Employment status of single parents, 2021 or latest available year  
Source: OECD Family database, 2023

In our present study, the triple bind theory used by Nieuwenhuis and Maldonado serves as the theoretical framework, and the comparative analysis of welfare systems is based on Esping-Andresen's typology. A systematic document analysis of family support measures is carried out



in four types of welfare systems (Scandinavian, continental, liberal, Eastern European). The comparison is made along three dimensions: labor market participation, provision and accessibility of childcare, and direct financial transfers to families.

This study relies primarily on secondary data sources, which limits the ability to capture lived experiences of single parents. The analysis focuses on formal policies and may not fully reflect implementation gaps or informal support systems. Time-series comparisons are constrained by data availability across different countries and years.

#### 4. Results and discussion

Sociological research and census data clearly show that single-parent families in Hungary face specific social and economic risks. The 2022 census data and the 2016 microcensus clearly show that the vast majority of single-parent households are headed by mothers, while the number of single fathers is significantly lower. 70% of single-parent families live with one child, while 23% live with two children. 19% of these households are multi-generational, indicating that kinship support is key to social survival. The risk of poverty is particularly high among single-parent families: according to the 2008 TARKI survey, the poverty rate for these families is 25.4%, which is higher than the poverty rate for families with three or more children. There is also a strong correlation between low employment and child poverty in single-parent households: if the parent is not working, 61% of children are more likely to live in poverty, while for parents who work full-time, this rate drops to 29% (Monostori, 2019).

According to the 2016 microcensus, feelings of loneliness are also common among single-parent families, especially among single mothers, 80% of whom report feeling lonely. In addition to the emotional burden, the economic situation is also a problem: work-related challenges such as part-time jobs and high childcare costs are common among lone parents. The labour market situation is particularly difficult for young mothers and parents with multiple children (Monostori, 2019).

Gender gaps are also strongly marked: single mothers make up 11% of single-parent households, while single fathers account for only 3%. The proportion of single-parent families is also on the rise in Europe, especially in Central and Eastern Europe. In 2018, 15% of households with children in the European Union were single-parent households, and trends indicate that more single-parent families will be created in the future (Monostori, 2019).

These data clearly show that single-parent families in Hungary and Europe are at increased risk of social exclusion, economic insecurity and emotional isolation. Family policies must



therefore pay more attention to the specific needs of these families, as adequate support is important not only from a social but also from an economic perspective. Future policies should take into account the increasing proportion of single-parent families and measures to promote their socio-economic integration.

Several studies, such as those by Nieuwenhuis and Maldonado (2018), Bernardi and Mortelmans (2018) and Nieuwenhuis (2020), confirm that the proportion of single-parent households has increased in Europe, with single mothers facing particular difficulties. According to Eurostat data, 15% of households with children were single-parent households in 2018, while in 2019 this proportion fell to 14.1%. The lowest rates were in Croatia, Romania, Greece, Slovakia, and Finland (Tartari, 2019).

The gender dimension of single parenthood has become even more apparent in recent years: single mothers often face an uncertain labor market situation, poverty, poorer health, and a lower standard of living. There are fewer employment opportunities for single mothers, especially young mothers or those raising several children. Although the employment rate of single mothers in Europe increased from 69% to 74% between 2009 and 2019, they typically work in part-time jobs requiring lower qualifications. When the hidden costs of employment, such as childcare fees or travel expenses, become burdensome, many are forced to leave the labor market or remain in low-paid positions (Tartari, 2019).

The risk of poverty is also a significant problem: single-parent families are much more likely to be at risk of poverty or material deprivation than two-parent households. In the EU, the poverty threshold for single mothers ranges from 7% to 37%, and in Hungary, according to 2011 OECD data, it is one of the highest at 31%. In addition, in-work poverty is becoming increasingly common, with the labor market system of the country concerned playing a decisive role, for example, the proportion of fixed-term contracts, access to paid leave, or the level of childcare support. In recent years, in-work poverty has decreased in Lithuania, Luxembourg, Cyprus, Bulgaria, and Spain, while it has increased in Hungary, Malta, Ireland, Estonia, and Belgium (Tartari, 2019).

The risk of poverty can be exacerbated by various life events, such as job loss, childbirth or relationship breakdown. Based on an analysis of EU-SILC data for 2011-2015, Zagel and Lancker (2017) found that single mothers are 16% more likely to be at risk of poverty than women in couples. According to these analyses, generous child benefits can reduce the risk of poverty, especially after the birth of the first child.



There are more than 73 million single-parent households in the EU, accounting for 12.4% of all households. The highest proportion of single-parent families is found in northern countries (e.g., Estonia, Latvia, Lithuania), while the lowest proportion is found in Slovakia, Greece, and Croatia (Eurostat, 2023). Single-parent families are more common among people with lower levels of education, who often work part-time or on fixed-term contracts. The risk of poverty among people in work is lower in countries where workers are protected and social security and childcare are available.

Early childhood education and care play a key role in promoting gender equality and reducing child poverty. However, in many European countries, childcare is not guaranteed for all children, and parents may face high costs. Paid parental leave, especially for fathers, could reduce gender inequalities, but more than 1 in 10 women and men in the EU are unable to take advantage of this opportunity.

Single-parent families are at higher risk of poverty, and the situation is exacerbated by low educational attainment, part-time employment, and low labor market participation. Poverty and deprivation have long-term negative effects on the cognitive and health status, social relationships, and political participation of both parents and children (Gaisbauer et al., 2020; Mani et al., 2013; Nieuwenhuis et al., 2018; Mood & Jonsson, 2016). Poverty and deprivation have significant disadvantages for children, as confirmed by Treanor (2016), who found that poverty is the main cause of disadvantage among children living with a single parent.

Table 2: Welfare models

Model	Parental leave	Childcare	Financial support	Employment rate	Poverty risk
Nordic	Long (paid, flexible)	Subsidized, universal	Generous child benefits, tax breaks	appr. 80%	appr. 15%
Continental	Medium (income-based)	Available but limited	Medium-level, employment-dependent	appr. 70%	appr. 25-30%
Liberal	Limited and means-tested	High costs, limited places	Moderate but strict eligibility	appr. 65%	appr. 35-40%
Eastern European	Long (but low pay)	Limited, rural gaps	Low and outdated	appr. 50-60%	appr. 50-60%

Source: own elaboration

Social policy frameworks supporting single-parent families exhibit considerable variation across Europe. Broadly, four distinct welfare models can be identified based on their core principles and policy implementations.

The Nordic Model, predominant in Sweden, Denmark, Norway, and Finland, is characterized by a "universal welfare" approach. In these countries, there is a high degree of state involvement in the provision of social support and childcare services, underpinned by robust gender equality policies. Consequently, single-parent families in the Nordic region experience a relatively low risk of poverty. Comprehensive financial support measures, generous parental leave schemes, and extensive childcare services collectively facilitate the economic participation and well-being of single parents.

In contrast, the Continental Model, evident in Germany, France, the Netherlands, and Belgium, is based on a social insurance approach. Financial support in these countries is moderate and closely tied to prior employment contributions. While parental leave and childcare services are available, their accessibility and quality often vary by income level. As a result, single-parent families within this model face a medium risk of poverty relative to other European regions.

The Liberal Model, as seen in the United Kingdom and Ireland, operates through a market-oriented welfare system. Here, social benefits are predominantly means-tested rather than



universally available, and policy efforts focus heavily on promoting employment. However, the high cost of childcare and relatively limited state support contribute to elevated poverty rates among single-parent households.

The Eastern European Model, encompassing countries such as Hungary, Poland, and Slovakia, adheres more closely to traditional family policy frameworks. These states exhibit lower levels of government involvement in childcare provision and financial assistance for single parents, while simultaneously encouraging the maintenance of traditional two-parent family structures. Although maternity leave periods can be extensive—up to three years in Hungary and Poland—the associated financial benefits are minimal, which in turn discourages early reintegration into the labor market. Moreover, flexible employment options remain limited, resulting in particularly high poverty risks among single-parent families in this region.

From an economic standpoint, single-parent families are structurally disadvantaged. Their household incomes are typically lower, as they rely on a single income rather than two. Eurostat data from 2022 reveals that in Hungary, 35% of single-parent households live in poverty, compared to only 12% of two-parent households. On a European Union level, single-parent families face a two- to threefold increased risk of financial hardship relative to two-parent households. Persistent economic stress fosters greater reliance on debt, undermining long-term financial stability.

Employment barriers further exacerbate these challenges. A lack of flexible job opportunities and affordable childcare options limits labor market participation among single parents, particularly single mothers. Additionally, single mothers frequently experience the "Motherhood Penalty," wherein employers perceive them as less reliable, thereby restricting their career progression. Covering essential expenses such as housing, utilities, and food is significantly more challenging on a single income. In Hungary, Eurostat data from 2021 indicates that 60% of single-parent households experience difficulties in meeting rent and utility obligations. The inadequacy of welfare support mechanisms often leads to entrenched dependence on state benefits, limiting prospects for social mobility.

Gender inequality remains a pervasive issue, as women lead the majority of single-parent households. This reality amplifies the gender pay gap and, in more conservative societies, subjects single parents to social stigmatization, thereby restricting their access to economic opportunities. Consequently, single mothers are disproportionately vulnerable to mental health issues, driven by chronic financial and emotional stress.



Hungary has implemented several policy measures aimed at supporting single-parent families; however, their efficacy remains contested. The Family Allowance is a universal benefit available to all families, with a marginally higher payment provided to single-parent households. Nevertheless, the value of this benefit has remained unchanged since 2008, rendering it insufficient to meet basic living expenses, particularly given the absence of additional supplements for housing, education, or healthcare.

Childcare-related benefits in Hungary, including GYED, GYES, and GYET, offer various forms of support during the early years of childrearing. However, the structure of these benefits often discourages labor market participation by providing financial incentives that disincentivize an early return to employment. Housing assistance programs are available but are characterized by stringent eligibility criteria, frequently benefiting more affluent households rather than those in genuine financial need.

In the realm of employment policy, Hungary employs a strong workfare approach, linking access to welfare benefits to participation in public work programs. For single parents, this model poses significant challenges, as balancing mandatory workfare obligations with childcare responsibilities is often unfeasible. Furthermore, these programs rarely provide meaningful opportunities for career advancement or skill development.

Tax policy measures, such as the Family Tax Allowance theoretically offer relief to single parents. However, Hungary's relatively high tax burden on low-income earners means that many single parents, particularly those earning below the taxable threshold, are unable to benefit from such schemes. Consequently, tax-based support predominantly assists those with stable, taxable incomes, excluding unemployed or informally employed single parents from meaningful assistance.

Overall, Hungary's social welfare system provides only limited, targeted support for single-parent families, and the minor increases embedded in the general family allowance framework are insufficient to mitigate the significant economic challenges faced by this demographic. Thus, while policy measures exist, they fall short of adequately addressing the structural disadvantages, employment barriers, and childcare needs that characterize the lived realities of single-parent households.

The comparative analysis of welfare regimes highlights three central policy insights relevant to the socioeconomic conditions of single-parent households.

### Lesson 1: Universal Versus Targeted Support



Evidence indicates that the universal support structures characteristic of Nordic welfare states outperform means-tested, liberal-model systems in both poverty alleviation and administrative efficiency. Means-testing is associated with several persistent disadvantages, including social stigma and reduced benefit take-up, heightened bureaucratic complexity, and the creation of benefit cliffs that may disincentivize labor-market participation.

### Lesson 2: Work–Family Balance Infrastructure

The availability of affordable and accessible childcare emerges as a necessary precondition for employment-based poverty reduction among single parents. In countries where childcare expenses exceed approximately 20% of a single parent’s income, poverty rates remain high even when employment levels are relatively strong. These findings underscore the structural nature of childcare barriers and the limitations of employment-centered strategies in the absence of adequate care infrastructure.

### Lesson 3: Gender Equality as Economic Policy

The analysis further demonstrates that welfare states incorporating robust gender-equality measures—again exemplified by Nordic regimes—consistently exhibit lower poverty rates among single-parent families. The documented “motherhood penalty” in labor markets suggests that passive income-support mechanisms are insufficient. Instead, targeted interventions addressing gendered patterns of labor-market disadvantage are required to mitigate the economic vulnerabilities disproportionately experienced by single mothers.

## 5. Conclusion

Single-parent families constitute one of the most vulnerable groups within both Hungarian society and Europe more broadly. Their economic and social challenges stem from systemic inequalities and inadequate policy responses rather than family structure alone. Although Hungary has introduced several support measures, their effectiveness is undermined by outdated benefit levels, rigid employment policies, and insufficient childcare infrastructure.

Future policy interventions must focus on increasing the adequacy and accessibility of financial support, expanding affordable childcare services, and promoting flexible employment opportunities tailored to the needs of single parents. Combatting social stigma through awareness campaigns is equally crucial to mitigate isolation and discrimination.

Investment in the well-being of single-parent families is not merely a moral obligation but a strategic necessity for ensuring economic sustainability and social cohesion. A resilient,

inclusive society demands equitable support systems that empower all families, regardless of their composition, to thrive and contribute fully to the community.

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## MARKETING IN THE 21ST CENTURY - THE CONVERGENCE OF RESOURCE-BASED BUSINESS THINKING AND STAKEHOLDER MANAGEMENT

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### ABSTRACT

#### **Purpose:**

This paper examines how the marketing approach of the 21st century is influenced by the intersection of resource-based business thinking and stakeholder management.

#### **Design/methodology:**

Among the qualitative research methods, a literature review was conducted to gather the foundational theories and findings on the topic, which can serve as a basis for future quantitative research.

#### **Findings:**

Stakeholder marketing has shown that companies are not the only creators of value, and stakeholder engagement can be a real competitive advantage. Networking between companies and stakeholders is a strategic resource that underpins business success. By incorporating a stakeholder management approach, firms can achieve differentiation and cost advantages.

#### **Research/practical implications:**

The network of relationships between a company and its stakeholders is a resource. A stakeholder relationship resource is an intangible marketing asset that can be used appropriately to achieve superior performance. A stakeholder network asset is a strategic resource in the life of the organization that makes the company more responsive to the needs and wants of the stakeholders in its own network, as value is created in collaboration with stakeholders. The company will gain differentiation benefits as it responds to the needs of its network, and the same can be said for achieving cost efficiency.

#### **Originality/value:**

The added value of the study lies in drawing attention to the ongoing paradigm shift in marketing, which is changing the traditional marketing approach at its roots and is currently the focus of various research efforts, so that the theoretical background presented here can serve as a basis for future research.

**Keywords:** Stakeholder, stakeholder management, stakeholder marketing.

**JEL Classification:** M10, M31



## 1. Introduction

Stakeholder marketing has recently become an increasingly popular area of research, reshaping the way we have thought about the science of marketing. Stakeholder groups comprise six core groups: customers, suppliers, employees, shareholders, regulators, and local communities (Korschun, 2015). Stakeholder marketing is “*activities within a system of social institutions and processes for facilitating and maintaining value through exchange relationships with multiple stakeholders*” (Hult et al., 2011, p. 57).

Simple input-output models are no longer relevant, as the emergence of networks has raised the fundamental question of who buys inputs and from whom (Oberfield, 2018). The reputation of companies depends largely on how stakeholders value the company (Capriotti, 2009), but it is also necessary to bear in mind that relationships between organizations and stakeholders are mutually beneficial; however, stakeholders often have a greater impact on companies than vice versa (Matuleviciene & Stravinskiene, 2015). That said, the importance of stakeholders varies across organizations, as stakeholders define their importance to the life of the organization and its reputation in different ways (Walker & Dyck, 2014).

The customer-centric approach is often seen by companies as a one-way relationship. Other stakeholders are outside managers' purview, and thus the potential marketing benefits cannot be fully realized (Smith et al., 2010). The opportunity cost of stakeholder engagement should always be carefully assessed, as stakeholder involvement in organizational processes only makes sense if it provides a competitive advantage (Verbeke & Tung, 2013).

Previous marketing studies have argued that it is necessary to involve all stakeholders in the value-creation process who may be affected by the firm's activities (Hajdas & Kleczek, 2024), but Jones (2005) made the following important findings in his study: (a) the value of a firm is determined by the number of stakeholders and how these stakeholders are able to interact as a network; (b) not only customers but also other stakeholders are responsible for success; (c) the value of a firm is not equal to the sum of positive stakeholder relationships; (d) each relationship has its own logic, where different variables need to be adjusted to influence the relationship; (e) prioritization is required to determine which stakeholder relationships are most important to the firm.

The resource-based view of the firm assumes that market orientation as a marketing resource can be a source of competitive advantage (Kontor, 2014). However, it is also necessary to consider the life cycle of the firm when allocating resources to stakeholder needs. Brammer and Millington (2008) found that for stakeholders, the social responsiveness of the company

becomes a key issue in the later stages of the corporate life cycle, while other motives are crucial in the early stages.

From the perspective of stakeholder marketing, therefore, the question of when, how and to which stakeholders' needs to allocate company resources is fundamental. According to Mitchell et al. (1997), the ranking of stakeholders is based on certain attributes, which are: legitimacy, power and urgency of demand. Over time, scholars have identified additional attributes that need to be considered when ranking stakeholders: proximity (Driscoll & Starik, 2004); illegitimacy and powerlessness (Weitzner & Deutsch, 2015).

The research question is: How do stakeholders influence the marketing approach of companies? The aim of this study is to collect the currently available studies that have the theoretical scope to answer the research question. The study employs a literature review as its research method.

## 2. Theoretical background

The term 'stakeholder' was introduced into the literature by the Stanford Research Institute in 1963, as shareholders had previously been the only group to whom managers felt they needed to be responsive, and the creation of the term 'stakeholder' was intended to break this old paradigm (Jongbloed et al., 2008). Miles (2018) notes the lack of consensus on stakeholder definitions, revealing 435 variations across 493 scholarly works.

Savage et al. (2004) collected the basic propositions of stakeholder theory, which are: (a) the organization interacts with a number of stakeholders who influence the internal processes of the organization; (b) the theory focuses on the nature of these relationships in terms of processes and outcomes between the firm and the stakeholders; (c) the legitimate claims of all stakeholders have intrinsic value and it is assumed that there is no single dominant stakeholder group; (d) stakeholder theories focus on managerial decision making; (e) the theories try to explain how stakeholders influence decision making processes; (f) the theories seek to explain how managers reconcile the demands and balance the interests of different stakeholders. According to Mainardes et al. (2011), stakeholder management was created to enable organizations to identify, examine and analyze the characteristics of individuals or groups that influence or are influenced by organizational behavior, and therefore stakeholder management involves three main activities: (a) identifying stakeholders; (b) developing frameworks that lead to an understanding of stakeholder needs and interests; (c) integrating stakeholder relationships with organizational goals.



According to Mitchell et al. (2017), working with stakeholders requires five main activities, which are:

- *Stakeholder awareness*: it is necessary to be aware of the potential actions of stakeholders in the organization's environment and their impact.
- *Stakeholder engagement*: stakeholder engagement work is the organization of activities aimed at taking action with an organization's stakeholders (Mitchell et al., 2017). Stakeholder engagement is a process by which individuals, groups and organizations can choose to take an active role in decisions that affect them (Reed, 2008). Stakeholder involvement in decision-making has reputational benefits for companies, increases cooperation between the company and its stakeholders, fosters trust, promotes ethically acceptable decisions, contributes to the success of projects and legitimizes the company's activities at a societal level (Cennamo et al., 2009; Gao & Zhang, 2006).
- *Stakeholder understanding*: the process of understanding stakeholders involves organizational activities aimed at uncovering stakeholder expectations (Mitchell et al., 2017). Organizations seek to understand stakeholders primarily through corporate social responsibility (CSR) programs.
- *Stakeholder identification*: Mitchell et al. (1997) developed a model of stakeholder importance in which the influence of stakeholders on the organization was measured along three attributes: power, legitimacy and urgency of demand. Power comes from our ability to get others to act, and legitimacy comes from socially accepted norms.
- *Stakeholder preference*: includes managerial skills and capabilities, interpreted collectively as technology (Mitchell et al., 2017). According to research by Parent & Deephouse (2007), the relative importance of the three stakeholder attributes identified by Mitchell et al. (1997) varies across stakeholder groups: the demands of professional and industrial groups are only important if these groups have sufficient power to influence the interests of the firm. In the case of consumer groups, legitimacy is generally not an issue; it is the attributes of power and urgency that determine the consideration of their claims. Groups with sufficient power have the greatest influence, followed by urgency and then legitimacy (Boesso & Kumar, 2009).

The desirable behavior of stakeholders has been explored by Savage et al. (1991), who classify stakeholders into four categories according to their potential threat and potential cooperation (see Table 1).

Table 1 Stakeholder classification and proposed relationship strategies

		<i>Stakeholder's threat to the organization</i>	
		<b>High</b>	<b>Low</b>
<i>Stakeholder collaboration potential</i>	<b>High</b>	Mixed (collaboration)	Supportive (engagement)
	<b>Low</b>	Non-supportive (protection)	Marginal (monitoring)

Source: Savage et al., 1991, p. 65

Hester et al. (2012) came to the following conclusions: (a) spending too many resources on a stakeholder is at best a waste and at worst a risk; (b) if not enough resources are spent on stakeholders, opportunities may be lost; (c) if resources are spent on non-supportive stakeholders instead of supportive stakeholders, there is a potential for wasting resources; (d) if only supportive stakeholders are engaged, the organization will never reach a solution with non-supportive stakeholders. Stakeholder marketing links relational capital from stakeholder networks to organizational outcomes (Gonzalez-Padron et al., 2016).

## 2.1. Stakeholder marketing

According to Miles and Ringham (2018), marketing activities are actions and communications that take place in a network infrastructure with the aim of creating value. Traditional marketing strategies are mostly customer-centric and focused on profit maximization, but companies are increasingly faced with other stakeholders (e.g., activists), forcing managers to address the needs of stakeholders other than customers (Bhattacharya, 2010). The concept of stakeholder marketing therefore goes beyond customer needs and seeks to satisfy the interests of all groups that are in some way affected by the company's activities (Bhattacharya & Korschun, 2008).

The key propositions underlying stakeholder marketing are that: (1) stakeholder interests are not independent but interrelated; (2) value creation occurs along stakeholder networks and is not the sole responsibility of the firm; (3) prioritizing customer interests is no longer appropriate (Hult et al., 2011). Stakeholder marketing requires the firm to build shared values and relationships outside its customer base, breaking with the traditional dyadic marketing approach (Hillebrand et al., 2015). Table 2 illustrates the differences between the traditional and stakeholder marketing approaches.

Table 2 Differences between traditional and stakeholder marketing

<b>Traditional marketing approach</b>	<b>Stakeholder marketing approach</b>
Stakeholder network is a discrete set (homogeneous and countable).	Stakeholder network is a continuous multiplicity (heterogeneous and uncountable).
Stakeholders' interests are independent.	Stakeholders' interests are interconnected.
Stakeholders' perception of value can be of different importance, the customer being the first.	Recognition of the value perception of stakeholders other than customers is essential for success.
Value is seen as created by the company.	Value is co-created.

Source: Hillebrand et al., 2015, p. 414

The key to stakeholder marketing is knowledge, which enables organizations to understand the needs of stakeholders and create organizational value by meeting those needs (Line et al., 2019). According to Vargo and Lusch (2004), the customer is involved in the value creation process, the value creation itself does not end when the production process is finished, it is only an intermediate process as the customer has to learn how to use, repair, maintain and use the product/service according to his specific needs, thus continuing the marketing process started by the company. Later, Vargo and Lusch (2008) modified the theory further: companies are not able to transfer value, they can only make value propositions, and if customers accept their value propositions, they create value collectively, using the tools provided by the company.

The question of how the firm can transform stakeholder relationships into strategic resources and manage them as a competitive advantage is answered by the resource-based view of the firm.

## 2.2. Resource-based corporate approach

The resource-based approach, hereafter referred to as “RBV”, assumes that successful firms focus their future competitiveness on the development of unique and distinctive capabilities, which may be tangible or intangible (Teece et al., 1997).

There are differences between firms within an industry, and these differences are the basis of heterogeneity, which is important because resources are only stable if heterogeneity is sustainable (Madhani, 2009). For this reason, Barney (1991) created the VRIN set of criteria so that firms can maintain a resource-based competitive advantage by identifying the right resources, such resources being: (a) valuable: a resource is valuable if it is of strategic importance; (b) rare: the resource is difficult to find among current and future competitors, resources that are found by all do not provide unique market opportunities; (c) inimitable: the

resource cannot be copied or imitated, for a number of reasons: competitors do not have the capabilities to copy, the resource is too complex, barriers to acquisition; (d) non-substitutable: there is no equivalent alternative to replace the resource.

Barney (1997) transformed the VRIN framework into the VRIO framework, in which organization becomes a critical factor, as companies could improve their own processes over time, the question is how well managers can embed the given strategic resources into the organizational processes to create a competitive advantage.

In some respects, stakeholder theory and RBV are similar in that they both look at the firm level and the main objective is to promote the success of the firm. However, while RBV sees the success of the firm in the possession of strategically important resources, stakeholder theory focuses on the exploitation of relational capital (Kull et al., 2016). A comparison of the two theories is summarized in Table 3.

Table 3 Comparison of stakeholder and RBV theory

	<b>Stakeholder theory</b>	<b>RBV</b>
<b>Central problem</b>	A company that has a good relationship with its stakeholders has a competitive advantage.	The company that has more strategic resources has a competitive advantage.
<b>Key assumption</b>	The company is in contact with many stakeholders who can influence the future of the company.	The company's specific resources are heterogeneous and imperfectly mobile.
<b>Outputs</b>	Stakeholder relations, corporate performance.	Strategic resources, corporate performance.

Source: Kull et al., 2016, p. 5556

### 3. Methods

The aim of this study was to comprehensively map and systematize the field of stakeholder marketing through a systematic literature review. The research sought to identify the trends in stakeholder marketing, its defining themes and the interrelationships between theoretical and practical approaches.

Data were collected using two main databases: Scopus and Web of Science. The keyword used in the searches was “stakeholder marketing”. The search period covered publications between 2010 and 2024, given that stakeholder marketing as a separate research discipline began to appear prominently in the literature after the turn of the millennium. The selection criteria included publication in peer-reviewed journals.

During the literature review, we examined the first 50 results from each database. In the first screening phase, 7 duplicates were removed, and in the second phase, after reading the abstracts, 74 records were excluded. From the remaining 19 studies, 12 were identified as relevant to our research. Using VOSviewer software, we created a visual map of the literature included in the study, which is illustrated in Figure 1.

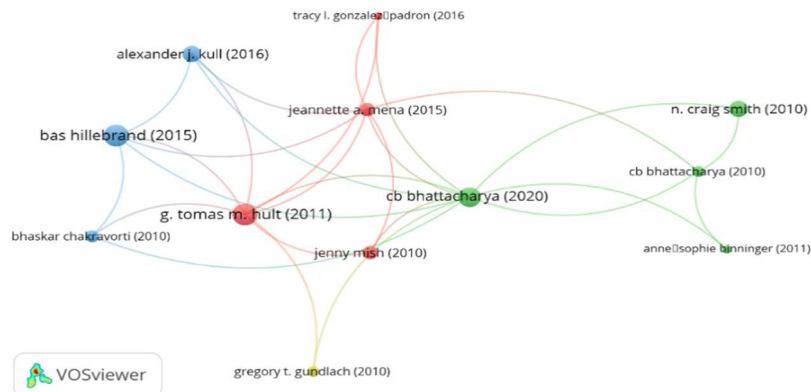


Figure 1 Literature visual map  
Source: own research

#### 4. Results and discussion

Corporate managers often overlook that stakeholder relationships are not dyadic in nature but often form complex network models in which individual stakeholders are interdependent (Hillebrand et al., 2015). Stakeholder marketing orientation has a significant and positive impact on a company's business performance (Chahal et al., 2021). Previous studies have also found similar results: stakeholder orientation has a positive impact on corporate social performance (Wei & Lau, 2008); stakeholder orientation helps strategic planning while having a positive impact on sales and market share (Ferrell et al., 2010); in a highly competitive environment, stakeholder integration has a positive impact on financial performance through the promotion of sustainability principles (Danso et al., 2019).

The relationship model between stakeholder marketing and RBV was developed by Kull et al. (2016) and is illustrated in Figure 2.

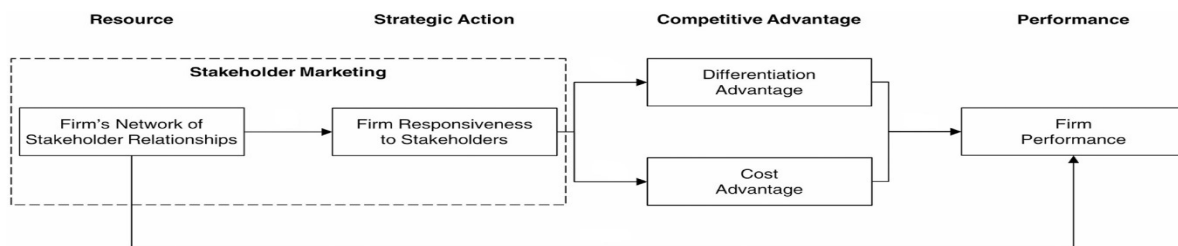


Figure 2 Integrated model of RBV and stakeholder marketing  
Source: Kull et al., 2016, p. 5557

In the case of stakeholder marketing, the resource is identified as the firm's extensive network of relationships, as formulated by Day (1994) as cited in Kontor (2014, p. 44): “a marketing asset is any asset that can be used to create a competitive advantage (e.g. brand name, unique distribution channel, etc.)”. Berács et al. (2003) point out that we can distinguish two types of marketing assets: intellectual assets and relational assets (relationships with stakeholders).

In the formulation of Hult et al. (2011), stakeholder marketing is nothing more than a set of strategic actions within a firm's stakeholder network to achieve organizational goals. The integrated model of RBV and stakeholder marketing developed by Kull et al. (2016) is based on this assumption, as the firm views its stakeholder relationships as a resource, while its responsiveness to other stakeholders constitutes the strategic action component, and these two factors enable the organization to achieve its goals (competitive advantage and superior performance).

Kull et al. (2016) make four assumptions about the model:

1. The network of relationships between the firm and its stakeholders is a resource; if these relationships meet the VRIO criteria, they contribute to the firm's superior performance. A stakeholder relationship resource is an intangible marketing asset that, if used appropriately, can be leveraged to achieve superior performance (Hillman & Keim, 2001). Superior performance is sustainable in the long term because it is a firm-specific resource (Rugman & Verbeke, 2002), which is unique to each firm and therefore cannot be replicated (Harrison et al., 2010). From the RBV perspective, each firm is a different entity with unique capabilities, where the strategic tools that the firm can create and work with are also different, and therefore the stakeholder relationship context can be understood as an organizationally embedded resource. In this way, the VRIO criteria are fully met by stakeholder network capital.



2. If stakeholder network capital exists as a strategic resource in the life of the organization, the firm will be more responsive to the needs and desires of the stakeholders in its own network, as value creation is a collaborative process (Hillebrand et al., 2015).
3. The company gains differentiation advantages to the extent that it responds to the needs of its network, and the same can be said for achieving cost efficiency. The competitive advantage here is that the company will gain a reputation among its stakeholders, it will be the only company in the area that can always respond in real time to stakeholder needs, which will ultimately translate into higher productivity and a higher customer base (Harrison et al., 2010). Cost efficiency also arises because stakeholder relationships enable access to resources from multiple sources, reducing search costs.
4. The greater the differentiation or cost advantage the company gains from its stakeholder network, the better its performance. According to McAlister et al. (2016), differentiation advantages can lead to performance improvements to the extent that the company promotes and highlights the benefits of its differentiation.

The results highlight that integrating resource-based and stakeholder-oriented perspectives enables firms to better align their internal competencies, such as innovation capability, brand reputation, and knowledge management with the expectations of key external actors, including customers, employees, and investors. From a managerial perspective, these findings emphasize the importance of developing dynamic capabilities that not only leverage unique resources but also foster long-term stakeholder trust and cooperation.

### 5. Conclusion

Stakeholder marketing is a relatively new branch of marketing science that remains at the center of academic interest. It differs fundamentally from the traditional approach in that it is based on stakeholder networks. The resource-based view completes the picture by explaining why stakeholder relationships are valuable and why building and maintaining them is necessary.

This study highlights the convergence between resource-based business thinking and stakeholder management as a defining feature of 21st-century marketing. The synthesis of these perspectives underscores the growing need for organizations to balance internal capabilities with external expectations in achieving sustainable competitive advantage.

To answer our research question: how do stakeholders influence the marketing approach of companies; the answer is clear. Through stakeholder marketing, it has become clear that companies are not the only value creators, that stakeholder engagement can lead to real

competitive advantage, and that the network of relationships between companies and stakeholders can be seen as a strategic resource that can be the basis for a company's success.

Beyond summarizing key insights, it is essential to critically reflect on the limitations of this conceptual approach. Future research should empirically test the proposed relationships through quantitative and qualitative analyses across various industries and cultural contexts.

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# INTERCULTURAL COMMUNICATION AS A PART OF EFFECTIVE MARKETING MANAGEMENT IN A GLOBAL MARKET ENVIRONMENT

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## ABSTRACT

### Purpose:

Effective marketing management in a global market environment is the process of developing and implementing strategic marketing programs to achieve organizational goals while adapting to diverse cultural contexts and market environments. Intercultural communication plays a crucial role in effective marketing management, especially in today's globalized business environment and expanding international markets.

The aim of this study is to develop a comprehensive conceptual model that systematically examines the dynamic interplay between intercultural communication competence (ICC) and global environmental factors within multicultural, high cultural-distance market environments. While previous studies have examined intercultural communication competence (ICC)—including elements such as cross-cultural negotiation skills—and global environmental factors like cultural norms largely in isolation, there remains a significant gap in understanding how these dimensions interact dynamically within real-world, multicultural contexts. This study explores the intersection of ICC and global environmental factors, moving beyond isolated analysis to investigate their interplay and mutual influence within multicultural environments.

### Design/methodology:

This study employs Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyse the systemic interdependence of the variables, with a particular focus on high cultural-distance markets. It also aims to develop a conceptual model that examines the relationships among culture, social media engagement, international advertising effectiveness, and effective international marketing management.

### Findings:

The findings provide insights into how businesses can navigate cultural complexities to design more effective global marketing strategies. Companies can use the findings to adapt their marketing strategies to align with cultural values, beliefs, and preferences in different regions. PLS-SEM is chosen for its flexibility in handling complex models and its suitability for exploratory research in diverse cultural contexts.

### Originality/value:

This research encourages future studies to adopt holistic methodologies, including pretest-post-test designs and control group comparisons, to measure the real-world impact of ICC development programs. The study also highlights the need for further investigation into the relationship between ICC and leadership effectiveness in diverse organizational settings, suggesting that intercultural competence is a critical factor for global leadership success.

**Keywords:** Intercultural Communication, Effective International Marketing Management, Culture, Social Media, International Advertising.

**JEL Classification:** F23, M31, M37

## 1. Introduction

According to Vaddadi (2019), in today's interconnected global market, effective intercultural communication is crucial for successful marketing management. However, integrating social media and international advertising strategies often poses challenges due to cultural differences (Vaddadi & Thandava, 2019, pp. 74–83).

The rapid integration of global markets and the advent of digital transformation have necessitated a paradigm shift in international marketing management. While intercultural communication competence (ICC), international advertising effectiveness (IAE), social media utilization (SMU), and the global market environment (GME) are all critical to organizational success, their interconnected impact on marketing management effectiveness (MME) remains underexplored. This study addresses this gap by developing a holistic framework to analyse how these subsystems interact within multinational organizations, offering actionable insights for navigating culturally complex markets and developing a comprehensive model for the entire system. The following review of the literature highlights the existing gap:

For example, Ni et al. (2015) established ICC's role in public relations but did not extend it to digital advertising or social media strategies, leaving a critical gap in understanding ICC's application in modern marketing (Ni et al., 2015a, pp. 167–183).

Similarly, Di Yuna et al. (2022) found that only 3.5% of cross-cultural communication studies integrate psychology and neuroscience with social media dynamics, highlighting the scarcity of interdisciplinary approaches (Di Yuna et al., 2022, p. 858900).

Montagna (2023) emphasized cultural depth in advertising but omitted SMU and ICC integration, exemplifying fragmented research (Montagna, 2023, pp. 1–15).

These siloed perspectives fail to explain how these factors collectively drive MME in global markets. A 2024 systematic review in SAGE Open revealed that 78% of ICC research focuses on leadership or education, neglecting its integration with digital marketing strategies (Sarwari et al., 2024).

Concurrently, Sarwari et al. (2024) identified ICC's absence as a key failure factor in international business, stressing the need for frameworks aligning ICC with GME factors like regulatory complexity and cultural norms (Sarwari et al., 2024).

To address this gap, the study aims to develop a model to investigate the following research questions: To what extent does intercultural communication competence (ICC) moderate the

relationship between international advertising effectiveness (IAE) and marketing management effectiveness (MME), and how does social media utilization (SMU) mediate the impact of the global market environment (GME) on MME in multinational organizations?

The findings provide insights into how businesses can navigate cultural complexities to design more effective global marketing strategies. Companies can use the findings to adapt their marketing strategies to align with cultural values, beliefs, and preferences in different regions. PLS-SEM is chosen for its flexibility in handling complex models and its suitability for exploratory research in diverse cultural contexts.

## 2. Theoretical background

Intercultural communication competence (ICC): Intercultural communication competence is increasingly recognized as a vital capability for organizations operating in global markets.

As Kim (2005) and subsequent research highlight, a culture-general approach to intercultural communication competence emphasizes the ability of individuals to communicate effectively across diverse cultural settings, rather than focusing solely on specific cultural knowledge or language skills. This competence includes general characteristics such as empathy, openness, and adaptability, which are essential for navigating multicultural, multi-faith, and multi-ethnic environments. Public relations practitioners, for example, must move beyond intracultural strategies and develop a broader competence to ensure effective communication with global stakeholders, as what is effective in one cultural context may not be so in another (Kim, 2005, pp. 554–577).

Global Market Environment (GME): The global market environment presents both opportunities and challenges for organizations seeking to expand their operations internationally. Factors such as economic development, political stability, media infrastructure, and cultural diversity significantly influence how companies approach international marketing and advertising.

As highlighted by Brei et al. (2011), the global market environment acts as both a driver and a moderator of marketing effectiveness. Companies must carefully consider how their products, messages, and media channels are perceived in different markets, balancing the need for standardization with the necessity of adaptation. Research indicates that while standardization offers benefits such as economies of scale and consistent brand identity, adaptation to local market conditions—particularly in pricing, promotion, and distribution—often yields better performance outcomes (Brei et al., 2011, pp. 266–287).



International Advertising Effectiveness (IAE): According to Kanso (1995), international advertising effectiveness is contingent upon a nuanced understanding of both general and culture-specific factors in target markets. Studies have shown that while advertising executives prioritize general factors such as product type, target audience, and budget, cultural considerations remain critical in designing and delivering effective campaigns (Kanso, 1995, pp. 95–113).

Social Media Utilization: As Hameed et al. (2022) highlight, social media utilization has transformed the landscape of international marketing and advertising, providing organizations with powerful tools for engagement, information sharing, and community building. Recent studies underscore the ubiquity of social media platforms such as Facebook, Twitter, and Instagram, which facilitate real-time interaction across geographic boundaries (Hameed et al., 2022, pp. 12–27).

### Marketing Management Effectiveness

As Horng et al. (2022) emphasize, marketing management effectiveness is a critical outcome of the interplay between intercultural communication competence, the global market environment, international advertising, and social media utilization. A systematic review of the literature reveals that marketing management has evolved significantly in response to changes in consumer behaviour, technological advancements, and the increasing complexity of global markets (Horng et al., 2022, p. 2344).

Furthermore, Horng et al. (2022) state that effective marketing management requires a comprehensive understanding of market dynamics, consumer preferences, and the integration of innovative tools and strategies. The literature emphasizes the need for a holistic approach that incorporates insights from multiple domains, including intercultural communication, advertising, and social media. By synthesizing these elements, organizations can develop robust marketing frameworks that enhance service quality, customer satisfaction, and brand loyalty, ultimately driving superior performance in the global market (Horng et al., 2022, p. 2344).

The system model encapsulates this multidimensional perspective, illustrating how the effectiveness of marketing management is contingent upon the successful integration of diverse factors and competencies.

### 3. Methods

This study employs Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyse the systemic interdependence of the variables, with a particular focus on high cultural-



distance markets. It also aims to develop a conceptual model that examines the relationships among culture, social media engagement, international advertising effectiveness, and effective international marketing management.

The connection between Intercultural Communication Competence and the Global Market Environment:

Intercultural Communication Competence → Global Market Environment

As Sarwari et al. (2024) emphasize, Intercultural Communication Competence (ICC) significantly enhances an organization's ability to operate effectively in the global market environment. ICC equips individuals and businesses with the skills to understand, respect, and adapt to diverse cultural norms, values, and communication styles, which is essential for navigating the complexities of international markets (Sarwari et al., 2024).

Global Market Environment → Intercultural Communication Competence

According to Albescu et al. (2009), the dynamics of the global market environment drive the need for and development of ICC within organizations. As globalization intensifies and international business activities become more frequent, professionals are increasingly required to interact with partners, clients, and teams from diverse cultural backgrounds. (Albescu et al., 2009, pp. 39–50). Albescu et al. (2009) further state that the multicultural challenges and opportunities presented by the global market environment compel companies to cultivate intercultural communication skills among their employees in order to manage cross-cultural teams, resolve conflicts, and adapt to local market conditions (Albescu et al., 2009, pp. 39–50).

The relationship between Intercultural Communication Competence and the Global Market Environment is bidirectional and mutually reinforcing. ICC enables organizations to succeed in global markets by fostering effective cross-cultural interactions, while the demands and complexities of the global market environment drive the continuous development and importance of intercultural competence within organizations.

The impact of the global market environment on social media utilization:

Global Market Environment → Social Media Utilization

According to Ignatov and Augustin (2019), social media has become a key tool for businesses to connect with global audiences, expand into new markets, and adapt to the demands of a competitive international environment. This highlights how the global market environment directly influences how organizations utilize social media to achieve their objectives (Ignatov, 2019, pp. 35–54). According to Ignatov and Augustin (2019), social media has become a key tool for businesses to connect with global audiences, expand into new markets, and adapt to the



demands of a competitive international environment. This highlights how the global market environment directly influences how organizations utilize social media to achieve their objectives (Ignatov, 2019, pp. 35–54).

### Impact of the global market environment on marketing management effectiveness:

Global Market Environment → Marketing Management effectiveness

The global market environment has a direct and profound impact on marketing management effectiveness due to the dynamic, complex, and highly competitive nature of international markets. According to Sudirjo (2023), globalization, technological advancements, and increased consumer access to information have transformed the business landscape, compelling companies to adapt their marketing strategies to remain competitive. The global market introduces both opportunities for growth and challenges, such as heightened competition, rapidly changing consumer preferences, and diverse regulatory requirements. In this context, companies must develop and implement effective marketing strategies tailored to the specific demands of international markets to enhance product competitiveness and achieve organizational goals (Sudirjo, 2023, pp. 63–69).

### Impact of intercultural communication competence on marketing management effectiveness via international advertising effectiveness:

Intercultural Communication Competence → International Advertising Effectiveness → Marketing Management Effectiveness

According to Pollay et al. (1992), intercultural communication competence significantly influences international advertising effectiveness by enabling organizations to develop culturally appropriate and resonant advertising messages. Organizations with strong intercultural communication competence can more effectively navigate the complexities of global advertising, avoiding potential miscommunications that might damage brand reputation or marketing outcomes. This cultural competence allows for the development of advertising strategies that respect local customs, values, and communication preferences while maintaining global brand consistency, thereby enhancing the overall effectiveness of international advertising initiatives (Pollay et al., 1992, pp. 45–57). When marketing teams possess the cultural intelligence necessary to develop appropriate advertising content, they can more effectively allocate resources, engage target audiences, and achieve organizational goals in diverse cultural contexts.

### Impact of intercultural communication competence on marketing management effectiveness via Social Media Utilization:



Intercultural Communication Competence → Social Media Utilization → Marketing Management Effectiveness

Social media utilization functions as a crucial intermediate subsystem that translates intercultural communication competence into enhanced marketing management effectiveness. By serving as an intermediate subsystem, social media utilization allows organizations to operationalize their intercultural communication competence through targeted digital strategies that resonate with diverse global audiences. According to Hameed et al. (2022), the use of Internet technologies in marketing communication is gaining importance, with most revenues generated through online marketing communications by using personalization, multimedia integration, and real-time interactions. Organizations that effectively utilize social media can respond more quickly to market changes, gather real-time consumer insights, and adapt their marketing strategies to meet the needs of diverse cultural contexts (Hameed et al., 2022, pp. 12–27).

#### 4. Result and discussion

The conceptual framework illustrates the interdependence of these five subsystems. Intercultural communication competence forms a bidirectional relationship with the global market environment and directly influences international advertising effectiveness, which in turn impacts marketing management outcomes. The global market environment directly affects both social media utilization and marketing management effectiveness. Social media utilization serves as a bridge between intercultural communication competence and marketing management effectiveness, while also interfacing with international advertising effectiveness. This multidimensional perspective emphasizes that marketing management effectiveness depends on the successful integration of these diverse factors and competencies in the global marketplace.

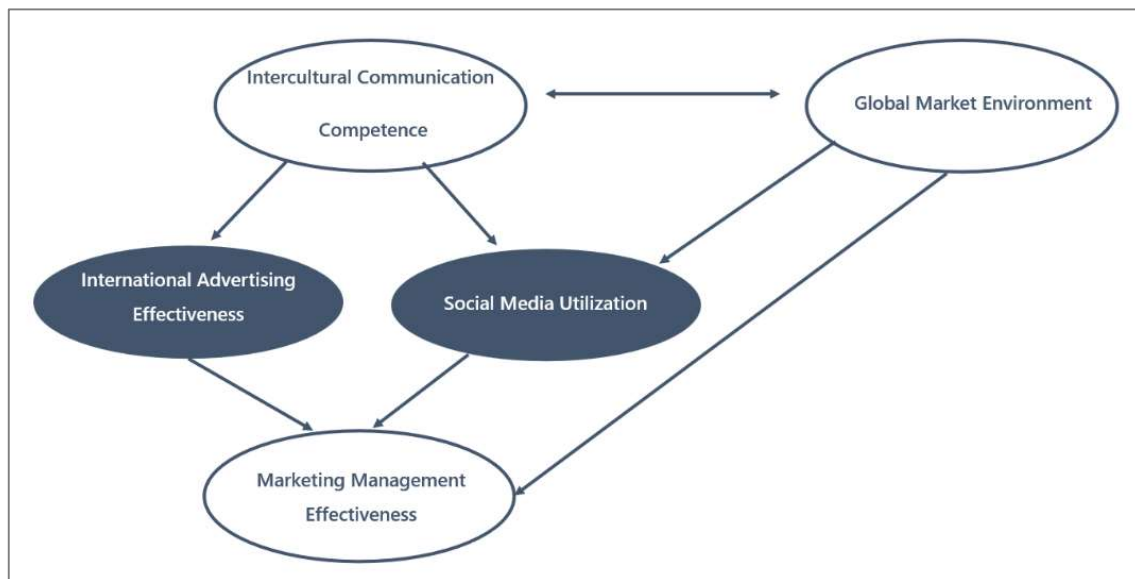


Figure 1 Model of Systems Integration  
Source: own elaboration

Despite the growing integration of global markets and the increasing reliance on digital channels, there is a notable lack of comprehensive research examining how intercultural communication competence, international advertising effectiveness, and social media utilization jointly influence marketing management effectiveness within the global market environment.

There is a gap in the literature concerning the integration of intercultural communication competence (ICC) and global management environment (GME) factors, particularly in relation to marketing management effectiveness through social media and international advertising.

The following studies address intercultural communication competence in marketing and digital contexts:

Research by Ni et al. (2015), published in the *Journal of Communication Management*, examined how intercultural communication competence affects public relations practitioners' ability to function in diverse environments. The study employed a culture-general approach to understand "*individuals' ability to communicate competently with any cultural groups*," rather than focusing on specific cultural contexts (Ni et al., 2015b, pp. 167–183). While this research connects intercultural competence to communication management, it doesn't fully extend to digital advertising or social media strategies.

To what extent does intercultural communication competence moderate the relationship between international advertising effectiveness and marketing management effectiveness, and how does social media utilization mediate the impact of the global market environment on marketing management effectiveness in multinational organizations?

This research question examines the mechanisms and pathways by which key factors interact to influence marketing management effectiveness in a global context. Specifically, it investigates the integrated impact of these relationships—how intercultural communication competence, international advertising effectiveness, social media utilization, and the global market environment function together within multinational organizations, rather than in isolation.

### 5. Conclusion

In the system, five latent variables were identified.

- Global Market Environment (GME)
- Intercultural Communication Competence (ICC)
- International Advertising Effectiveness (IAE)
- Social Media Utilization (SMU)
- Marketing Management Effectiveness (MME)

The following table illustrates the latent variables in the system:

Table 3 Latent Variables in the System

Variable types	Latent Variables
Exogenous Variables (Independent Variables)	- Intercultural Communication Competence (ICC) - Global Market Environment (GME)
Mediating Variables	- International Advertising Effectiveness - Social Media Utilization (SMU)
Endogenous Variable (Dependent Variable)	-Marketing Management Effectiveness (MME)

Source: own elaboration

The following table illustrates the structural equations in the system:

Table 4 Structural Equations in the System

International Advertising Effectiveness (IAE)	
$IAE = \beta_1 ICC + \varepsilon_1$	$\beta_1$ = Path coefficient representing the effect of ICC on IAE $\varepsilon_1$ = Error term for IAE
Social Media Utilization (SMU)	
$SMU = \beta_2 ICC + \beta_3 GME + \varepsilon_2$	$\beta_2$ = Path coefficient representing the effect of ICC on SMU $\beta_3$ = Path coefficient representing the effect of GME on SMU $\varepsilon_2$ = Error term for SMU
Marketing Management Effectiveness (MME)	
$MME = \beta_4 IAE + \beta_5 SMU + \beta_6 GME + \varepsilon_3$	$\beta_4$ = Path coefficient representing the effect of IAE on MME $\beta_5$ = Path coefficient representing the effect of SMU on MME $\beta_6$ = Path coefficient representing the direct effect of GME on MME $\varepsilon_3$ = Error term for MME

Source: own elaboration

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## REDEFINING CORPORATE SUSTAINABILITY: A NEW MEASUREMENT FRAMEWORK

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### ABSTRACT

#### Purpose:

This study aims to redefine corporate sustainability by developing a composite measurement framework that integrates environmental, social, and economic dimensions. Given the inconsistencies in current sustainability assessment models, this research provides a standardized and structured approach to evaluating corporate sustainability across industries. The proposed framework enhances transparency, accountability, and comparability, offering a reliable tool for regulators, investors, and policymakers.

#### Design/methodology

The research employs a mixed-method approach, incorporating a systematic literature review, expert consultation, and quantitative data analysis. A composite sustainability index is developed based on three key dimensions: Environmental Sustainability, Social Sustainability, and economic sustainability with Indicators are selected from global sustainability frameworks, normalized using a Min-Max scaling technique, and weighted using an equal or expert-weighted aggregation method. The final index is tested using corporate data from multiple industries to ensure robustness and applicability.

#### Findings:

The study reveals that the overall level of corporate sustainability in Sri Lanka is approximately 4, reflecting moderate performance across industries. While sectors such as financial services and telecommunications demonstrate strong governance and social responsibility, industries like manufacturing and energy face challenges in environmental compliance and long-term sustainability practices. The proposed measurement framework is validated as a reliable and accurate instrument, confirmed through statistical tests, including Cronbach's Alpha and factor analysis. The index effectively distinguishes sustainability performance across companies, providing a robust tool for regulators, investors, and policymakers to enhance corporate sustainability standards and decision-making.

#### Research/practical implications

This framework serves as a benchmarking tool for corporate sustainability, helping businesses enhance sustainability strategies and improve reporting standards. Policymakers and regulators can adopt the index to refine sustainability guidelines, while investors can use it for risk assessment and decision-making. Future research should explore industry-specific adaptations and integrate AI-driven analytics for real-time sustainability evaluation.



## **Originality/value**

This study contributes to sustainability literature by introducing an innovative, data-driven measurement framework that links Economic, Social dimensions with Environmental Sustainability. Unlike conventional models, this approach ensures adaptability to evolving sustainability challenges and enhances decision-making for corporations, investors, and regulators. By establishing a standardized assessment tool, this research advances corporate sustainability evaluation and fosters more responsible business practices globally.

**Keywords:** Corporate Sustainability Index (CSI), Environmental Sustainability, Social Sustainability, Economic Sustainability

**JEL Classification:** M14, Q01, Q50

## **1. Introduction**

Since the early 2000s the developing business concept of corporate sustainability developed to combine economic components with environmental concerns and social parameters to gain business-world and educational institution attention. Corporate sustainability expanded beyond protecting the environment and executing social responsibility by adding future business success and corporate governance practices (Eccles, Ioannou, & Serafeim, 2014). Corporate Sustainability is the integration of the business performance expectations including economic, social, and environmental sustainability (Dissanayake et al., 2024). Sustainability's diverse features have driven businesses to develop consistent approaches that measure financial investor returns while examining how operations impact multiple stakeholder groups. Multiple worldwide difficulties including climate change and poverty with inequality serve as evidence for companies needing sustainable strategies according to Sullivan & Mackenzie (2017). Organizations struggle to report and evaluate sustainability efforts because Hahn et al. (2015) explain that an official corporate sustainability assessment standard does not exist. The interpretation possibilities remain diverse because the sustainability models Triple Bottom Line and Environmental Social Governance framework operate with sector-specific applications while showing limited breadth of effect. The research develops an corporate sustainability index (CSI) to combine essential environmental assessments with social and economic measures into one complete measurement system. This standardized evaluation system included in the combined assessment framework provides universal decision-making capabilities alongside visible assessment through its worldwide deployment.



## 2. Literature Review and Theoretical Background

The progress of corporate sustainability has acquired new dimensions since its creation because of different theoretical frameworks. One of the best-known organizational models originated from TBL by Elkington (1998) asserts that companies need to assess success through three components including economics and society and nature. The model creates significant changes for businesses in their sustainability practices because it requires them to assess performance in a comprehensive way. However, the widespread adoption of TBL and other sustainability frameworks, such as ESG and Global Reporting Initiative (GRI) standards, has been hampered by several challenges. These include a lack of universal definitions for sustainability criteria, inconsistent reporting standards across industries, and challenges in the comparability of sustainability data (Milne & Gray, 2013). Furthermore, frameworks like ESG ratings often employ different methodologies and weightings, resulting in divergent ratings for the same company across various platforms (Berg, Kölbel, & Rigobon, 2022). These inconsistencies undermine the effectiveness of sustainability assessments and hinder corporate accountability.

### 2.1 Theoretical Underpinnings

This study bases its theoretical framework on stakeholder theory (Freeman, 1984) that requires businesses to generate worth for shareholders combined with employees and customers with the community being additional stakeholders. The approach demonstrates that organizations need to meet their financial objectives alongside fulfilling their responsibilities to society and the environment. Through legitimacy theory (Deegan, 2002) businesses understand how they should synchronize sustainability actions with social expectations to uphold their societal standing.

The theory of institutional pressures (Scott, 2008) explains how organizational sustainability approaches get influenced by external institutional requirements. The regulatory bodies as well as NGOs along with competitors often create pressures which companies experience. The exam aims to develop an extensive context-sensitive method for measuring corporate sustainability by uniting these theoretical frameworks.

### 2.2 Gaps in Existing Models

The acceleration of sustainability guidelines has not eliminated the deficiency of unified tools which measure sustainability performance across industries. The sustainability data



reporting guidance from GRI and SASB serves as valuable resources but their frameworks do not connect sustainability metrics across different dimensions and they do not create an adaptable universal measurement standard. The systematic evaluations known as ESG ratings receive frequent criticism because organizations do not adequately disclose their scoring methods and allow decisions to be subjective (Berg et al., 2022).

Due to existing knowledge gaps this research develops a composite sustainability index (CSI) which combines economic and environmental and social sustainability assessments into a unified robust measurement method. The CSI includes global sustainability frameworks while creating standardization options which work well with various industries and sectors.

### 3. Methodology

The research methodology combines qualitative with quantitative methods to construct its investigative approach. The CSI benefits from a practical industry-wide structure achieved through systematic literature review along with expert consultations and quantitative methodology. 3.1 Systematic Literature Review A thorough evaluation of current scholarly works led to the selection of essential sustainable indicators along with applicable frameworks. The initial selection of 287 sources led to choosing 20 key documents which directed sustainability reporting and evaluation metrics development. The evaluation concentrated on global frameworks beginning with TBL and proceeding to ESG and GRI standards along with UN Sustainable Development Goals (SDGs) for selecting indicators. 3.2 Expert Consultation Ten experts validated that the selected indicators had both valid theoretical foundations alongside usable practical characteristics. A group of experts composed mainly of academic scholars joined with senior sustainability officers working across different business sectors to identify appropriate sustainability metrics. The consultation process worked to improve the approach for weighting factors when building the CSI.

### 3.3 Quantitative Analysis and Index Construction

The CSI creation involved multiple defined steps: A selection process of indicators was performed from three major global frameworks which included GRI and SDGs and SASB guidelines. The Min-Max normalization approach standardized different variables despite their original scales and units so they could be compared. The index received weighting through two methods starting with equal weighting followed by expert opinions to prevent bias and deliver accurate dimensional balance. Statistical tests revealed that the reliability and validity of the



CSI through Cronbach's Alpha and Composite Reliability (CR) and Average Variance Extracted (AVE).

## 4. Results and Discussion

### 4.1 Sectoral Performance

The CSI was applied to a diverse set of companies across industries in Sri Lanka. The results revealed significant variation in sustainability performance across sectors. The average sustainability score for Sri Lankan companies was 4 out of 7, indicating moderate performance.

#### Financial Services and Telecommunications

These sectors demonstrated high performance, particularly in governance and social responsibility. Financial institutions, such as banks and insurance companies, scored well on stakeholder engagement and transparency, likely due to stringent regulatory oversight and their emphasis on social governance (Harrison & Freeman, 2021).

#### Manufacturing and Energy Sectors

These sectors struggled with environmental sustainability metrics, particularly in the areas of carbon emissions, waste management, and energy efficiency. The lack of robust environmental policies and limited investment in green technologies contributed to their poor performance (Vachon & Klassen, 2008).

### 4.2 Index Validation Process

The CSI evaluation process reached multiple companies from different industries within Sri Lanka. The sustainability performance evaluation showed major differences in sector results. The Sri Lankan companies achieved an average sustainability score of 4 out of 7 points which reflects their moderate performance level.

The Financial Services together with the Telecommunications sector realized outstanding results especially in governance together with social responsibility performance. The financial institutions that included banks and insurance companies achieved high marks on stakeholder engagement as well as transparency because they face stringent licensure guidance and maintain substantial social governance practices (Harrison & Freeman, 2021).

The manufacturing sector together with the energy sector experienced difficulties in environmental sustainability measurement due to poor performance in carbon footprint reduction waste control and energy conservation efforts. Poor environmental results stem from inadequate environmental regulations and insufficient investment in green technologies according to Vachon & Klassen (2008).

The CSI demonstrated a strong capacity to maintain its reliability values through validation tests. The CSI along with its economic, environmental and social components showed excellent internal consistency through Cronbach's Alpha values that surpassed the suggested 0.7 threshold.

Table 1 Reliability and Validity Analysis

Dimension	Cronbach's Alpha	Composite Reliability	AVE
CSI	0.984	0.985	0.352
ECO	0.962	0.965	0.473
ENV	0.964	0.966	0.356
SOC	0.963	0.965	0.435

Source: own elaboration

The CSI emerges as a trustworthy instrument for company sustainability evaluation because of its validated results.

## 5. Conclusion

This research brings forward an innovative composite sustainability index (CSI) which solves existing sustainability framework constraints. The combination of essential environmental, social and economic indicators within a standardized CSI index structure boosts the transparency and enables more effective sustainability assessment across organizations. The framework shows its differentiation capacity through sector-wide application in Sri Lanka which helps identify high and low performing entities while providing insights to sustainability decision stakeholders.



## 6. Research and Practical Implications

### Implications for Firms

The CSI provides companies with a valuable tool for internal benchmarking and aligning sustainability strategies with global standards. Firms can use the index to track their performance over time and identify areas for improvement.

### Implications for Regulators

Regulatory bodies can adopt the CSI as a standard for monitoring sustainability practices across industries. This could lead to more uniform reporting practices and stronger enforcement of sustainability regulations.

### Implications for Investors

The CSI offers investors a reliable tool for assessing ESG risks and making more informed investment decisions. The ability to compare companies based on standardized sustainability metrics can facilitate the growth of responsible investing.

### Policy Implications

Governments can use the CSI to develop tailored sustainability policies that address the specific needs and challenges of different sectors. This could lead to more targeted interventions and improved national sustainability performance.

## 7. Originality and Value

This research contributes to the corporate sustainability literature by providing a composite, data-driven framework for assessing sustainability performance. The CSI offers several advantages over existing model. It integrates multiple sustainability dimensions into a single, validated tool. It is adaptable for use across industries and geographies. In addition, it can be further enhanced with AI technologies for real-time sustainability monitoring. The potential for the CSI to be integrated with AI tools offers exciting prospects for dynamic sustainability tracking in the future (Wamba et al., 2021).



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# ANALYSIS OF IMPACT OF SODA TAX ON THE OBESITY AND OVERWEIGHT OF POPULATION FROM DIFFERENT DEMOGRAPHIC AND SOCIAL GROUPS INCOME IN THE USA STATES

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## ABSTRACT

### Purpose:

The problem of obesity in the United States is relevant, as indicated by various studies, both in the field of public health and socio-economic policy related to the development of socio-economic measures aimed at supporting a healthy lifestyle and reducing excess consumption of fats and carbohydrates in various social and ethnic groups of the population.

The purpose of the paper is to study the effect of introducing a tax on sugary carbonated drinks on the rates of the proportion of the population with different degrees of obesity using the difference-in-difference model.

### Design/methodology:

Our empirical strategy was based on the following steps:

At first, we formulated the hypotheses that high consumption of sugary carbonated drinks, along with other unhealthy dietary factors, leads to obesity in certain risk groups. Then, we analyzed the sample data on body mass index (percentage of population with obesity) for the period 2011-2022. After, we applied the simple difference-in-difference model to study the effect of the introduction of the soda tax during the period 2011-2022 in some US states and its impact on the indicators of the proportion of the population with obesity in general and in individual groups.

### Findings:

We identified risk groups based on statistical analysis of CDC Behavioral Risk Factor Surveillance Survey data for various population groups in various US states over a sufficiently long period of time. We applied Student's tests to determine statistically significant differences in the means for individual sample data of the proportions of individual population groups by US states for 2011 and 2022.

### Research/practical implications:

Using the method “difference-in-difference” we estimated the impact effect of policy (introduction “soda tax”) on the obesity and overweight for total respondents and different social and demographic groups, particularly. It is necessary to consider the policy effect (introduction “soda tax”) in more homogenous groups, such as the same age, educational level or race/ethnic group. We analyzed the policy effect for young and middle-aged population (18-



24; 25-34; 35-44) of different race or ethnic groups (White, Black, Hispanic) with low level of education and income (Education less than high school; Household income less than \$15,000).

**Originality/value:**

The difference-in-difference model to study the effect of the introduction of soda tax during the period 2011-2022 in some US states was constructed. This model allows us to estimate the efficiency of the introduction of the soda tax and its impact on the potential reduction of obesity. The results of the empirical strategy will allow us to form general conclusions about the effectiveness of the soda tax in terms of its impact on the change in the percentage of the population with obesity in general and in individual groups.

**Keywords:** Soda tax, state policy, DID (difference-in-difference), obesity.

**JEL Classification:** C01, H21, I18

## 1. Introduction

The American Medical Association recognized obesity as a disease in 2013. Based on surveys of respondents presented in the CDC Behavioral Risk Factor Surveillance Survey (BRFSS) database (<https://www.cdc.gov/brfss/>), in 2011, the average value of respondents with various degrees of obesity was 27.58%, and in 2022 this figure increased to 33.71%, that is, by more than 5%.

Moreover, over the period 2011-2022, the increase in the percentage of respondents with various degrees of obesity was more than 8%. For example, in Arizona (8.13%), Illinois (8.39%), Ohio (8.4%), Oklahoma (8.89%), West Virginia (8.62%), South Dakota (8.66%), and in states such as Delaware, Georgia, Nevada, Tennessee, Wisconsin, and Wyoming, the percentage of respondents with varying degrees of obesity increased by more than 9% over the specified period. In 2022, in a number of states, such as Alabama, Ohio, Tennessee, Mississippi, and Oklahoma, the percentage of respondents with varying degrees of obesity was more than 38-40%, and in states such as Louisiana and West Virginia, it exceeded 40%. Thus, in many US states, there is a steady trend of increasing population with varying degrees of obesity. It should be mentioned that in addition to behavioral variables, obesity encompasses complicated genetic, environmental, social, physiological, and economic elements that are still poorly understood by scientists and that physicians are still determining the most effective ways to treat (Lazarus & Ortiz-Pujols, 2022).

As (Thorndike et al., 2022) mentioned, although the goal of US food aid policies and programs is to increase food security, there is increasing agreement that nutrition security should be given more attention. According to this policy statement, nutrition security is the state in which people or households have fair and consistent access to, affordability of, and consumption of foods and drinks that support health and prevent and treat illness.

The research idea is to analyse the impact of soda tax on the obesity and overweight of population from different demographic and social groups income in the USA states.

This paper addresses to answer the core research questions:

- What are the policy effects from introduction of soda tax implemented in some states on obesity and overweight of population from different demographic and social groups income?
- Should it necessary to take into account the factors such as: gender, age group, race/ethnicity, education or household income for the analysis of policy effects from introduction of soda tax and its influence on obesity and overweight?

By answering these questions, the paper contributes to a better understanding of set of economic and social measures for support responsible consumer's behavior towards health style and healthy food.

## 2. Literature Review/ theoretical background

The problem of the growth of obesity in the US population has been studied by many researchers who have studied the various causes of this phenomenon. Such researchers (Kyle et al., 2016 and Lazarus & Ortiz-Pujols, 2022) point to the problem of unhealthy eating as one of the reasons for the growth of the population with various degrees of obesity. At the same time, a number of researcher's point to the problem of mass consumption of sweet carbonated drinks.

Thus, regular consumption of sweet carbonated drinks such as Cola, Pepsi, etc., which have been recognized by nutritionists as harmful to health, leads to weight gain, especially in the risk group, i.e. in the group of consumers who, due to genetic, behavioral, socio-economic or other factors, are prone to excess weight and obesity. One of the possible measures aimed at reducing the consumption of harmful carbonated sweet drinks is the introduction of a tax on them, which is called a soda tax. This tax is one of the types of taxes considered by the economist Pigou and studied by a number of other economists. In accordance with the assumptions, an increase in the price of sweet carbonated drinks should lead to a decrease in the consumption of these drinks and, as a result, a decrease in the risk of weight gain and obesity in various population groups, especially in groups with high risk factors. At the same time, an increase in the price of sweet carbonated drinks due to the soda tax may not always lead to the expected effect. Thus, for some social groups of the population, the demand for sweet carbonated drinks may be inelastic due to price changes, i.e. these consumers, due to habit, will consume sweet carbonated drinks in the same volume as before, despite the price increase. Other consumers may switch



to a larger amount of consumption of sweet fruits, for which prices have not been increased, or to the consumption of lemonades, light alcoholic drinks with the addition of carbonated water and sweet syrups prepared at home or in cafés, restaurants, etc. In this group of consumers, an effect of substitution of consumption of sweet carbonated drinks, on which a tax was introduced, with other unhealthy sweet drinks on which a tax was not introduced may be observed.

(Taber et al., 2011) calculated the relationship between state policy changes and the percentiles of adolescents' body mass index (BMI) and soda consumption, both generally and by race/ethnicity. Such studies (Jones-Smith et al., 2024) were conducted within the framework of separate projects and were not conducted at the level of all states and various social, age and ethnic groups. Data on the consumption of sweet carbonated drinks by US states are not presented in full; there are separate sample data for some age groups.

At the same time, data on respondents with different values of body mass indexes for all states are presented in the database for the period 2011-2022, which allows using these data as dependent variables to study the policy effect of introducing a tax on sugary sodas in individual states. It should be noted that the tax on sugary sodas was introduced and canceled at different times in different cities of the US. Also, the practice of introducing a tax on sugary sodas was in other countries. The effects of introducing a tax on sugary sodas in individual groups of the population within the framework of individual projects were studied by such researchers as (Kim & Kawachi, 2006), (Jacobson & Brownell, 2000), (Andreyeva et al., 2022).

At the same time, such studies have not been conducted at the level of all US states and individual socio-economic groups of the population exposed to the risks of unhealthy diets and obesity. A preliminary analysis of data related to the study of population obesity rates and the introduction of a tax on sugary carbonated drinks showed that in a number of cities in such states, where significantly higher rates of the proportion of the population with obesity were observed, a tax on sugary carbonated drinks was not introduced, but in other cities of states, where the rates of the proportion of the population with obesity were not so high, on the contrary, a tax on sugary carbonated drinks was introduced in certain periods of time. Thus, studying the problem of the effect of introducing a tax on sugary carbonated drinks in various US states and the impact of this social policy measure on obesity rates is relevant.

### 3. Methods

This research aimed to study the effect of introducing a tax on sugary carbonated drinks on the rates of the proportion of the population with different degrees of obesity using the difference-in-difference model. We formulated hypotheses that the possible effect of introducing a tax on sugary carbonated drinks on reducing obesity rates may not be seen in all, but in certain groups of the population. One hypothesis was: for low-income, low-education populations, the introduction of soda tax will reduce the proportion of the population with obesity and overweight.

The main steps of the empirical strategy are:

1) At the first stage, based on the conducted literature review, we formed the hypotheses that high consumption of sugary carbonated drinks, along with other unhealthy dietary factors, leads to obesity in certain risk groups, and it is necessary to identify these risk groups based on statistical analysis of CDC Behavioral Risk Factor Surveillance Survey (BRFSS) data (<https://www.cdc.gov/brfss/>) for various population groups in various US states over a sufficiently long period of time.

2) At the second stage, an analysis of sample data on body mass index (percentage of population with obesity) for the period 2011-2022 was conducted. At this stage, we analyzed trends in the percentage of the population with various degrees of obesity for all groups. We estimated parameters of linear trends and correlation coefficients and provided visual analysis of the graphs constructed.

3) At the third stage, a simple difference-in-difference model was applied to study the effect of the introduction of the soda tax during the period 2011-2022 in some US states and its impact on the indicators of the proportion of the population with obesity in general and in individual groups. In this case, a control group will be allocated, that is, those states in which the soda tax was not introduced during this period and a treatment group of states in which the soda tax was introduced. It is assumed that in the simple version of the difference-in-difference model, the hypothesis of parallel trends is accepted. In a more complex version, taking into account the results of the first and second stages, the specification of the model can be changed, and explanatory variables can be added, for example, the percentage of the population with poor health or the percentage of the population with high cholesterol.

The results of the empirical strategy will allow us to form general conclusions about the effectiveness of the soda tax in terms of its impact on the change in the percentage of the population with obesity in general and in individual groups.

#### 4. Results and discussion

This section presents the results of the study conducted to study the problem of obesity in the United States and in individual states. During the specified period of 2011-2022 the average value of the proportion of respondents with obesity increased from 27.58% in 2011 to 33.71% in 2022%, i.e. by more than 6%. This increasing tendency is confirmed by a study of the dynamics of the minimum and maximum values of the proportion of respondents with obesity, which were observed in individual states for the period 2011-2022. Thus, in 2011, the minimum value of the proportion of respondents with obesity was 20.7%, and in 2022 this value increased to 24.29%. In 2011, the maximum value of the proportion of respondents with obesity was 34.9%, and in 2022 this figure was 41.02%. At the same time, the values of the standard deviations and the coefficient of variation changed insignificantly over the specified period.

Table 1 presents the results of the statistical analysis and parameter estimates of the linear trend models for a number of states that had the highest obesity rates, over 31% in 2011.

As follows from the results of the estimation of the linear trend parameters, the initial level (estimate  $a_0$  or intercept) in 2010, explained by various reasons related to the specific socio-economic characteristics of these states, also indicates some regional differences, and the estimate of the parameter  $a_1$  indicates the annual explained increase in this indicator.

As can be seen, the highest initial explained level of  $a_0$  was observed for the state (MS) – Mississippi, and the lowest level of  $a_0$  (intercept) in this group was for OK – Oklahoma. The highest increase (the value of the parameter  $a_1$  or slope) was observed in the states of WV (0.76) and OK (0.75).

Table 1 Descriptive statistics and characteristics of the linear trend for indicator “Obesity” (%) for some states with the highest level of obesity

	Obesity_AL	Obesity_AR	Obesity_LA	Obesity_MS	Obesity_OK	Obesity_WV
Mean	35,66	35,67	36,12	37,4	34,95	37,36
Std.Dev.	2,57	2	2,06	2,23	2,88	2,79
Coef. Var.	7,2	5,62	5,7	5,96	8,23	7,48
Min	32	30,9	33,1	34,6	31,1	32,4
Max	39,9	38,6	40,08	40,8	39,99	41,02
a0	31,29	32,59	32,69	33,75	30,06	32,45
a1	0,67	0,47	0,53	0,56	0,75	0,76
R	0,95	0,85	0,92	0,91	0,94	0,98
Change						
2011- 2022	6,27	6,48	6,68	4,55	8,89	8,62

Source: own elaboration based on the data from [BRFSS: Table of Overweight and Obesity \(BMI\) | Data | Centers for Disease Control and Prevention](#)

The slowest increase in the indicator of respondents with obesity was observed in the state of AR – Arkansas (slope 0.47). The correlation coefficients (R) for the given linear trend models were significantly high, exceeding 0.9, which indicates that the rates of respondents with obesity increased evenly from year to year in the given states, i.e. in accordance with the linear growth trend.

To identify the treatment effect concerned with implementation of “soda tax” we considered model with control and treatment groups and method “difference-in-difference”. In many states the “soda tax” was implemented in the period of 2014-2018. In the sample time period was used: 2011-2023, which contains the time of different introduction of “soda tax”.

Thus, two groups were introduced: Control group: states, where “soda tax” was not implemented; Treatment group: states, where “soda tax” was implemented in the cities. Treatment group includes such states: California (Berkley, Oakland, San-Francisco, Albany); Colorado (Boulder); Illinois (Cook County); Pennsylvania (Philadelphia); Washington (Seattle); District Columbia. Using method “difference – in- difference” we estimated the impact effect of policy (introduction “soda tax”) on the obesity and overweight for total respondents and different social and demographic groups, particularly.

The method “difference-in-difference” (DID) is based on the analysis of result, which is equal delta for treatment – delta for control. Delta for treatment is difference in treatment group for average values for dependent variable BMI after implementation of action (“soda tax”) and average values for dependent variable BMI before implementation. Delta for control is difference in control group for average values for dependent variable BMI after implementation of action (“soda tax”) in treatment group and average values for dependent variable BMI before implementation.

The results of the estimation of DID model for indicator “Obesity” for total respondents in US states are given in table 2.

Table 2 The results of the estimation of DID model for indicator “Obesity” for total respondents in US states

Variables in the model	Obesity (% of respondents with BMI>30,0)
$D_{Treat,i}$	-2.757971* (1.47184)
$D_{Post,i}$	6.308696*** (0.7070493)
$D_{Treat,i} \cdot D_{Post,i}$	-1.630362 (2.081497)
constant	27.8413*** (0.4999593)
R-squared	0.4927
# of observation	104

\*(p<0,1),\*\* (p<0.05), \*\*\*(p<0.01)

Source: own elaboration in STATA

As we can see, the estimate for parameter  $\delta_T$  (1.tax) is negative and statistically significant at  $p<0.1$  and estimate  $\delta_P$  (1.post) is positive and statistically significant at  $p<0.001$ , but the estimate  $\delta_{DD}$  (tax##post) is not statistically significant.

Thus, it is necessary to consider the policy effect (introduction “soda tax”) in more homogenous groups, such as same age, educational level or race/ethnic group. Also it is necessary to modify the initial model and consider the time effect and non-parallel trends, introduce the other explanatory variables, which can have an impact on obesity and overweight (consumption of alcohol, fast foods, bad health status and low level of physical activities).

For the total respondents we analyzed the policy effect of introduction of “soda tax” on the overweight and the results were similar. In this research the simple version of model based on



the analysis of DID effect was used. In meantime, the more appropriate models for the analysis of the policy effects in the different states and different social and demographic groups should be used. It is necessary to analyse the dynamic models based on the panel data with inclusion of the set with additional explanatory variables. Then, using panel data models of the dynamics of the proportions of the population with obesity in the US states for the period 2011-2022 the estimation of fixed and random effects can be provided, the Hausman test to select the most appropriate dynamic model can be used.

It should be noted also that there are some research addresses how sugar-sweetened-beverage (SSB) / “soda” taxes affect consumption and projected or measured impacts on overweight/obesity across income and demographic groups in the EU. Thus, Chatelan, A. et al. (2023) compare four European countries that introduced or increased a soda tax during the study period (Finland, France, Belgium, Portugal) with five neighboring countries that did not have such a tax. The authors suggest that taxing sugary drinks could be an equitable public health measure — effective across SES groups and potentially more beneficial for lower-affluence youth. However, they note important heterogeneity across countries, likely due to differences in tax size, implementation, baseline consumption, and other social or cultural factors.

The recent modelling (Emmert-Fees K.M.F et al., 2023) estimates small but measurable reductions in sugar intake and downstream effects on obesity in Germany. This study supports SSB taxes as a cost-effective public health intervention, but real-world effects will depend on implementation, price pass-through, and complementary measures.

The study (Hattersley & Mandeville, 2023) provides a comprehensive review of global coverage and design of SSB taxes. The design of SSB taxes in Europe & Central Asia shows a relatively sophisticated approach: use of specific excise taxes and sugar-content tiering in many places. This is important because this kind of design is more likely to influence sugar content in beverages (manufacturers reformulating) and potentially achieve greater health impact. However, because only ~39% of the population in Europe & Central Asia is covered by such national taxes (per their 2022 database), coverage remains limited in many European countries, which may constrain the potential public health reach of SSB taxation in the region.

### 5. Conclusion

To summarize the results of the current studies and our research it is possible to conclude that, it is necessary: to consider the policy effect (introduction “soda tax”) in more homogenous



groups, such as same age, educational level or race/ethnic group; to modify the initial model and consider the time effect and non-parallel trends, introduce the other explanatory variables, which can have an impact on obesity and overweight (consumption of alcohol, fast foods, bad health status and low level of physical activities).

In addition, as next stage for future research will be included the development of series of models. The particular models will be developed for respondents in young and middle age with low income (less than 15,000 \$) and low education (less than H.S.) and different age groups: 1 – (18-24) y.o.; 2 – (25-34) y.o.; 3 – (35-44) y.o. and different race/ethnicity: 1 – White, non-Hispanic; 2 – Black, non-Hispanic; 3 – Hispanic will be taken into account. These models allow to analyse the specific risk for such groups and identify the target groups in the states or regions with higher values of the proportion of the population with obesity and overweight. In this regards, the health policy based on the analysis of the specific needs and problems in consumption behavior and life style of the different groups of the population with obesity and overweight will be more efficient.

Simultaneously, it is important to conduct research on this issue with consideration of each country's unique characteristics and national taxation structures.

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# THE INFLUENCE OF FOMO ON THE ADOPTION OF FACIAL RECOGNITION PAYMENT SYSTEMS: A THEORETICAL FRAMEWORK

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## ABSTRACT

### Purpose:

This paper explores the theoretical foundations of the adoption of facial recognition payment systems (FRPS) and how cognitive bias can influence the behavioral intention of users to adopt this emerging technology. The aim of this paper is to develop a comprehensive theoretical framework that extends the Technology Acceptance Model (TAM) with the components of FOMO (Anticipated Regret, Social Comparison, and Counterfactual Thinking) to identify factors affecting user acceptance of FRPS in China and determine FOMO's influence on users' behavioral intention to adopt this emerging mobile technology.

### Design/methodology:

A wide-range of research studies from academic journals and relevant publications were carefully selected and reviewed. Hypotheses were formulated based on the findings of previous technology adoption researches that utilized the components of the TAM (Perceived Usefulness, Perceived Ease of Use, and Attitude) and FOMO (Anticipated Regret, Social Comparison, Counterfactual Thinking). A corresponding theoretical framework that shows the relationships between the constructs based on the hypotheses was formulated, demonstrating the influence of FOMO on the adoption of facial recognition payment systems.

### Findings:

This paper developed a comprehensive theoretical framework that integrates the components of the Technology Acceptance Model (TAM) with the components of FOMO (Anticipated Regret, Social Comparison, and Counterfactual Thinking). It demonstrates the correlation between the constructs based on the formulated hypotheses and identifies the factors affecting user acceptance of FRPS. In addition, it also shows how FOMO can impact the behavioral intention of users to adopt an emerging mobile technology.

### Research/practical implications:

Understanding the factors that affect the behavioral intention of users to adopt FRPS can enable marketing managers of mobile payment service providers (e.g. WeChat, Alipay) to identify what aspects they should emphasize on their promotional campaigns (e.g. value, utility, convenience, etc.). For example, by explicitly highlighting the potential future regret that individuals might experience if they fail to adopt FRPS or by showing the total number of active users on the user interface of the app, users will more likely use FRPS when they pay as they often act in such a manner to minimize regret and reduce uncertainty.

### Originality/value:

The theoretical framework of this paper can be easily extended/applied to other types of digital biometric payments. The integration of the three components of FOMO (Anticipated Regret, Social Comparison, and Counterfactual Thinking) to extend the TAM is a pioneering approach

in technology acceptance research. Moreover, the identification of the influence of the three components of FOMO to the behavioral intention of users is a significant contribution in technology adoption literature, especially Anticipated Regret since little has been known about its role on the behavioral intention to adopt a given technology.

**Keywords:** Facial Recognition Payment Systems, Technology Adoption, FOMO, Theoretical Framework

**JEL Classification:** G41, O30, Q55

## 1. Introduction

Over the past decades, China has been the hotspot for innovative and modern technologies. One notable example of these emerging technologies in China is facial recognition that can quickly and accurately detect and measure facial characteristics. Among the various biometric features (e.g. fingerprint, palmprint, voice, and face attributes), the face is one of the main physiological traits that can be collected and analyzed by biometric systems (Maity, Abdel-Mottaleb, & Asfour, 2021). Big Chinese tech firms such as Baidu, Alibaba, and Tencent have developed world-leading facial recognition technologies that offer high recognition accuracy and fast speed. With its continuous progress and breakthroughs related to this emerging technology, algorithms based on face recognition continue to be updated and developed (Liu, Yan, & Hu, 2021).

Advancement in the facial recognition technologies paved way to the increasing popularity of facial recognition payment systems (FRPS) in China. This innovative digital payment method enables users to authorize a payment transaction using their face once they have connected their facial information to their online payment account or bank account (Zhang & Kang, 2019). As one of the novel biometric payment methods, FRPS has gained attention as it provides an efficient and convenient payment process (Achim, 2020).

With the ever-increasing development of technology and its integration into user's private and professional life, a decision regarding its acceptance or rejection still remains an open question (Marangunic & Granic, 2015). For mobile technologies (e.g. facial recognition payment systems), it is important to understand how specific factors influence the use of such technologies (Amoroso & Lim, 2013). After reviewing several related studies in various fields and applications, the researcher selected and adopted Fred Davis' Technology Acceptance Model (TAM) as the fundamental theory for this study. It is a valid and robust model that has been utilized widely to analyze user acceptance of a particular technology (King & He, 2006). One of the suggested applications of TAM is measuring user acceptance of "emerging

technology” as they surface in the market (Davis & Venkatesh, 1996), making it ideal in understanding the user acceptance of FRPS in China.

## 2. Literature review/theoretical background

According to a prior study, there are still several unexplored areas of the TAM that could contribute to its predictive validity, in spite of an increasing number of studies that revealed new factors with significant influence on the model’s core variables (Marangunic & Granic, 2015). Despite the suggestion from a previous study to incorporate social factors to the TAM in order to increase its predictive capability (Legris, Ingham, & Collette, 2003), the researcher discovered that cognitive biases (a systematic, predictable, and replicable pattern of deviation from rational judgment) have received very little attention and remain largely overlooked in technology acceptance research (Ciriello & Loss, 2023).

In order to fill this research gap and contribute to its limited literature, the researcher extends the TAM with a cognitive bias called Fear of Missing Out (FOMO). According to the definition from a prior study, FOMO is an affective and cognitive experience based on the perceived discrepancy between individuals’ current and possible experiences as well as that between their experiences and the ones their immediate and extended social environment is having (Neumann, 2020). In terms of technology adoption, the findings of a previous research show that corporate decision makers in Austria suggests that FOMO is positively related to the intension to adopt to new technology (Gartner, Fink, & Maresch, 2022). In addition, FOMO also has a positive effect in user’s intention to use cryptocurrency investment platforms (Deb & Dr. Deb, 2024). Thus, the researcher posits that FOMO, through its affective (Anticipated Regret) and cognitive (Social Comparison and Counterfactual Thinking) components, positively influences the users’ intention to use FRPS in China.

### 2.1 Technology Acceptance Model

The Technology Acceptance Model (TAM) is a theoretical model (see Figure 1) developed by Fred Davis based on the Theory of Reasoned Action and Theory of Planned Behavior. It aims to improve our understanding of user acceptance processes by providing new theoretical insights into the successful design and implementation of information systems. It is a common approach in the field of Information Management (Taherdoost, 2017) and has been applied to many studies regarding adoption behavior related to various information technologies and systems. It is important to note that TAM is not the end point of technology introduction (Turner,

Kitchenham, Brereton, Charters, & Budgen, 2010), and it does not measure the benefit of using a technology (Dybå, Moe, & Arisholm, 2005). Its main application is to understand the factors that affect users' attitudes and intention that lead them to use such technology.

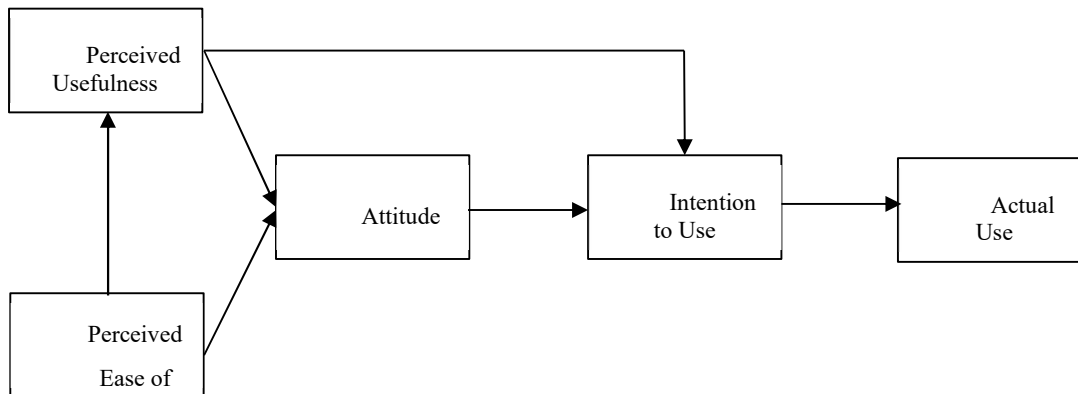


Figure 1 The Original Technology Acceptance Model  
Source: Fred Davis, 1985

### 2.1.1 Perceived Usefulness (PU)

In this paper, Perceived Usefulness (PU) refers to the degree to which an individual believes that using FRPS would enhance their payment experience. A research regarding mobile wallet (Shin, 2009) and a study about a disruptive technology in Austria (Schmidhuber, Maresch, & Ginner, 2018) indicates that perceived usefulness has a positive effect on users' attitude. Therefore, the researcher posits that:

*H<sub>1</sub>: Perceived usefulness has a positive effect on the user's attitude toward FRPS*

*H<sub>2</sub>: Perceived usefulness has a positive effect on the intention to use FRPS.*

### 2.1.2 Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) is defined in this paper as the degree to which a user believes that using FRPS would be free of cognitive effort. According to a prior study about the consumers' acceptance of mobile wallet, the ease of use of mobile wallet services maybe conducive to reaching a higher level of attitude towards its usage (Shin, 2009). Another research also suggests that perceived ease of use has a significant link to attitudes towards m-money (Gbongli, Xu, & Amedjonekou, 2019).

Despite not being explored in the original version of the TAM, the direct effect of perceived ease of use to the users' intention to adopt a technology was proven in previous researches,

including a recent study that shows that perceived ease of use positively influences the behavioral intention of consumers to use mobile payments (Tian & Chan, 2024).

Furthermore, perceived ease of use also has significant direct effect on perceived usefulness, since, all else being equal, a system which is easier to use will result in increased performance (i.e. greater usefulness) for the user (Davis, 1989). This is consistent with the findings of a meta-analysis conducted based on 26 selected empirical studies, stating that one of the strongest correlation in the TAM is the relationship between perceived ease of use and perceived usefulness (Ma & Liu, 2004). Likewise, in Finland, Germany, USA and Japan, the perceived ease of use of mobile payment platforms also has a positive influence on its perceived usefulness (Guhr, Loi, Wiegard, & Breitner, 2013). With these prior research findings, the researcher suggests that:

*H<sub>3</sub>: Perceived ease of use has a positive effect on the user's attitude toward FRPS.*

*H<sub>4</sub>: Perceived ease of use has a positive effect on the intention to use FRPS.*

*H<sub>5</sub>: Perceived ease of use has a positive effect on perceived usefulness of FRPS.*

### 2.1.3 Attitude (ATT)

Attitude (ATT) in this paper is defined as the evaluation of users toward the consequences of using Facial Recognition Payment System (FRPS) when paying (Ajzen & Fishbein, 2005). Based on the results of a previous study, the most influential variable on intention to use mobile payment is the attitude, as it is essential to increase the intention and subsequent use of the proposed technology (Liébana-Cabanillas, Ramos de Luna, & Montoro-Ríos, 2015). Attitude is also positively related to the users' intention to use Alipay, one of the leading platforms for payments and digital services in the China (Li, Wang, Wang, & Zhou, 2019). Taking these related literatures into account, the researcher hypothesizes that:

*H<sub>6</sub>: Attitude has a positive effect on the intention to use FRPS.*

### 2.2 Fear of Missing Out (FOMO)

The TAM is a valid and robust model that has been widely used and has potential to have wider applicability (King & He, 2006). In fact, the TAM has been extensively used by researchers with minor modifications (Davis & Venkatesh, 1996). This research extends the TAM with Fear of Missing Out (FOMO), a cognitive bias that was originally defined in academic research as a pervasive apprehension that others might be having rewarding

experiences from which one is absent and is characterized by the desire to stay continually connected with what others are doing (Przybylski, Murayam, DeHaan, & Gladwell, 2013).

In this paper, FOMO's theoretical definition will follow the proposed definition of a prior study that defines FOMO as an affective (Anticipated Regret) and cognitive (Social Comparison and Counterfactual Thinking) experience based on the perceived discrepancy between individuals' current and possible experiences as well as that between their experiences and the ones their immediate and extended social environment is having (Neumann, 2020). It is also the basis of the suggested economic definition proposed by Kaddouhah (2024), which states that "FOMO causes individuals to base their decision-making utility on their own anticipated regret and the decisions made by individuals in their social group." Another study also suggests that FOMO is divided into three dimensions: sense of self, social interaction, and social anxiety (Abel, Buff, & Burr, 2016). Following the suggestions from related researches, this study will adopt the Anticipated Regret, Social Comparison, and Counterfactual Thinking as the key determinants/components of FOMO.

### 2.2.1 Anticipated Regret (AR)

Anticipated Regret (AR), also referred to as Anticipatory Regret, is the affective component of FOMO (Neumann, 2020). It means that individuals anticipate the disagreeable effects of what they might feel in case of regret and seek to protect themselves before they make a decision (Huang, Li, & Su, 2022). Perceived discrepancies in expected outcomes between a choice and its alternatives can induce anticipated regret (Shih & Schau, 2011). In this paper, Anticipated Regret is defined as the induced emotion that users experience if they miss out on the opportunity to enjoy the potential benefits of using FRPS when paying (Ding, 2018). A research about continued use of information systems in China shows that the degree of anticipated regret of users after halting their usage of a specific mobile application is positively related to their intention to continue using it (Ding, 2018). Another study suggests that anticipated regret positively influences the intention of users to adopt mobile payment systems (Verkijika, 2020). In line with previous studies, the researcher posits that:

*H7: Anticipated regret has a positive effect on the intention to use FRPS.*

### 2.2.2 Social Comparison (SC)

Based on the Social Comparison Theory, the Social Comparison construct centers on the belief that individuals drive to gain accurate self-evaluations and explains how individual

evaluate their opinions and abilities by comparing themselves to others to reduce uncertainty (Festinger, 1954). In this paper, Social Comparison is defined as the tendency of FRPS users to compare their payment method to what others are using in order to evaluate their situations within the context of a group or society (Neumann, 2020). A technology acceptance research in South Korea indicates that individual users' tendencies to social comparison have a positive impact on their behavioral intention to use Avatar in virtual communities (Kim & Song, 2006). Another research also indicates that the two significant variables of Social Comparison (informational influence and value-expressive influence) significantly influence the user acceptance of electronic vehicles (Shanmugavel, Alagappan, & Balakrishnan, 2022). Therefore, the researcher proposes that:

*H<sub>8</sub>: Social comparison has a positive effect on the intention to use FRPS.*

### 2.2.3 Counterfactual Thinking (CT)

The other half of the cognitive component of FOMO is called Counterfactual Thinking (also known as Counterfactual Thoughts). It is often evaluative, specifying alternatives that are in some tangible way better or worse than actuality (Epstude & Roese, 2008). After a decision has been made and some kind of feedback on the chosen alternative is received, people tend to engage in counterfactual thinking, which is the process of individuals asking themselves, "What could have been?" (Neumann, 2020). Counterfactual Thinking in this paper is defined as the user's view of Facial Recognition Payment System (FRPS) as an alternative to other payment methods that they have used in the past (Epstude & Roese, 2008). According to a prior study, counterfactual thinking of users significantly influences their intention to use digital health tracking tools (Wang, Bublitz, & Zhao, 2021). A study in China about people's satisfaction also indicates that counterfactual thinking significantly affects anticipated regret, i.e. more counterfactual thinking induces more anticipated regret (Li, Ye, Deng, Zhao, & Shi, 2022). With these related theories and research findings, the researcher proposes that:

*H<sub>9</sub>: Counterfactual thinking has a positive effect on the intention to use FRPS.*

*H<sub>10</sub>: Counterfactual thinking has a positive effect on the anticipated regret of FRPS users.*

## 3. Theoretical framework

In line with the aforementioned theories and hypotheses (see Table 1), the researcher proposes a corresponding theoretical framework to evaluate the relationships among the determinants of the Technology Acceptance Model and FOMO, and to analyze their influence

to the behavioral intention of users to adopt facial recognition payment systems in China (see Figure 2).

Table 1 Research Hypotheses

No.	Hypotheses	Directions
H <sub>1</sub>	Perceived usefulness has a positive effect on the user's attitude toward FRPS.	PU + → ATT
H <sub>2</sub>	Perceived usefulness has a positive effect on the intention to use FRPS.	PU + → ITU
H <sub>3</sub>	Perceived ease of use has a positive effect on the user's attitude toward FRPS.	PEOU + → ATT
H <sub>4</sub>	Perceived ease of use has a positive effect on the intention to use FRPS.	PEOU + → ITU
H <sub>5</sub>	Perceived ease of use has a positive effect on perceived usefulness of FRPS.	PEOU + → PU
H <sub>6</sub>	Attitude has a positive effect on the intention to use FRPS.	ATT + → ITU
H <sub>7</sub>	Anticipated regret has a positive effect on the intention to use FRPS.	AR + → ITU
H <sub>8</sub>	Social comparison has a positive effect on the intention to use FRPS.	SC + → ITU
H <sub>9</sub>	Counterfactual thinking has a positive effect on the intention to use FRPS.	CT + → ITU
H <sub>10</sub>	Counterfactual thinking has a positive effect on user's anticipated regret toward FRPS.	CT + → AR

Source: Author

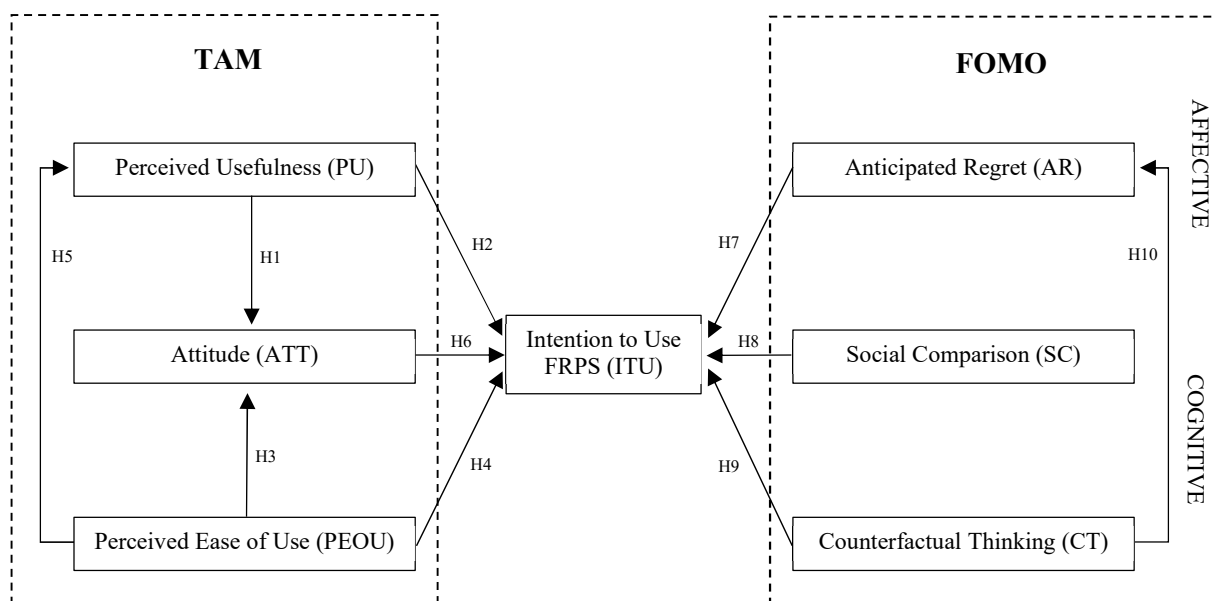


Figure 2 Theoretical Framework of the Influence of FOMO on the Adoption of Facial Recognition Payment Systems

Source: Author

#### 4. Conclusion

This paper developed a comprehensive theoretical framework that identifies the factors that affect the users' acceptance of FRPS in China, which can also be easily extended/applied to other types of digital biometric payments. It is worth noting that this study's integration of the three aforementioned components of FOMO to the TAM is a pioneering approach in technology acceptance research. Overall, this paper contributes to the growing literature related to biometric payment system adoption, and serves as a significant contribution to the limited technology adoption studies that incorporate a cognitive bias as a main construct.

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## INSTITUTIONAL AND GOVERNMENT SUPPORT FOR SELECTED ELEMENTS OF LEARNING REGIONS

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### ABSTRACT

#### **Purpose:**

This paper aims to analyze the role of institutional and governmental support for entrepreneurship in the Czech Republic, particularly in the context of the concept of learning regions. It explores how innovation infrastructure (e.g., clusters, technological platforms, science and technology parks, incubators, and spin-off companies) and inter-sectoral cooperation between the public, academic, and private sectors contribute to regional development and innovation.

#### **Design/methodology:**

The main method employed in this research is secondary data analysis, primarily desk research, which involves collecting and analyzing data from publicly available online materials such as reports, articles, statistics, and government documents. The aim is to understand the support mechanisms for innovation infrastructure and regional development.

#### **Findings:**

The analysis reveals that the Czech government and the European Union have implemented various supportive measures, including funding schemes, policy initiatives, and strategic collaborations that foster innovation and inter-sectoral cooperation. However, challenges in coordination between sectors and regions remain, and there is a need for more efficient integration of academic, private, and public sector efforts to achieve sustainable regional development.

#### **Research/practical implications:**

The paper suggests that to enhance innovation and entrepreneurship in the Czech Republic, it is essential to strengthen inter-sectoral collaboration and create more targeted support mechanisms for innovation infrastructures such as clusters and incubators. Future research should focus on evaluating the effectiveness of specific policy measures and exploring best practices from regions.

#### **Originality/value:**

The originality of this paper lies in its focus on the intersection of government support, institutional frameworks, and regional development, particularly in the context of learning regions. It offers new insights into how these elements can be leveraged to enhance innovation and entrepreneurship, contributing to regional growth and economic competitiveness.

**Keywords:** Learning regions, Entrepreneurship support, Innovation infrastructure

**JEL Classification:** R11, O3



## 1. Introduction

Entrepreneurial support in the Czech Republic is a crucial element of economic development, particularly within the framework of learning regions. These regions emphasize knowledge exchange, innovation, and cooperation between businesses, academic institutions, and government entities. The Czech government and the European Union (EU) actively contribute to fostering entrepreneurship through various policies, financial incentives, and innovation-oriented programs. This paper analyzes the role of institutional and governmental support for entrepreneurship in the Czech Republic, with a specific focus on innovation infrastructure, clusters, technological platforms, science and technology parks, incubators, and spin-off companies. The aim is to find out what types of support are available in the Czech Republic and this information will be used for further research related to the theory of the learning region in the application to the Czech Republic in the form of examining the level of support in individual regions.

## 2. Literature review/theoretical background

### Theory of Learning Regions

Learning regions effectively utilize and develop knowledge, innovation, and cooperation to ensure economic growth and competitiveness. Their key characteristics include generating innovations, fostering collaboration, and deepening knowledge. Innovation is a fundamental pillar of learning regions. These regions promote creativity and the development of new products, services, and processes through investments in research, development, and education—such as the establishment of technology parks, startup development, and support for digital solutions.

The concept of learning regions was developed in the 1990s by several authors examining the relationship between knowledge creation, innovation, and regional development. Asheim (1996) described learning regions as territories characterized by strong institutional frameworks that promote continuous learning and knowledge exchange among firms, research institutions, and governments. Maskell and Malmberg (1999) emphasized the importance of localized learning—the ability of firms in close geographic proximity to share knowledge and build competitiveness through interaction. Florida (1995) linked the concept to the idea of a creative and adaptive regional economy, arguing that learning regions thrive when they foster creativity, openness, and collaboration across institutional boundaries. In essence, these theories underline that regional competitiveness depends not only on infrastructure and funding but also on the



quality of social networks, knowledge diffusion, and institutional learning processes that enable continuous innovation.

Collaboration involves effective connections between regional actors, including businesses, universities, research institutions, and public administration. Mutual cooperation intensifies the exchange of knowledge and resources, strengthening synergistic effects, such as partnerships between industry and academia. A crucial aspect is the flow of knowledge among stakeholders. Learning regions actively facilitate the sharing of experiences and know-how through both formal and informal mechanisms, such as international research projects, professional workshops, and conferences.

The public sector plays a key role in creating conditions that enable business development, which is an essential part of the learning region concept. Business support includes a legislative framework, which involves creating laws and regulations that facilitate entrepreneurship (e.g., tax incentives for innovative companies). Another element of support is financial aid, including grants, investment incentives, and subsidies. Advisory and educational services, such as programs aimed at developing entrepreneurial skills and innovation capacity, are also part of government assistance. Lastly, innovation policy is crucial, focusing on strategies that support research, development, and technology transfer (Ministry of Industry and Trade, 2024).

### **Regional Innovation Systems (RIS)**

The concept of Regional Innovation Systems (RIS) focuses on structures and processes that support innovation and technological progress in regions. One of the core principles of this concept is leveraging the natural potential and unique characteristics of each region. The goal is to promote endogenous economic and social development based on local resources. However, this process must be enriched by external stimuli and an inflow of knowledge, which contribute to expanding opportunities and strengthening innovation (Adámek, Csank, Žížalová, 2007). The RIS approach involves cooperation between businesses, research institutions, public institutions, and other stakeholders.

A Regional Innovation System (RIS) comprises a network of actors, institutions, tools, and processes that collectively create an environment conducive to innovation within a specific region. Its aim is to enhance the region's competitiveness through the promotion of innovation, technological advancement, collaboration between entities, and knowledge transfer. In a way, it can be equated with the innovation infrastructure of a given area.



RIS includes both the public and private sectors, with key players such as universities, research institutions, innovation centers, technology parks, business incubators, clusters, small and medium-sized enterprises (SMEs), and local public authorities. These actors are interconnected through various relationships and collaborations, enabling efficient information exchange, resource sharing, and the implementation of innovative projects. The public sector provides strategic frameworks, funding, and support through grant programs and public policies. These instruments often involve support for digitization, environmental projects, and business internationalization (Žitek, 2015).

The continuous development of human resources, enhancement of workforce skills, and educational programs focused on technological and managerial competencies are critical for ensuring long-term sustainability and regional competitiveness.

As Viturka (2010) notes, one of the objectives of regional policy is to support convergence, competitiveness, and employment, which directly aligns with the functioning of RIS. The financing of innovation activities and structural reforms through regional development programs is essential for the effective operation of RIS, which serves as a tool for regional development.

From a regional policy perspective, RIS plays a crucial role in achieving objectives such as digitization, green transformation, and business internationalization. The funds allocated for regional development support are not merely investments in specific projects but also in the overall enhancement of regional innovation capacity, with a broad impact across multiple areas. It is evident that the theory of learning regions and regional innovation systems share many common goals. RIS can be understood as the implementation of strategies designed to help realize the vision of learning regions.

This study builds upon these theoretical frameworks to assess how government and institutional support contribute to the development of a knowledge-based economy in the Czech Republic. By analyzing secondary data, the paper explores whether existing support mechanisms effectively enhance innovation and inter-sectoral cooperation, ultimately promoting regional economic resilience.

### 3. Methods

This research primarily relies on secondary data analysis, specifically desk research, which entails gathering and examining information from publicly accessible sources, including



reports, articles, statistical data, and government publications. The objective is to gain insight into the support mechanisms for innovation infrastructure and regional development.

#### 4. Results and discussion

There are many programs and institutions aimed at supporting entrepreneurship. Most of these projects have similar objectives. The most common goals include deepening digitalization, i.e., introducing new technologies into production and services; green transformation, which focuses on developing ecological technologies and products; and international cooperation, such as connecting regional clusters with European partners within EU-funded projects. These goals complement and support each other, as digitalization enables more efficient production, often linked to ecological solutions, while also facilitating communication and knowledge sharing at an international level. This approach aligns with the objectives of regional policy, as mentioned by Víturka (2010), who cites convergence, regional competitiveness and employment, and European territorial cooperation as key regional policy goals. Funds allocated for regional and structural policy are redistributed through relevant development programs, which often include projects focused on digitalization, green transformation, and international cooperation. This support system functions as an interconnected whole, where different areas of innovation development can collaborate and complement each other. In the Czech Republic, the key overarching document in this area is the Innovation Strategy of the Czech Republic.

Although numerous programs exist (OP TAK, TA ČR, CzechInvest, RIS3, etc.), their effectiveness is limited by fragmented coordination between national and regional levels. Evaluation reports (e.g. MPO 2024; RIS3 2022) show overlaps in funding priorities and insufficient feedback mechanisms between policy makers and end-users (firms, universities). The support structure is thus more descriptive than performance-oriented. Moreover, regional disparities persist, as innovation infrastructures are concentrated mainly in metropolitan regions (Brno, Prague, Ostrava), which contradicts the inclusivity goal of learning regions (Asheim, 1996). To enhance efficiency, better integration of monitoring and evaluation indicators is needed — for instance, measuring knowledge transfer intensity or regional learning capacity, not just fund absorption.

#### **Innovation Strategy of the Czech Republic**

The Innovation Strategy for the period 2019–2030 was approved by a resolution of the Government of the Czech Republic. This document represents a strategic plan that determines



government policy in the field of research, development, and innovation, aiming to help the Czech Republic become one of the most innovative countries in Europe within twelve years. The strategy consists of nine interconnected pillars, including key starting points, strategic objectives, and tools for their achievement. These areas include financing and evaluation of research and development, innovation and research centers, the national environment for start-ups and spin-offs, polytechnic education, digitalization, mobility and construction environment, intellectual property protection, smart investments, and smart marketing (Council for Research, Development, and Innovation, 2019).

### **Supported Elements of Innovation Infrastructure**

Elements of innovation infrastructure represent key components of the regional innovation system (RIS) that support the emergence, development, and dissemination of innovations. Below are some of the key elements.

#### **Clusters**

According to Porter (1998), clusters represent geographically concentrated groups of interconnected firms, institutions, and other entities operating in a specific sector or technology. Clusters serve as one of the main mechanisms for linking key actors in learning regions. These entities collaborate while competing, stimulating innovation and growth. Clusters enable firms, universities, and public administration to collaborate effectively, share knowledge, and create innovative solutions. By sharing resources and know-how, actors in clusters can achieve better results in the global market. These groups of firms often function as platforms for experimentation, research, and testing of new technologies. In many European countries, clustering has become a fundamental pillar of industrial, regional, and innovation policy. Public institutions actively support the establishment and development of clusters to strengthen regional competitiveness (Pavelková et al., 2009). Clusters connect actors from various sectors, creating a platform for resource and knowledge sharing. Joint projects and information exchange support the development of new technologies and services. Firms involved in clusters benefit from improved infrastructure, access to financing, and expertise, thereby enhancing their overall competitiveness. Cluster development also contributes to job creation and workforce qualification enhancement. The support of clusters is overseen by the National Cluster Association of the Czech Republic (CzechInvest, 2007). There are currently 109 clusters in the Czech Republic.

#### **Science and Technology Parks (STP)**



Švejda et al. (2007) define science and technology parks as institutions focused on science, technology, and innovative entrepreneurship. Their goal is the dynamic development of innovative companies and education in innovative entrepreneurship. Science and technology parks (STPs) are key institutions of supportive innovation infrastructure that foster regional economic development. Their main activities include technology transfer support—connecting research institutions and companies to commercialize research results; cluster creation—STPs often function as cluster hubs in specific industries; and providing space for spin-off companies—offering university-founded firms opportunities for growth and development. STPs are becoming part of regional development plans and prepared structural funds (Association of Science and Technology Parks, 2025). Examples of such institutions include the Řež Science and Technology Park and the Chomutov Technology Park. There are 32 STP in the Czech republic.

### **Business and Innovation Centres (BIC)**

BICs fall under the category of STPs. They serve as centers supporting start-ups and developing business projects with innovation potential. Their long-term focus is on fostering collaboration between businesses, research institutions, and universities to stimulate growth and development. They also provide consultancy and mentoring in marketing, finance, and legal matters. Additionally, they offer office and laboratory spaces under favorable conditions for start-ups. BICs assist financially by helping obtain grants and investments (BIC Ostrava, 2010). Business and Innovation Centres can be found in cities such as Plzeň, Ostrava, and Brno (BIC, 2025).

### **Spin-off Companies**

Spin-off companies are founded at universities or research institutions, transforming academic research results into practical applications. Establishing a spin-off company provides financial benefits both to the university—through equity shares or licensing—and to the intellectual property creator. The commercialization process is much easier through a spin-off company than directly via the university. At the same time, the spin-off company gains access to collaboration with the university, strengthening its development and innovation. Spin-off companies in the Czech Republic are most commonly established by universities and institutes of the Czech Academy of Sciences. An example is the Spin-off Platform MUNI (CTT MUNI, 2025).

### **Incubators**



Incubators also provide support to startups and emerging entrepreneurs. Their primary functions include mentoring, offering guidance in marketing, legal matters, and strategic management; networking, facilitating connections with investors and business partners; business Support, assisting in securing funding and workspace.

An example of an incubator in the Czech Republic is the JIC Incubator at the Science and Technology Park in Brno, which focuses on hi-tech startups. Another example is the Innovation Incubator at Brno University of Technology (VUT), where academic research is connected with industrial practice (CzechInvest, 2025).

### **Government and EU Support for Entrepreneurship**

In the Czech Republic, entrepreneurship and innovation support are provided by several key institutions, primarily the Ministry of Industry and Trade (MPO), the CzechInvest agency, and the Technology Agency of the Czech Republic (TA CR). Given the wide range of business support programs, only some existing projects are introduced below.

#### **Ministry of Industry and Trade (MPO)**

The MPO focuses on business support through various operational programs, such as the National Recovery Plan, which is prepared by the Ministry of Industry and Trade. It is divided into six main areas receiving financial support—infrastructure development and transition to greener solutions, education improvement and labor market strengthening, transition to a digital economy, healthcare improvement, research, technology, and innovation support, and institutions, regulation, and business support in response to the COVID-19 pandemic (Overview of Grants, 2025).

One of the supporting programs is OP PIK (Operational Program Enterprise and Innovation for Competitiveness), which supported cluster organizations in 2014–2020. It focused on financing infrastructure, promotion, and international cooperation. The MPO informed about successful projects in its newsletters. One example is Plastigram Industries, which developed an innovative processing device for recycling paper-based beverage cartons (MPO, 2022). The currently ongoing program OP TAK (Technology and Applications for Competitiveness) follows OP PIK. Planned for 2021–2027, its objectives include supporting digitalization, sustainable technologies, and innovation (Ministry of Industry and Trade, 2024).

Further business support occurs through regional innovation strategies (RIS3 strategy). The National Research and Innovation Strategy for Smart Specialization of the Czech Republic 2021–2027 (RIS3) is a strategic document focused on the efficient use of European, national,



and regional resources to support applied research and innovation. Its goal is a resilient economy based on knowledge and innovation.

Other EU-supported programs include Horizon Europe, the European Regional Development Fund (ERDF), and COSME, each aiming to enhance research, development, and SME support across Europe.

### **CzechInvest**

The key government agency providing services for the creation and development of clusters is CzechInvest. It was established to support and promote investments, business, and innovation, not only for foreign investors but also for domestic companies. The support includes promotion, networking, organizing specialized seminars, and facilitating foreign contacts. It is primarily focused on non-financial assistance to organizations, such as knowledge transfer (CzechInvest, 2025). CzechInvest also aims to support business in less developed regions of the Czech Republic, helping to reduce regional disparities in the business environment. They also support startups and clusters. On its website, CzechInvest displays statistics of investment projects, with over 2,000 projects leading to the creation of more than 300,000 new jobs. Surprisingly, the most common projects in most regions are focused on the automotive industry (CzechInvest, 2025).

### **TAČR**

The Czech Technology Agency (TA ČR) also focuses on supporting research, experimental development, and innovation. Its goal is to strengthen and support collaboration between research institutions and businesses. Through its programs, TA ČR selects and finances projects focused on applied research and innovation, using both state funding and European Union resources. It serves as a tool of government policy in the areas of science, research, and innovation, coordinating various programs that aim to support businesses, research organizations, and other entities involved in innovation activities. TA ČR is focused on industry and technology, as well as sustainable development. Successful projects include the Autonomous Robotic Construction System, invented by the company DEK, a.s. in collaboration with the Czech Technical University (TA ČR, 2025).

Other programs supporting business through RIS include Horizon Europe, the European Regional Development Fund (ERDF), and COSME. The European Regional Development Fund (ERDF) is one of the key financial tools of the European Union's cohesion policy. It was established to reduce disparities in development levels across European regions and improve the quality of life in the most disadvantaged areas. ERDF focuses mainly on regions that face



long-term problems due to natural or demographic factors, preferring investments in regional clusters focused on sustainable development, research, and innovation. It also aims to connect research institutions with industry (Schwarz, 2024). A successful project financed by ERDF was the construction of the Biotechnology and Biomedicine Center of the Academy of Sciences and Charles University, which connects technical and natural sciences and will lead to the development of new innovations.

Horizon Europe Program is not only the largest but also, according to the European Commission, the most ambitious research and innovation initiative, currently defined for the period 2021–2027. The aim of this program is to achieve significant scientific, social, and economic benefits, support climate goals, and contribute to creating new high-quality jobs. Specific goals of the program include strengthening the scientific and technological base of the EU, achieving sustainable development goals, and boosting competitiveness and growth (Technological Centre Prague, 2024). One of the companies funded by this program is the Děčín-based company Chart Ferox, a.s., a manufacturer of cryogenic equipment and systems for the storage, transport, and final use of liquefied gases (Technological Centre Prague, 2024).

COSME is another example of a business support program, implemented between 2014 and 2020. It focused on supporting small and medium-sized enterprises (SMEs) and was funded directly by the European Commission from the EU budget. The program allowed companies in clusters to cooperate better and improve their competitiveness. For the period 2021–2027, its activities are part of the broader single market program, while financial tools have been incorporated into the InvestEU program. The funds support not only SMEs but also cities, municipalities, non-profit organizations, and government institutions (Eur lex, 2022). For example, this program enabled the Erasmus for Young Entrepreneurs initiative to strengthen the position and connection of entrepreneurs across borders.

The examples above represent just a small selection of many initiatives that have been or are being implemented in the Czech Republic. Many other projects are ongoing or waiting for approval, all with a common goal: to strengthen competitiveness, support the growth of the business environment, and contribute to sustainable development. The concept of learning regions focuses on the ability to quickly adapt to changes and innovations through the connection of businesses, public institutions, universities, and other organizations. Projects focused on supporting business, digitization, and innovation can thus play a key role in creating learning regions, where entrepreneurs rely not only on external funding but also on mutual



cooperation and sharing experiences, which enhances their competitiveness and overall regional resilience to economic challenges.

### 5. Conclusion

The aim of this article was to analyze the methods of institutional and governmental support for entrepreneurship in the Czech Republic and their contribution to regional development. The theoretical foundations of learning regions and regional innovation systems were briefly evaluated, emphasizing the importance of cooperation between the public sector, private enterprises, and academic institutions. These theories and concepts also highlight the significance of innovation, knowledge flows, and the interconnection of key actors within regions.

The practical part focused on describing and evaluating various forms of business support and innovation infrastructure in the Czech Republic. Key support mechanisms include clusters, technological platforms, science and technology parks, incubators, and spin-off companies, which collectively create conditions for innovation and an entrepreneurial environment. Attention was also given to governmental strategies such as the Czech Innovation Strategy 2019–2030 and RIS3, which define the main objectives and tools for supporting entrepreneurship at both regional and national levels.

The analysis reveals that business support in the Czech Republic is diverse and includes both financial and non-financial measures. Institutions such as the Ministry of Industry and Trade (MPO), CzechInvest, and the Technology Agency of the Czech Republic (TA ČR) play a key role in creating a business- and innovation-friendly environment. These organizations not only support the development of clusters and technological platforms but also strive to integrate Czech entities into international innovation networks, such as through the Horizon Europe program.

Institutional and governmental support for entrepreneurship is a crucial factor in regional economic development, and there are many programs available even for start-ups in the Czech Republic. Innovation infrastructure and cross-sector collaboration represent an effective way to enhance competitiveness and sustainable development. Future efforts should focus on further developing these initiatives to fully exploit the potential of the Czech innovation ecosystem.

While institutional and governmental support for entrepreneurship in the Czech Republic is extensive, its overall effectiveness in fostering learning regions remains limited. Future strategies should focus on measuring real learning outcomes (knowledge diffusion,

collaboration intensity) rather than only financial inputs. Strengthening cross-regional coordination and feedback loops among stakeholders would increase both the efficiency and the learning capacity of Czech regions.

Additionally, this article serves as a theoretical foundation for subsequent research related to the application of the learning region theory to the Czech Republic—specifically, to assess the extent to which individual regions utilize these support mechanisms, how many clusters exist in different areas, and how much funding is allocated to innovative companies in various regions.

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## PREDICTIONS OF INTEGRAL INDICES OF INDUSTRIAL DEVELOPMENT IN CEE COUNTRIES BY MEANS OF ARIMA

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### ABSTRACT

#### **Purpose:**

This study examines the industrial development of Central and Eastern European (CEE) countries using cluster analysis and ARIMA forecasting. It classifies countries by key industrial indicators and predicts future growth, identifying economic differences and trends. Analysing historical data and modelling provides insights into regional dynamics, supporting more informed policy, planning, and investment strategies.

#### **Design/methodology:**

A two-stage approach is used: first, hierarchical clustering classifies CEE countries based on nine industrial indicators, revealing similarities and differences. Second, ARIMA models forecast future cluster changes for long-term growth. This combination provides a robust framework, enhancing prediction reliability and facilitating a deeper understanding of regional industrial patterns.

#### **Findings:**

The results show five industrial clusters in CEE countries. Germany and Austria form the most advanced cluster, characterised by high output and stability. Slovakia, the Czech Republic, and others show intermediate or slower growth. ARIMA forecasts indicate growing disparities, suggesting divergence in industrial paths. These findings underscore the need for policies that bridge gaps and promote sustainable growth.

#### **Research/practical implications:**

This study offers valuable insights for policymakers, investors, and economists. Understanding the clustering of CEE countries by industrial indicators and forecasting trends helps decision-makers develop more effective regional strategies. The findings emphasise the need for tailored policies to address disparities between industrial clusters. Future research could include more macroeconomic variables or test different forecasting methods. This approach is adaptable for analysing industrial development in other countries, expanding its practical use.

#### **Originality/value:**

This research advances industrial economics by integrating cluster analysis and ARIMA forecasting, providing a data-driven perspective on past and future trends in CEE countries. Unlike studies that focus solely on historical or qualitative data, this approach provides a structured analysis of regional industrial development. The results support further research and give practical guidance for policymakers and investors seeking to boost regional industrial competitiveness.

**Keywords:** Cluster analysis, ARIMA, industrial development, CEE countries, economic forecasting

**JEL Classification:** C38, E32, L60

## 1. Introduction

Over recent decades, Central and Eastern European (CEE) countries have undergone significant economic transformations, having joined the EU and aimed for Western European industrial levels (Török, 2025b). Despite progress, the region still exhibits structural divergences, especially in industrial competitiveness, innovation, and resilience to shocks (Becker et al., 2010; Landesmann, 2013). Traditional industrial analysis often relies on historical or qualitative judgments; however, with increasing economic volatility and policy uncertainty, data-driven predictive models are becoming increasingly necessary. Time series forecasting, especially ARIMA models, effectively predicts industrial trends (Box & Jenkins, 1976; Hyndman & Athanasopoulos, 2018). This paper addresses a research gap by developing ARIMA forecasts for industrial indices in CEE countries. Hierarchical cluster analysis groups similar countries, providing a transparent framework for forecasting. Combining classification and forecasting offers a comprehensive view of regional industrial evolution. The study's core questions are:

- RQ1: How can CEE countries be classified into meaningful industrial development clusters based on integral structural indicators?
- RQ2: How are these clusters and their associated indicators expected to evolve, based on ARIMA forecasts?

By answering these questions, the paper enhances our understanding of industrial transformation patterns in CEE, aiding policymaking, planning, and investment decisions.

## 2. Literature Review

The industrial development of Central and Eastern European (CEE) countries has been a central theme in the research on transition and post-transition economies. Studies such as Drahokoupil (2009) and Havlik (2015) emphasise the dual processes of modernisation and external dependency shaping the region's industrial structures. Research by Becker et al. (2010) and Landesmann (2013) further highlights persistent asymmetries between CEE countries and Western Europe, despite overall economic convergence at the macro level. Recent studies highlight the importance of our approach. Török (2025a) used ARIMA and K-means clustering to analyse the EU's Summary Innovation Index, showing innovation gaps between leading and

lagging countries likely persist. Fatima et al. (2024) review time-series forecasting, affirming the continued use of ARIMA for linear trends despite its limitations with complex data. In economic convergence, hierarchical clustering has identified groups of countries with similar growth or institutional patterns (Osińska et al., 2025).

Cluster analysis has been widely used to classify economies based on structural and performance indicators. Everitt et al. (2011) show that hierarchical clustering reveals underlying group structures in complex datasets. In industrial economics, it identifies countries with similar development patterns, aiding comparisons and policymaking (Ketels, 2017). Parallel to classification approaches, time series forecasting helps predict economic developments. The ARIMA model, introduced by Box and Jenkins (1976), is a key tool for forecasting macroeconomic variables. Hyndman and Athanasopoulos (2018) highlight the versatility and robustness of ARIMA, especially in conjunction with modern validation techniques. Building on the research gap, this study combines cluster analysis and ARIMA forecasting into a unified framework. Most studies classify economies based on historical data or forecast indicators without considering structural differentiation. This study fills the gap by integrating cluster-based structural classification with ARIMA forecasting, providing a deeper understanding of industrial transformation in CEE countries.

### 3. Methodology

The study uses data from Eurostat and national statistical offices (2000–2023). The industrial development index, based on nine standardised indicators, mainly reflects productivity and investment efficiency.

- GVA\_E - Gross Value Added in the Enterprise Sector
- GFCF\_E - Gross Fixed Capital Formation in the Enterprise Sector
- Compensation\_E - Compensation of Employees in the Enterprise Sector
- Share GVA in Industry
- Share GFCF in Industry
- Share Compensation in Industry
- GVA\_per Employee\_Ratio
- GFCF\_per Employee\_Ratio
- Compensation\_per Employee\_Ratio

These indicators measure industrial productivity, investment, and labour costs across CEE countries. The composite index was calculated using the Helwig method (Helwig, 1968), which



is a technique based on minimising the distance from the ideal point. It aggregates standardised variables into a single index while maintaining the multidimensional structure. For more details, see Helwig (1968) or later studies, such as Kowalski (2015). A hierarchical cluster analysis classified CEE countries into distinct industrial development groups using Ward's method and Euclidean distance, following best practices (Everitt et al., 2011). The optimal clusters were identified via dendrogram and the Elbow Method. This unsupervised approach groups countries based on structural similarities without predefined labels.

ARIMA models, with AR, I, and MA components, were used for time series forecasting of industrial development indices, capturing trend and autocorrelation. The process involved stationarity testing using the ADF, differencing, ACF/PACF diagnostics, maximum likelihood estimation, residual analysis, and criteria such as AIC/BIC. Forecasts covered five years. The analyses were conducted using R (packages: stats, cluster, forecast, ggplot2) and SPSS for initial cluster validation.

#### 4. Results

Hierarchical cluster analysis of nine industrial indicators revealed five distinct clusters, each with unique structural features. Clusters are ordered from the least to the most advanced in industrial development. The main characteristics are as follows:

- Cluster 1: Volatile Industrial Performers (Baltic states and others)
- Cluster 2: Stagnating or Slower Growth Economies (Romania, Bulgaria)
- Cluster 3: Emerging Industrial Economies (Poland, Hungary)
- Cluster 4: Strong Intermediate Performers (Slovakia, Czech Republic)
- Cluster 5: Advanced Industrial Economies (Germany, Austria)

In addition to static cluster assignments, Figure 1 illustrates the dynamic evolution of cluster membership over time (2000–2020) for selected countries, highlighting periods of stability and transition.

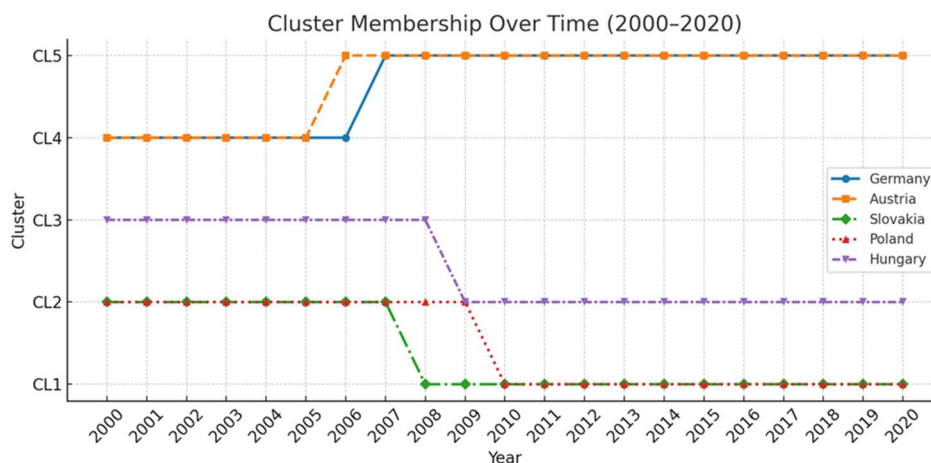


Figure 1 Evolution of cluster membership among selected CEE countries (2000–2020) (own elaboration based on Eurostat data).  
Source: own elaboration

To illustrate the internal structural differences within and between clusters, Figure 2 displays the network relationships between key industrial indicators for Austria, Germany, and Slovakia.

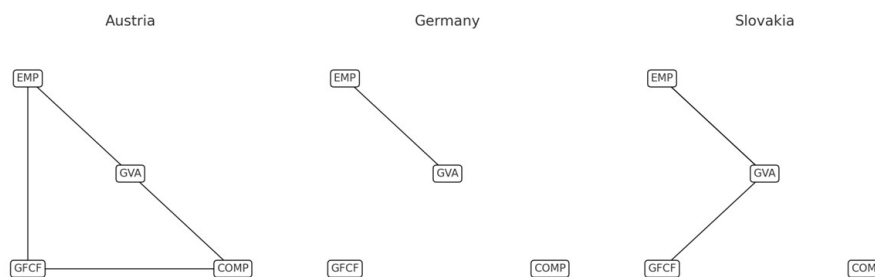


Figure 2 Network structure of key industrial indicators for Austria, Germany, and Slovakia (own elaboration based on own calculations).  
Source: own elaboration

Austria has a highly interconnected network linking employment (EMP), gross value added (GVA), gross fixed capital formation (GFCF), and competitiveness (COMP), indicating a balanced, resilient industrial system where investments, employment, and output reinforce each other. Germany's network is more selective, mainly connecting employment and GVA, reflecting a differentiated, output-driven model with more complex links for investment and competitiveness. Slovakia is an intermediate case: employment and value creation are connected, investment is partly integrated, but competitiveness remains somewhat detached. These differences suggest that countries within the same industrial cluster can exhibit diverse development models, which in turn affect their resilience and growth potential. Figure 3

presents the ARIMA-based forecast for the Industrial Development Index in a representative country from Cluster 5, covering the period from 2022 to 2025.

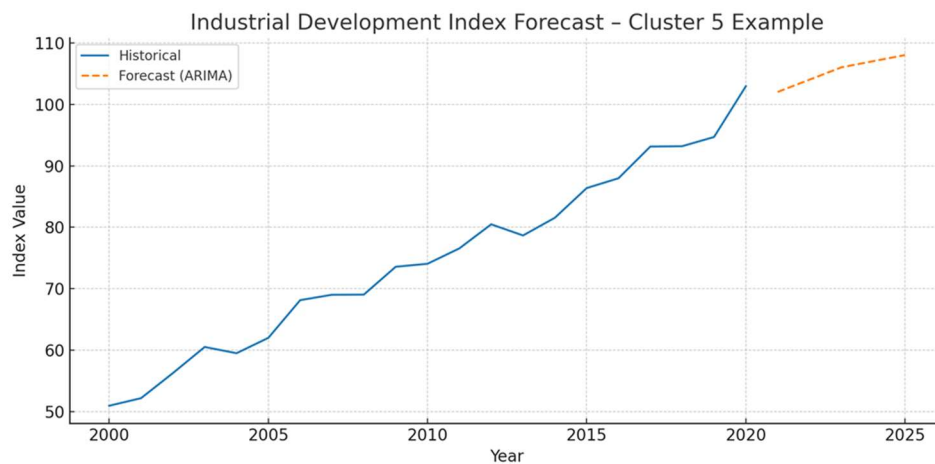


Figure 3: ARIMA forecast of the Industrial Development Index for a representative country in Cluster 5 (example 2000–2025) (own elaboration based on own calculations).  
Source: own elaboration

Historical data (2000–2021) show a steady upward trend with moderate fluctuations and overall positive industrial growth. The ARIMA model predicts continued growth, but at a decelerating rate. The forecast curve flattens slightly, indicating that Cluster 5 countries will likely maintain positive momentum, albeit at a slower pace. This warns of entering maturity without enough innovation or structural change, highlighting the need for proactive policies to sustain growth and competitiveness.

## 5. Discussion

Results highlight heterogeneity in CEE industrial development. Cluster analysis and ARIMA forecasts suggest a widening gap, emphasising the need for tailored policies. Beyond the cluster patterns, a paradox emerges:  $\beta$ -convergence suggests CEE countries are converging economically, but cluster analysis and ARIMA forecasts show ongoing divergence. This highlights that improvements in individual indicators do not ensure systemic convergence; underlying frameworks, innovation, and investment patterns drive differing long-term industrial paths. A detailed analysis of internal dynamics within the leading cluster adds nuance to the findings. Germany and Austria form the most advanced industrial cluster, but key indicators reveal different strategies. Exports and productivity drive Germany's growth, while Austria has a more interconnected model with high GFCF and COMP linkages. These insights



stress the importance of recognising diverse strategies within clusters and considering country-specific factors in regional analysis.

Slovakia stands out among intermediate performers. Despite positive indicators, VAR analysis shows asymmetric feedback, like GVA negatively impacting employment. ARIMA forecast volatility suggests structural rigidities and labour market frictions that could hinder Slovakia's industrial convergence, potentially making it a future outlier. Besides Germany, Austria, and Slovakia, emerging CEE economies such as Poland, the Czech Republic, and Hungary exhibit moderate industrial progress but remain structurally vulnerable. Forecasts suggest sustained but fragile growth, highlighting broader regional divergence.

From a policy standpoint, stronger regional strategies, innovation funding, and resilience are vital, especially for lagging clusters. Methodologically, ARIMA models provide reliable univariate forecasts but are sensitive to structural breaks and lack consideration of exogenous factors. While the present study focuses on key productivity and investment indicators, future research could also consider other factors, such as energy intensity and export performance, to capture industrial sustainability and global integration better. Future research could integrate multivariate models or machine learning approaches to enhance predictive accuracy and capture complex dynamics more effectively.

While the combined clustering-ARIMA approach provides valuable insights, there are important methodological limitations to acknowledge:

- **Sensitivity of ARIMA Models:** ARIMA forecasts assume past pattern continuity and are sensitive to shocks or changes. Our models did not include events after 2020, such as the impacts of COVID-19 or recovery programs. If a country undergoes a significant shift, predictions may become inaccurate. Limited data (21 points) constrained model complexity to AR(1), risking missed trends or cycles. We checked residuals for seasonality or autocorrelation, but uncertainty bounds might underestimate actual volatility. Combining ARIMA with other models can enhance forecasts (Fatima et al., 2024). Caution is advised with point forecasts; focus on the overall trend rather than the exact prediction values.
- **Consistency of Results and Data Quality:** The **integral index**, built from nine indicators with Helwig's weights, influences results. Altering indicators or weights could change cluster outcomes, as adding variables like education might reshape relationships. We focused on industrial metrics for scope, but this limits applicability to industrial structure. Assuming index comparability from 2000 to 2020 overlooks

potential structural breaks, although we employed relative ratios and constant-price data to maintain consistency. Data errors might affect clusters and ARIMA models. The 2010 clustering check revealed a similar structure, further bolstering confidence in the results beyond a single year.

- **Cluster Stability Over Time:** The Results highlight that the cluster setup is sensitive to the examined time period. Poland and Hungary were closest in 2010 but not in 2020, suggesting clustering may vary by snapshot. Hierarchical clustering lacks probability-based assignments, and with only six items, small data or normalisation changes can alter merges. Comparing the two periods revealed that the Germany-Austria cluster remained stable, supporting the grouping, but the relationships among lower-tier countries changed. This suggests that our five clusters are not fixed but rather a current approximation of a continuum. The distance heatmap (Fig. 2) illustrates how inter-country distances have changed over time, reflecting both fundamental shifts and the arbitrary nature of clustering choices (year, variables, and distance). Formal stability analysis, such as the bootstrap methods used by Liu et al. (2022), could assess robustness but was not performed. Qualitative checks suggest the central Ger-Aus cluster is very stable, while others are less so. Users should note that countries near cluster boundaries might switch groups with new data or criteria. For instance, Czechia and Slovakia could form a quasi-cluster split in our results or merge in the future.
- **Forecast Uncertainty and Cluster Dynamics:** We forecast each country separately, assuming its relationships stay consistent. In reality, if a country's growth differs, it might change cluster membership. For instance, faster growth in Poland's industrial index could mean it joins Slovakia or the Czech Republic by 2027. Our method did not model such interactions. A more advanced approach could forecast cluster centres or distributions, but our small sample made this infeasible. Therefore, our discussion of "divergence" focuses on index gaps, rather than cluster reconfigurations, assuming the relative order remains similar until 2027. This is reasonable given the projected gradual changes, but it is a limitation, as we did not model cluster changes explicitly. We assumed that cluster membership is static in the short term, which our stability check supports – no significant reordering has occurred in the past decade, except for minor shifts. For longer horizons, this assumption weakens.

Our methodology employs established techniques, such as hierarchical clustering and ARIMA, with verified robustness. However, results should be viewed with limitations—future

work could extend the analysis with longer data spans, alternative clustering methods (such as k-means and Bayesian), and uncertainty assessments via bootstrapping. This would boost confidence in findings. Cluster stability analysis, an evolving field (Box et al., 2015), could also reveal how firmly countries belong to or their potential to change clusters.

## 6. Conclusion

This study used hierarchical cluster analysis and ARIMA forecasting to examine industrial development patterns in CEE countries. Findings show significant regional divergence, with forecasts indicating a growing gap between industrial leaders and laggards. This study addressed two key questions. First (RQ1), it classified CEE countries into five industrial clusters based on structural indicators, revealing diverse industrial dynamics. Second (RQ2), it utilised ARIMA models to forecast the future paths of these clusters, indicating likely divergence in industrial development. Findings show that although some indicators converge, overall industrial development remains heterogeneous. Tailored policies are essential to reduce disparities and promote balanced growth in CEE.

These results suggest future CEE policies should go beyond growth figures, focusing on innovation, diversification, and labour flexibility. Countries like Slovakia and the Baltic states require tailored strategies to enhance resilience and avoid falling behind in industrial transformation. The paper emphasises the significance of data-driven strategies in economic planning and the necessity of targeted policies for achieving balanced growth. Further research incorporating additional variables and advanced forecasting would deepen the understanding of regional industrial changes.

These findings enhance understanding of CEE regional industrial development and support the hypothesis that although industrial indicators may converge, systemic convergence is fragmented and context-dependent.

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## THE IMPORTANCE AND POSSIBILITIES OF EMPLOYEE PARTICIPATION IN THE SOCIALLY RESPONSIBLE ACTIVITIES OF ENTERPRISES IN SLOVAKIA – LITERATURE REVIEW

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### ABSTRACT

#### **Purpose:**

Employee participation in CSR activities brings many positive impacts, but it also presents barriers to the corporate environment. The aim of the paper is to identify the benefits and barriers of participation for all stakeholders - employees, businesses, communities, and society at whole. Since these aspects have been studied by foreign authors, their findings and insights can be used for subsequent analysis and advancement in the field of exploring the current state of knowledge in Slovak Republic.

#### **Design/methodology:**

For the processing of the literature review and achieving the set goal, information obtained from secondary sources was used. Relevant information was gathered through searching and studying articles and papers from available databases such as Emerald, Web of Science, ResearchGate, Google Scholar, Academia, and ScienceDirect. The selection of articles was based on searches using the following keywords in English: external social dimension, benefits of employee participation in CSR activities, benefits of employee participation, CSR benefits for businesses, CSR benefits for communities, CSR barriers, and CSR disadvantages, and in Slovak: employee benefits from CSR, CSR benefits and barriers, CSR benefits for communities. After reviewing and assessing the abstracts of individual articles, we selected 64 relevant sources from foreign authors and researchers. The article used methods of analysis and synthesis. Through analysis, we gained a better understanding of the issue being studied, and using synthesis, we formed an idea about the phenomena being examined.

#### **Findings:**

The article helps to highlight the importance of employee participation in corporate social responsibility activities and identifies its main benefits and barriers, focusing on the external social dimension. It presents the results of an analysis based on a review of 64 articles and studies by foreign authors. The review reveals that authors emphasise the importance of the external social area of CSR. Several authors agree that building a strong brand, attracting young talent, tax advantages and improving organisational performance are significant benefits. Factors such as job and financial satisfaction and work commitment are important benefits for employees. Furthermore, corporate activities through CSR strategies aimed at communities lead to improvements in infrastructure, economic development and environmental protection.

#### **Research/practical implications:**

Based on the analysis of scholarly articles and studies, we can identify the key benefits and barriers to consider when analysing enterprises in Slovakia. The practical implication of this review lies in its potential to guide businesses in designing more inclusive and effective CSR strategies that actively support employee engagement.

By examining the existing benefits and barriers identified in the foreign studies, we are able to formulate relevant research questions. The findings will serve as the foundation for further secondary and primary research.

**Originality/value:**

The originality of the paper lies in filling the research gap by providing findings and insights into the area of Slovakia. The analysis of available literature confirms that research on employee participation in CSR activities in Slovakia is highly limited. This absence of empirical evidence creates a clear research gap that the present study seeks to address. Also, it can help to open a discussion in the academic as well as in the corporate environment on the issue of social responsibility and its importance for the external social area. Our research will lead to the development of framework, set of recommendations or models, which companies can apply to enhance employee participation in CSR activities. This would represent an original contribution to both theory and practice.

**Keywords:** Corporate social responsibility. Employee participation. External social area. Employee benefits.

**JEL Classification:** M14, O15

## 1. Introduction

Corporate Social Responsibility (CSR) has become an increasingly important topic in the 21st century. A crucial element for the successful implementation of CSR strategies is the active participation of employees. This paper aims to identify the benefits and barriers of employee involvement in CSR activities, particularly focusing on the external social environment. As a literature review, this paper synthesises and critically examines current academic knowledge on the benefits and barriers of employee involvement in CSR activities, with a particular emphasis on the external social environment. Drawing from 64 scholarly articles and studies, the review maps key research streams, identifies recurring theoretical perspectives, and highlights conceptual gaps.

The analysis reveals a significant lack of Slovak research in this area, indicating that employee participation in CSR, especially in activities targeting the external social domain, remains considerably understudied in the Slovak context. Since these aspects have been extensively examined by international authors, their findings provide a valuable basis for outlining future research directions and for advancing the understanding of CSR-related employee engagement in the Slovak Republic.

This literature review therefore serves not only to summarise existing knowledge but also to create a foundation for subsequent empirical inquiry, offering a framework for identifying research needs within the Slovak academic and corporate environment.



Figure 1 shows that employee motivation for CSR is clustered mainly with management, engagement, strategy and sustainability, indicating its role in the strategic implementation of CSR. Strong links with performance and business highlight its economic relevance. The clusters together show that employee motivation connects managerial, behavioral and value-based aspects of CSR, and is particularly significant for SMEs and innovation.

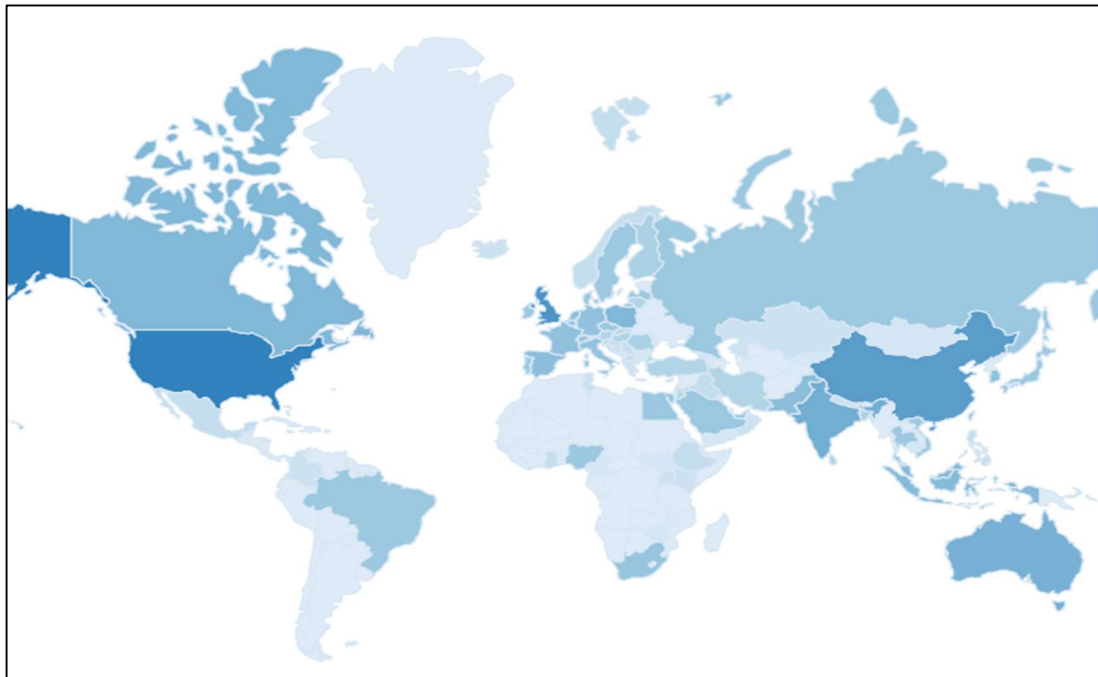


Figure 2 Overview of countries and the number of publications with the keyword “employee engagement and CSR”

Source: VosViewer, 2025

Figure 2 presents the geographical distribution of research publications on employee engagement in CSR from 1970 to August 2025. The map uses shades of blue to represent the intensity of publication output, with darker colours indicating higher values and light blue or white areas showing low or no data. The results clearly demonstrate the dominance of the United States (182 publications), followed by the United Kingdom (135), China (117), and Germany (60). In contrast, Slovakia shows only a minimal contribution, with just 4 publications, highlighting once again a pronounced lack of data and limited academic engagement with this topic in the Slovak research environment.

Employees and their willingness to engage are the most important elements for the successful implementation of CSR strategies. According to Ibrahim, Ahmed, and Nayel (2023), Moran and Tame (2013), and Joseph (2023), CSR practices and identification are important drivers of employee engagement. Ali, Rehman et al. (2010) argue that there is a positive



relationship between CSR, employee commitment, and organizational performance, suggesting that organisations can strengthen employee loyalty by involving them in social activities such as meeting community needs and protecting the environment. Jia, Yan, Liu, and Huang (2019) also support through their research that external CSR improve work engagement and involvement through organizational pride. The study by Zhou and Zheng (2023) highlights the importance of leadership support in encouraging employees to participate in external activities and providing opportunities for collaboration with external stakeholders. Authors Mahmood and Bashir (2020), Vuong and Bui (2023), Sun (2024), and Boateng, Amoako et al. (2022) emphasize in their studies how CSR activities could help a company in building the positive relationship with brand. Sun (2024) also adds that companies should foster a CSR culture within the organization so that all employees understand its significance and are motivated to contribute to its goals, as social responsibility and brand image building are in close relationship. Chau, Tran et al. (2022), in their research focusing on improving reputation, enhancing business innovation, and creating competitive advantages, show that CSR should not be viewed just as a cost obligation or charitable activity, but rather as an opportunity for creating a competitive advantage and sustainable development. Employees, particularly potential employees, are the most sensitive to attitudes and behaviors regarding CSR. As Oh, Jhang, and Kim (2024) claim, candidates form their opinions based on available information, especially negative information. If a company treats third sector in a poor way, it creates the perception among potential employees that the company will also treat its own employees also poorly.

Marcinkowska and Sawicka (2023) claim through their employee survey that an active CSR policy influences employment decisions, highlighting that the protection of the environment and human rights is important for employees, although collaboration with local communities was not statistically significant in their evaluation. Sprinkle and Maines (2010) also point out, besides attracting young talents, customer appeal, and improved reputation, that CSR initiatives may bring tax benefits, such as tax reliefs for environmental activities and charitable donations. Although Skowron-Mielnik and Golembiski (2013) and Azim (2016) used different research methods (financial performance, empirical approaches) and targeted different groups (small and medium-sized enterprises, employees in organizations), their results consistently show that CSR significantly influences employee engagement, organizational commitment, and organizational performance. Employee participation in CSR activities plays an important role in strengthening organizational identification, a relationship particularly visible in activities focused on the community, environmental protection, and employee well-being.



Boutmaghzoute and Moustaghfir (2021) used a single case study for a detailed analysis, applying a triangulation methodology (questionnaires, interviews, archival data) with a deductive approach to examine how employee-oriented activities influence employee retention within an organization. They emphasized factors such as job satisfaction, motivation, and organizational identification, confirming that these factors contribute to improved employee loyalty, which supports organizational performance.

Employee motivation and satisfaction, which enhance work morale and loyalty, are also discussed by Tsourvakas and Yfantidou (2018), while Kim, Koo, and Kim (2022) highlight job satisfaction connected with personal well-being and the positive impacts of job satisfaction. Ochnik and Arzenšek (2021) further add the factor of volunteering as an important element for financial satisfaction and work engagement. Gazzola and Mella (2016), Bhaker (2024), and Madeeha and Ali (2024) also address the enhancement of employee morale and commitment through engagement in CSR activities. Bhaker (2024) additionally explores the relationship between CSR initiatives and employee job satisfaction, creativity, and innovative behavior. Job satisfaction was also explored by González-Morales, Galván-Sánchez, and Román-Cervantes (2023) through a survey, as well as by Kim, Milliman, and Lucas (2023), who focused on strengthening employee organizational identification. Bauman and Skitka (2012) also discuss this aspect, according to him, CSR activities help foster employee pride in their employer and enhance organizational commitment through the promotion of shared values, ultimately contributing to reduced employee fluctuation.

CSR programs also bring benefits to communities. In their study, Demmangetung and Dongoran (2023) mention, in addition to employee-related benefits, the positive impacts on local communities, such as the support of social and religious initiatives, improvement of infrastructure, environmental protection — specifically land reclamation and waste management — and economic development. Similarly, Ismail, Alias, and Rasdi (2015), Deigh, Farquhar, Palazzo, and Siano (2016), and Katamba, Nkiko et al. (2014) emphasize factors such as the improvement of living standards, health, and education. Based on research conducted among local communities in Poland, Murawska (2020) points out that corporate involvement can lead to improved communication between businesses and communities, support infrastructure development, create job opportunities, and foster collaboration at the local level. Through interviews with 25 selected respondents, Lesmana, Sirat, and Soleman (2023) found that increased incomes, better access to education and healthcare, and environmental protection are aspects that positively impact multiple areas of community life, as observed in their study



conducted in mining regions in Indonesia. McCallum, Schmid, and Price (2013) also examined not only the benefits for businesses and employees but also those for communities. They highlight that through volunteering, communities can gain access to corporate resources that are often lacking, such as business relationships, networking opportunities, and employee skills.

On the other hand, there are studies and opinions that disagree with the idea of corporate social responsibility (CSR) activities. Devinney (2009) reflected on five fundamental facts: corporations exist to generate economic returns, not to solve social problems; they adapt social standards to their own needs; they do not represent society as a whole; and they do not represent the poor and disadvantaged groups. The fourth point highlights that most corporations are naturally socially conservative and are unlikely to experiment unless they see a clear profit, with CSR merely allowing governments to abdicate their social responsibilities. The study by Aguinis and Glavas (2012) identifies gaps in knowledge, pointing out the then-existing lack of studies focusing on individuals and their roles in CSR, uncertainty in the processes through which CSR initiatives lead to outcomes, and various methodological challenges. Fransen, Kolk, and Rivera-Santos (2019) draw attention to the quantity and diversity of international standards, arguing that the high number of CSR standards leads to confusion in their implementation, conflicts among actors, and increased costs. Goyal and Kumar (2017) also mention the issue of financial limitations. More recent studies, including those by Goyal and Kumar (2017) and Chehimi and Géraudel (2022), focus on barriers to the implementation of CSR initiatives. Kumar, Goyal, and Kumar (2019) further highlight a lack of management commitment, a perceived lack of benefits from CSR activities, and financial constraints, particularly within the service sector. They argue that top management does not pay sufficient attention to these initiatives and that consumers in developing countries prioritize price over the environmental or social attributes of products. A study from Saudi Arabia by Pinto and Allui (2020) also confirms a lack of managerial engagement, limited financial resources, and a lack of investor interest. Mohapatra (2024), through empirical analysis in India, categorizes CSR barriers into internal (lack of financial and human resources, weak leadership, insufficient management support, absence of a clear CSR strategy) and external (regulatory barriers, differences in cultural values and social norms, inadequate infrastructure), similar to the categorization by Govindasamy and Suresh (2017), who focused on reviewing CSR implementation barriers from an academic perspective. Beloskar and Rao (2022), using a sample of listed companies in India, found that when companies spend more on CSR activities than legally mandated, it negatively

impacts their short-term financial performance and lays a burden on their business activities at the expense of shareholder returns.

### 3. Methods

To carry out the literature review and achieve the main aim of the paper, information obtained from secondary sources was used. Secondary sources were gathered through the search and study of relevant articles and papers from accessible databases such as Emerald, Web of Science, ResearchGate, Google Scholar, Academia, and ScienceDirect. Articles were selected by searching for keywords in both Slovak and English language, including: external social area, benefits of employee participation in CSR activities, benefits of employee participation, benefits of CSR for businesses, benefits of CSR for communities, barriers to CSR, and disadvantages of CSR. The keyword-based search revealed a huge number of available sources - for example, ScienceDirect revealed 110 articles, the Emerald database offered 137, and the Web of Science showed us 510 sources. After reviewing and evaluating the abstracts of individual articles, 64 relevant sources were selected. The sources came from foreign literature, as the literature review revealed a lack of Slovak literature suitable for achieving aim of the paper. In the paper, we used methods of analysis and synthesis. Through analysis, we achieved a better understanding of the researched issues, and by using synthesis, we formed a picture of the phenomena studied. The findings will serve as the basis for further secondary and primary research.

### 4. Results and discussion

The findings of the literature review reveal that employee participation in CSR activities, particularly those focused on the external social area, play a crucial role in enhancing employee engagement, loyalty, and organizational performance. From the perspective of literature addressing the external social dimension, several authors emphasize the particular significance of the external aspect of CSR, including Lee and Choi (2021), Kim, Milliman, and Lucas (2021), Wolowiec, Szybowski, and Bogacki (2019), Vashchenko (2017), Pittman and Read (2024), Shrestha and Timalseña (2023), Hawn and Ioannou (2015), Wijaya, Wiska, and Gusteti (2022), Habaragoda (2018), Rivera-Franco, Requejo, and Suárez-González (2024), Hameed, Riaz, Arain, and Farooq (2016), Cao, Yao, and Zhang (2023), Gulema and Roba (2021), among others. On the other hand, Yang, Shi, and Wang (2021) point out the potential misuse of the external CSR dimension for gaining better market access, subsidies, or preferential treatment.

Based on the examination of individual studies, we support the argument that employee participation in CSR activities aimed at external target groups helps businesses improve their brand image and sociable awareness. We also agree with the claim that active CSR is an important factor influencing employees' decision-making when considering employment, as stated by Oh, Jhang, and Kim (2024) and Marcinkowska and Sawicka (2023). However, their results also show that besides collaboration with local communities, it is essential for companies to focus on all aspects of CSR. In most of the studies focused on the benefits for businesses, primary data were collected through surveys with respondents from various sectors. Authors such as Mahmood and Bashir (2020), Vuong and Bui (2023), Sun (2024), Boateng, Amoako, Amoako et al. (2022), and Chau, Tran et al. (2022) specifically highlight the enhancement of brand value and awareness. Beloskar and Rao (2022), using a sample of listed companies in India, found that when companies spend more on CSR activities than legally mandated, it negatively impacts their short-term financial performance and places a burden on their business activities at the expense of shareholder returns.

Table 5 Summary of the most frequently mentioned benefits

BENEFITS		
Employees	Businesses	Communities
job satisfaction, engagement	building brand value, attracting talents, productivity	better living standards, infrastructure development
Bhaker (2024), González-Morales, Galván-Sánchez, Román - Cervantes (2023), Kim, Milliman and Lucas (2023) Kim, Koo, Kim (2022), Boutmaghzoute and Moustaghfir (2021), Tsourvakas and Yfantidou (2018),	Oh, Jhang and Kim (2024), Sun (2024), Vuong and Bui (2023), Marcinkowska and Sawicka (2023), Ibrahim, Ahmed and Nayel (2023), Joseph (2023), Boateng, Amoako and col. (2022), Chau, Tran and col. (2022), Mahmood and Bashir (2020), Moran and Tame (2013), Sprinkle and Maines (2010),	Demmangetung and Dongoran (2023), Murawska (2020), Deigh, Farquhar, Palazzo, Siano (2016), Ismail, Alias and Rasdi (2015), Katamba, Nkiko and col. (2014)

Source 1 Own work, 2025

However, despite the huge amount of benefits, several studies, including those by Devinney (2009) and Fransen, Kolk, and Rivera-Santos (2019), also point to significant challenges and criticisms, such as the risk of CSR being used for profit rather than genuine social impact, the complexity of navigating multiple CSR standards, and financial restrictions, particularly in developing countries. These insights suggest that while CSR activities bring measurable benefits to businesses, employees, and communities, successful implementation requires



authentic commitment, strategic integration, and sensitivity to potential barriers. Overall, employee participation in CSR, when properly supported and aligned with organizational values, emerges as a key factor in achieving sustainable corporate success.

### 5. Conclusion

The paper helps to highlight the importance of employee participation in corporate social responsibility activities and identifies the main benefits and barriers of such participation, with a focus on the external social environment. It presents a review of 64 articles and studies from international literature.

Several authors agree that building a strong brand is one of the key benefits for companies resulting from employee involvement in CSR activities. This view is supported by studies from Zhou and Zheng (2023), Mahmood and Bashir (2020), Vuong and Bui (2023), Sun (2024), and Boateng, Amoako, et al. (2022). Besides attracting young talents, customer appeal, tax benefits, and improved organizational performance are also identified as significant advantages. Factors such as job satisfaction, financial satisfaction, and work engagement are important benefits for employees. These aspects were particularly examined by Tsourvakas and Yfantidou, Kim, Koo and Kim (2022), Bhaker (2024), and González-Morales, Galván-Sánchez, and Román-Cervantes (2023). Creating a sense of pride and organizational identification among employees is also highlighted by Kim, Milliman, and Lucas (2023), and Bauman and Skitka (2012) as a key factor.

Improvements in infrastructure, economic development, and environmental protection are benefits made from CSR activities directed toward communities. Another important contribution is that employees can provide missing skills or experience to communities through corporate volunteering.

Some scholars argue that corporations primarily exist to generate profits and adapt social standards to their own interests, often without representing society or disadvantaged groups (Devinney, 2009). Research identifies multiple barriers to CSR implementation, including limited resources, weak management support, unclear strategies, and confusion caused by diverse international standards (Aguinis & Glavas, 2012; Kumar et al., 2019; Fransen et al., 2019; Pinto & Allui, 2020; Mohapatra, 2024). Excessive CSR spending beyond legal requirements may also negatively impact short-term financial performance, highlighting the practical challenges and conceptual criticisms of CSR (Beloskar & Rao, 2022).

The paper is limited by the absence of professional articles and studies originating from Slovakia. Nevertheless, the literature review can still serve as a foundation for further research in this area.

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## VERTICAL FISCAL IMBALANCE AS AN EFFECT OF FISCAL DECENTRALIZATION

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### ABSTRACT

#### **Purpose:**

Fiscal decentralization is an integral part of the theory of fiscal federalism and is commonly presented in case studies and research articles as an effective solution for ensuring the efficient delivery of public services. However, for a comprehensive understanding of this issue, it is essential to also highlight the risks associated with fiscal decentralization. Therefore, the aim of this paper is to explore the issue and provide an overview of the current state of knowledge regarding vertical fiscal imbalance as an effect of fiscal decentralization.

#### **Design/methodology:**

The paper employs the snowball method, which is characterized by a chain-referral sampling approach, supplemented by the ability to search for scholarly articles and research studies through databases such as Google Scholar, ResearchGate, Scopus, and ScienceDirect. Additionally, the paper utilizes classification analysis and abstraction methods in developing the theoretical and methodological framework for the examined issue.

#### **Findings:**

The paper, through a literature review, presents fundamental insights into the current state of fiscal decentralization, with a particular focus on vertical fiscal imbalance. It also describes fiscal decentralization within the framework of fiscal federalism theory, discusses the implementation challenges of fiscal decentralization, and explores various approaches to measuring vertical fiscal imbalance. Additionally, the paper examines the widely used ratio indicator, which compares intergovernmental transfers to the total revenues of local governments.

#### **Research/practical implications:**

The study confirms that fiscal decentralization is essential for effective public service delivery but also presents challenges, particularly in vertical fiscal imbalance. It highlights that many local governments rely on central government transfers, which may lead to inefficiencies and financial instability. The findings suggest that it is essential to ensure a proper balance between revenue-raising capacity and expenditure responsibilities. The study serves as a foundation for further quantitative research, especially on measuring vertical fiscal imbalance using new datasets. Another area of interest is how fiscal decentralization affects administrative costs, particularly in relation to public sector employment and financial efficiency.

#### **Originality/value:**

The study provides insights that can be used by policymakers to design better fiscal frameworks, ensuring more autonomy for local governments while maintaining financial stability. The research discusses different methods for measuring vertical fiscal imbalance, such as the ratio of intergovernmental transfers to local revenues, which can be used for policy evaluation and financial planning.

**Keywords:** fiscal federalism, fiscal decentralization, vertical fiscal imbalance.

**JEL Classification:** H77, E62

## 1. Introduction

Fiscal decentralization is presented in most case studies and research articles (Epple & Nechyba, 2004; Hange & Wellisch, 1998; Hung & Thanh, 2022) as a suitable solution, particularly concerning the efficient provision of public services. However, for an adequate understanding of the issue, it is also essential to consider the studies of other authors (Altunbas & Thornton, 2011; Hankla, 2008; Arends, 2020), which describe the risks associated with fiscal decentralization. Fiscal decentralization brings challenges in the form of fiscal imbalances, both vertical and horizontal, arising from the mismatch between revenues and expenditures at different levels of government in relation to the execution of assigned competencies.

This paper highlights the fundamental link between the theory of fiscal federalism and fiscal decentralization itself. Authors such as Cibík (2020), Giertz (2008), and Hanif, Wallace, and Gago-de-Santos (2020) argue that it is more efficient to provide public services at lower levels of government. They perceive fiscal federalism as a set of principles necessary for restructuring financial relationships between government levels, while fiscal decentralization is understood as the actual implementation of these principles.

Through a literature review, this paper also aims to define vertical fiscal imbalance as an effect of fiscal decentralization (Bird & Tarasov, 2004; Boadway & Tremblay, 2006; Čapková & Zeleňák, 2015; Dahlby, 2005). Additionally, it focuses on different methods for measuring vertical fiscal imbalance (Acosta & Meneses, 2019; Ahmad & Craig, 1997; Bird & Tarasov, 2004; Čapková & Zelenák, 2015).

## 2. Theoretical background

Several foreign authors, such as Blank (2010), Geys and Konrad (2010), and Hallerberg (2010), as well as domestic authors like Cibík (2020), Dujičová and Sochorová (2017), and Koreňová (2022), associate the multi-level government system, characteristic of modern public administration and its activities, with the fiscal system, based on the foundations of fiscal federalism theory.

When defining fiscal federalism, authors such as Antic (2014), Páleník and Šikulová (2007), and Sorens (2010) rely on the fundamental concept of federalism, which refers to a form of governance that emphasizes the division of powers in carrying out specific competencies



(Schapiro, 2020). The authority to perform a given function is shared between central and regional governments, with both levels maintaining a certain degree of autonomy within a specific policy area (Law, 2013). The distribution of political powers among the various levels of public administration is then accompanied by the allocation of fiscal interactions between public administration bodies (Fossati & Panella, 1999).

The purpose of fiscal federalism is perceived by scholars such as Berriel et al. (2023), Bird (1999), and Marciano (2021) as ensuring the adequate distribution of public finance functions and decentralization of financial resources to lower levels of public administration to maximize efficiency. Bird (1999) particularly emphasizes the maximization of social welfare through the decentralization of competencies and financial resources among government levels to meet public needs and effectively deliver public services.

The theory of fiscal federalism is closely linked to fiscal decentralization (Cibík, 2020; Giertz, 2008; Hanif, Wallace, & Gago-de-Santos, 2020), as both rely on the same hypothesis – that the provision of public services is more efficient at lower levels of government than at the central level. However, while fiscal federalism represents a set of principles guiding the modification of financial relations among government levels, fiscal decentralization determines the process of implementing these principles, with a focus on transferring decision-making power to lower levels of public administration (Cibík, 2020).

In the context of fiscal federalism, fiscal decentralization is also the subject of several key studies, such as Tiebout's model of local public goods (1956), Buchanan's economic theory of clubs (1965), Oates' decentralization theorem (1972), and Brennan and Buchanan's decentralization hypothesis (1980).

Musgrave (1959) considers the connection between fiscal decentralization and fiscal federalism to be appropriate and mutually beneficial in terms of allocating tax and expenditure competencies among different government levels. According to Hanif, Wallace, and Gago-de-Santos (2020), the core of fiscal federalism lies in optimizing tax revenues, which are fundamental to public revenues and budgets. Additionally, Ponce-Rodriguez et al. (2020) highlight the need for tax revenue decentralization as a consequence of decentralizing competencies and responsibilities to local, regional, and municipal governments.

Epple and Nechyba (2004), Hange and Wellisch (1998), and Hung and Thanh (2022) present fiscal decentralization in their studies as a means of efficiently providing public services. On the other hand, Altunbas and Thornton (2011), Hankla (2008), and Arends (2020) emphasize the implementation challenges of fiscal decentralization, particularly concerning

efficiency, vertical and horizontal fiscal imbalances, which stem from the mismatch between revenues and expenditures at various government levels in relation to their assigned responsibilities.

### 3. Methods

The objective of this paper is to map the issue and provide an overview of the current state of knowledge on vertical fiscal imbalance as a consequence of fiscal decentralization. To achieve this, we have formulated the following research questions:

RQ1: What areas are associated with the research on vertical fiscal imbalance?

RQ2: What are the methods for measuring vertical fiscal imbalance?

This study employs the snowball sampling method, which is characterized by chain-based, accumulative sampling. In other words, it is a method marked by avalanche-like selection, where one research sample can facilitate access to other similar content-related samples. The snowball sampling method is unique and effective, as it offers a specific approach to accessing hard-to-reach research areas by leveraging existing connections between samples (Škodová, 2013).

The snowball sampling method began with several key “seed” studies identified in Scopus and Google Scholar, including Bird and Tarasov (2004), Boadway and Tremblay (2006), and Čapková and Zeleňák (2015). These seminal works provided the conceptual foundation for subsequent searches. Additional sources were identified through citation links and thematic relevance, focusing on peer-reviewed articles (1997–2024) addressing fiscal decentralization, intergovernmental relations, and vertical fiscal imbalance.

The classification analysis served to structure and synthesize the reviewed literature by grouping studies according to their thematic and methodological focus. Specifically, it differentiated between research emphasizing fiscal decentralization as a means of efficient public service delivery and works examining its implementation challenges, including vertical and horizontal fiscal imbalances. This approach enabled a clearer identification of conceptual links between fiscal federalism and decentralization.

By applying classification analysis and abstraction, we outline the theoretical and methodological framework of the research, emphasizing the link between fiscal federalism and fiscal decentralization as reflected in the works of both foreign (Giertz, 2008; Hanif, Wallace, & Gago-de-Santos, 2020; Musgrave, 1959) and domestic authors (Cibík, 2020; Dujičová & Sochorová, 2017; Koreňová, 2022). Furthermore, we focus on vertical fiscal imbalance and its

measurement methods, drawing upon both foreign and domestic research studies (Acosta & Meneses, 2019; Ahmad & Craig, 1997; Bird & Tarasov, 2004; Boadway & Tremblay, 2006; Čapková & Zeleňák, 2015; Jílek, 2008; Maličká, 2019)

#### 4. Results and discussion

The issue of vertical fiscal imbalance has been the subject of numerous scientific outputs, as confirmed by Scopus, a multidisciplinary, bibliographic, and abstract database, which, upon entering the term "vertical fiscal imbalance," displayed over 60 scholarly articles and research studies.

By utilizing the VOSviewer software and scientific outputs retrieved from the Scopus database, this paper provides an overview of key areas related to vertical fiscal imbalance through Graph 1.

Based on Graph 1, we conclude that the main areas associated with the research on vertical fiscal imbalance include: fiscal decentralization, fiscal federalism, and decentralization itself. Among these, fiscal decentralization appears most frequently, while fiscal federalism is the least represented area, as Graph 1 illustrates using the size of individual points and clusters. Furthermore, Graph 1 uses colour coding to indicate the strength of connections. Vertical fiscal imbalance is strongly linked to fiscal decentralization, as represented by the purple colour. It is also somewhat connected to fiscal federalism, depicted in a purple-pink shade.

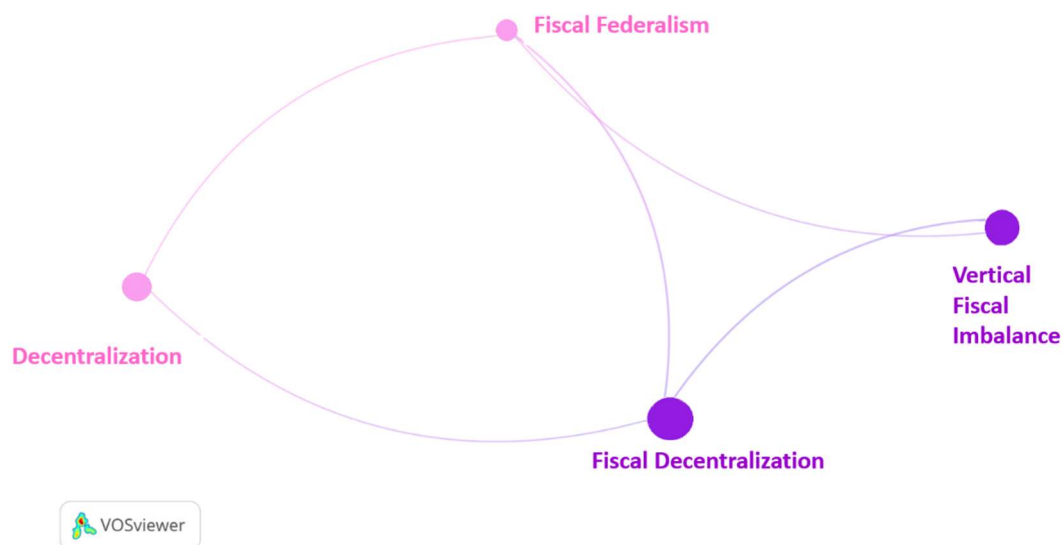


Figure 2 Overview of areas associated to vertical fiscal imbalances

Source: own elaboration (2025)

Graph 1 simultaneously represents the connection between the theory of fiscal federalism and fiscal decentralization, which, in scientific and professional studies, is associated not only with the efficient provision of public services but also with the implementation challenges it brings. The following Table 2 provides an overview of the mentioned studies, which serve as a basis for processing the subsequent sections and addressing the established research questions.

Table 6 Overview of selected scientific and professional studies in the research area

Type of Study	Authors
Fiscal Decentralization as an Effective Provision of Public Services	Cibík (2020), Epple & Nechyba (2004), Giertz (2008), Hanifa, Wallace & Gago-de-Santos (2020), Hange & Wellisch (1998), Hung & Thanh (2022), Marciano (2021)
Implementation Challenges of Fiscal Decentralization	Altunbas & Thorton (2011), Boadway & Tremblay (2006), Dahlby (2005), Eyraud & Lusinyan (2013), Hankla (2008), Arends (2020), Khan & Agrawal (2016)

Source: own elaboration (2025)

Horizontal fiscal imbalance is further described by authors such as Bird and Tarasov (2004), Di Liddo, Longobardi, and Porcelli (2016), and Eyraud and Lusinyan (2013). A common defining characteristic is the presence of differences in the ability and capacity of individual local governments to generate adequate revenue to ensure the provision of public services. In other words, local governments of the same level provide identical services but with differing revenues, which subsequently leads to differences in the costs of individual public services.

Khan and Agrawal (2016) further draw attention to the link between horizontal and vertical fiscal imbalance, considering vertical fiscal imbalance a determining factor in the increasing degree of horizontal fiscal imbalance.

The area of vertical fiscal imbalance is defined by authors such as Boadway and Tremblay (2006), Čapková and Zeleňák (2015), and Dahlby (2005), who agree that it refers to a mismatch between local government revenues and expenditures, as the scope of expenditure decentralization does not correspond to the scope of revenue decentralization. This results in a gap between the revenues of local governments and their expenditure responsibilities within the legally established competencies (Cibík, 2020).

Blöchliger and Charbit (2008), Boadway and Tremblay (2006), and Collins (2002) present vertical fiscal imbalance in relation to the significance of transfers, emphasizing the necessity of transfer payments, as local government expenditures are often covered precisely through transfer revenues – payments from the central government level. Boadway and Tremblay (2006)

further add that this stage occurs when the amount of transfers distributed by the central government does not reflect the actual value of the state's tax revenues.

There are several methods to determine the degree of vertical fiscal imbalance. The most commonly used percentage indicator is the ratio of grants and shared taxes in relation to the total revenues of local governments (Rodden, 2002).

Eyraud and Lusinyan (2011) suggest measuring vertical fiscal imbalance through the proportional relationship between the own expenditures of lower levels of government (local governments), defining own expenditures as those not covered by own revenues.

Bird and Tarasov (2004) link vertical fiscal imbalance to the fiscal gap, as they measure it based on the difference between own revenues and own expenditures, which also represents the fiscal gap. Jílek (2008, p. 287) characterizes the fiscal gap as the difference between *"the expenditures that a decentralized level of government must undertake to ensure a standard or minimally acceptable level of services and the own revenues that this level of government can generate from its own sources."*

Acosta and Meneses (2019) define vertical fiscal imbalance as the difference between the vertical fiscal gap and intergovernmental transfers. They also argue that the presence of a vertical fiscal gap does not always indicate a vertical fiscal imbalance, as it depends on whether the gap is sufficiently filled. They consider the distribution of revenue-raising powers and the implementation of intergovernmental transfers as ways to address the gap (Čapková, Zeleňák, 2015).

In international literature, authors such as Ahmad and Craig (1997), Meloni (2016), Rodden (2002), and Schroeder and Smoke (2003) generally define vertical fiscal imbalance as a proportional indicator reflecting the relationship between the volume of transfers and the total revenues of local governments, regional, and local authorities.

## 5. Conclusion

Fiscal decentralization is a frequently discussed topic in various scholarly articles and research studies, as authors (Epple, Nechyba, 2004; Hange, Wellisch, 1998; Hung, Thanh, 2022) consider it essential for the efficient provision of public services. On the other hand, for conducting relevant research, it is also crucial to focus on the weaknesses and risks associated with fiscal decentralization (Altunbas, Thorton, 2011; Hankla, 2008; Arends, 2020).

The objective of this paper was to map the issue and provide an overview of the current state of knowledge in the area of vertical fiscal imbalance as an effect of fiscal decentralization.



The fulfilment of this goal and the answering of research questions are reflected in the literature review, based on which we can conclude:

Regarding RQ1: What areas are associated with the research on vertical fiscal imbalance?, the answer can be derived not only from Graph 1 but also from the overall literature review. The main areas connected to vertical fiscal imbalance include fiscal decentralization, fiscal federalism, and decentralization itself, with fiscal decentralization having a particularly significant influence.

The issue of fiscal decentralization is presented by Bird and Tarasov (2004), Boadway and Tremblay (2006), Čapková and Zeleňák (2015), Dahlby (2005), and Khan and Agrawal (2016) through the lens of fiscal imbalance, both horizontal and vertical, brought about by fiscal decentralization. Based on scholarly articles and research studies (Altunbas, Thornton, 2011; Hankla, 2008; Arends, 2020), we can state that horizontal fiscal imbalance is present in almost all multi-level government systems due to differences in fiscal capacity at lower levels of public administration and a lack of financial resources to secure and provide public services.

Authors such as Blöchliger and Charbit (2008), Boadway and Tremblay (2006), and Karpowicz (2012) present vertical fiscal imbalance through the importance of transfers, as it is a situation where a mismatch exists between local government revenues and their expenditures, which should be covered precisely through transfer payments.

Regarding RQ2: What are the methods of measuring vertical fiscal imbalance?, based on the literature review, we can state that there are several approaches to measuring vertical fiscal imbalance, which are discussed by Acosta and Meneses (2019), Bird and Tarasov (2004), and Čapková and Zeleňák (2015).

According to other authors, such as Ahmad and Craig (1997), Rodden (2002), and Schroeder and Smoke (2003), it is common to define vertical fiscal imbalance as a proportional indicator of transfers relative to the total revenues of local governments.

This paper primarily has an informative character, providing an overview of vertical fiscal imbalance as an effect of fiscal decentralization within a broader theoretical and comparative context. It serves as a conceptual foundation for further scholarly inquiry into the dynamics of intergovernmental fiscal relations.

Nevertheless, the study is subject to certain limitations. Its methodological framework relies exclusively on a literature review conducted through the snowball sampling method, which may introduce selection bias toward highly cited or conceptually dominant works. Moreover, the

analysis is largely confined to English and Slovak sources indexed in major academic databases, potentially overlooking relevant regional or non-indexed contributions.

Future research should therefore aim to empirically substantiate the conceptual relationships outlined in this paper through the analysis of fiscal data across countries and administrative levels. Particular attention should be devoted to identifying the key determinants influencing the degree of vertical fiscal imbalance in local governments and to examining how disparities in fiscal capacity and expenditure responsibilities shape the overall balance of intergovernmental financial relations.

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# BEYOND ACCESS: A MULTIDIMENSIONAL ANALYSIS OF THE DIGITAL DIVIDE IN THE EUROPEAN UNION

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## ABSTRACT

### Purpose:

The increasing reliance on digital technology in various sectors has highlighted significant disparities in access and skills across countries of the European Union. Understanding these disparities is crucial for addressing the challenges posed by the digital divide. The study aims to investigate the digital divide in the European Union, specifically focusing on access to technology and the disparities in digital skills, with an emphasis on various types of skills.

### Design/methodology:

To achieve the goal mentioned, we conducted principal component analysis and hierarchical agglomerative cluster analysis using different indicators of digital divide, such as internet access, internet use and digital skills.

### Findings:

The paper reveals disparities in digital skills across various European countries. Countries such as Sweden and Finland exhibit advanced digital capabilities, showcasing high levels of internet access and digital literacy. In contrast, nations like Romania and Bulgaria still face challenges mainly in case of problem-solving skills, safety skills and digital content creation skills.

### Research/practical implications:

The research highlights that while internet access and usage across EU countries are relatively high, there is a significant disparity in digital skills, with countries like Bulgaria and Romania lagging. These disparities suggest that the digital divide in the EU has shifted from access to competencies. The findings imply that future policy efforts should prioritize digital skills development, mainly focusing on safety skills and content creation skills. These insights are valuable for policy makers and educators to design targeted upskilling initiative. Future research should explore drivers behind these gaps not only on national but also regional level.

### Originality/value:

The paper provides a nuanced classification of EU countries based not only on internet access and usage but also on detailed dimensions of digital skills. By applying cluster analysis and principal component analysis, the study offers classification of countries and clear identification of leaders and laggards.

**Keywords:** Digital divide, digital skills, European Union, internet usage, cluster analysis.

**JEL Classification:** O33, J24, R11

## 1. Introduction

The concept of the digital divide became the subject of research in the mid-1990s. At that time, however, the digital divide was interpreted solely as the gap in access to digital



technologies and the internet, focusing on the first level that we now consider basic. (Barzilai-Nahon, et al., 2010) Over time, the concept has been expanded to include additional dimensions, yet the availability of technology remains a key aspect of digital divide research, which is analyzed both at the national and regional levels. (Deursen, Dijk, 2019)

### 2. Theoretical background

According to the International Telecommunication Union, 91% of the population in Europe is connected to the internet. However, research points to significant differences in the availability and quality of internet connections between individual EU member states. (ITU, 2024) Dorić in his research discusses the difference, particularly between northern and southern countries. (Dorić, 2022) Internet access in the northwestern EU countries reaches 94-98% of the population, while in the southeastern countries it is only 75-87%. (van Kessel, 2022) The most pronounced digital divide, according to data from 2017, was observed in countries such as Romania, Bulgaria, Greece, and Portugal. (Gomes, Dias, 2024) Compared to these countries, younger countries like Slovenia, Slovakia and Croatia show better digital development. However, the clear leaders from 2011 to 2015 were Luxembourg, Denmark, as well as Norway and the Netherlands. (Cruz-Jesus, et al., 2018)

Studies by James and Dijk highlight the fact that the digital divide has shifted from access to digital skills and usage, with digital skills being the most pressing issue. (James, 2020; Dijk, 2017) Despite many initiatives to reduce the digital divide, there are significant differences in the level of digital skills among the populations of European Union countries. (Caravella, et al., 2023) According to a study by Bran and colleagues, the most lagging countries are Romania and Bulgaria, similar to the situation with internet access. However, post-communist countries, with Croatia being the only exception, also fall below the EU average. (Bran, et al., 2021) Digital skills significantly impact the workplace, with information digital skills being especially important. (Belluzzo, 2019) Laar and co. emphasize the importance of different types of digital skills, including technical, communication, and problem-solving skills. (Laar, et al., 2019) Despite the existence of various types of digital skills, most studies address them as a whole.

### 3. Methods

The aim of this study is to investigate the digital divide in the European Union, specifically focusing on access to technology and the disparities in digital skills, with an emphasis on

various types of skills. To achieve this goal, we have formulated the following hypotheses based on the theoretical background:

*H1: In the European Union, there is more variability in digital skills compared to access.*

*H2: Bulgaria and Romania are the most disadvantaged countries in terms of access and digital skills.*

*H3: The most challenging areas of digital skills are problem-solving and safety skills.*

To investigate the defined area, we utilize variables sourced from the Eurostat database, as presented in Table 1.

Table 1 Description of variables used.

	Description
Access	Percentage of households who have internet access at home.
Use	Percentage of individuals who have used internet within 3 months.
Frequent_user	Percentage of individuals who have used internet (almost) every day on average within the last 3 months.
Ever_used	Percentage of individuals who have ever used internet.
Digital_skills	Percentage of individuals with basic or above basic overall digital skills.
Information	Percentage of individuals with basic or above basic information and data literacy skills.
Communication	Percentage of individuals with basic or above basic communication and collaboration skills.
Digital_content	Percentage of individuals with basic or above basic digital content creation skills.
Safety	Percentage of individuals with basic or above basic safety skills
Problem_solving	Percentage of individuals with basic or above basic problem-solving skills.

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Source: Author's elaboration based on Eurostat.

Based on the specified variables, cluster analysis was used to test hypothesis 2, specifically hierarchical agglomerative clustering based on Ward's method using Euclidean distance. For the other two hypotheses, H1 and H3, principal component analysis and descriptive statistics were applied.

#### 4. Results and discussion

Based on the average values shown in Table 2, we can say that the availability of internet connection and its usage are relatively high in the European Union. The highest average is reached by the variable "ever\_used," which confirms that a large part of the EU population has

experience with digital technologies, and due to the relatively low standard deviation, this statement holds true across all countries.

Table 2 Descriptive statistics of the analyzed variables for the year 2023

	Average	SD	Median	Minimum	Maximum
Access	92,00	3,04	93,15	86,9	99,06
Use	91,44	5,04	92,06	80,39	99,35
Frequent_users	86,70	5,56	86,5	76,74	97,67
Ever_used	93,45	3,93	93,4	86,35	99,59
Digital_skills	56,38	12,34	55,84	27,82	79,18
Information	85,18	7,07	86,21	70,44	97,55
Communication	89,34	5,65	90,11	78,84	98,86
Digital_content	68,56	10,59	69,73	40,89	86,46
Safety	70,43	12,21	72,88	46,81	92,70
Problem_solving	83,04	10,59	85,51	57,47	98,15

Source: Author's elaboration based on Eurostat.

On the other hand, variables representing digital skills not only show lower average values but also higher variability, which confirms hypothesis 1. In 2023, an average of 56.38% of the population in the EU had at least basic digital skills, but the relatively high variability indicates significant differences between countries. Based on the EU average the most critical areas appear to be safety skills and digital content creation, which partially confirms our Hypothesis 3. Moreover, both areas exhibit substantial variability across countries, indicating pronounced cross-national differences. These results point to the fact that while access to the internet and technologies is relatively balanced, the level of digital skills shows higher variability, which may represent a potential barrier, especially for countries like Bulgaria and Romania, where the level of digital skills is the lowest among all EU countries. The unfavorable situation is further confirmed by the results of the cluster analysis, through which both countries were placed in the weakest cluster. The number of clusters into which the countries were divided was determined using the Elbow Method, based on monitoring the development of the Total Within-Cluster Sum of Squares (WSS) indicator as the number of clusters gradually increased. Based on the point at which the decline in WSS begins to slow down, 3 was identified as the optimal number of clusters.

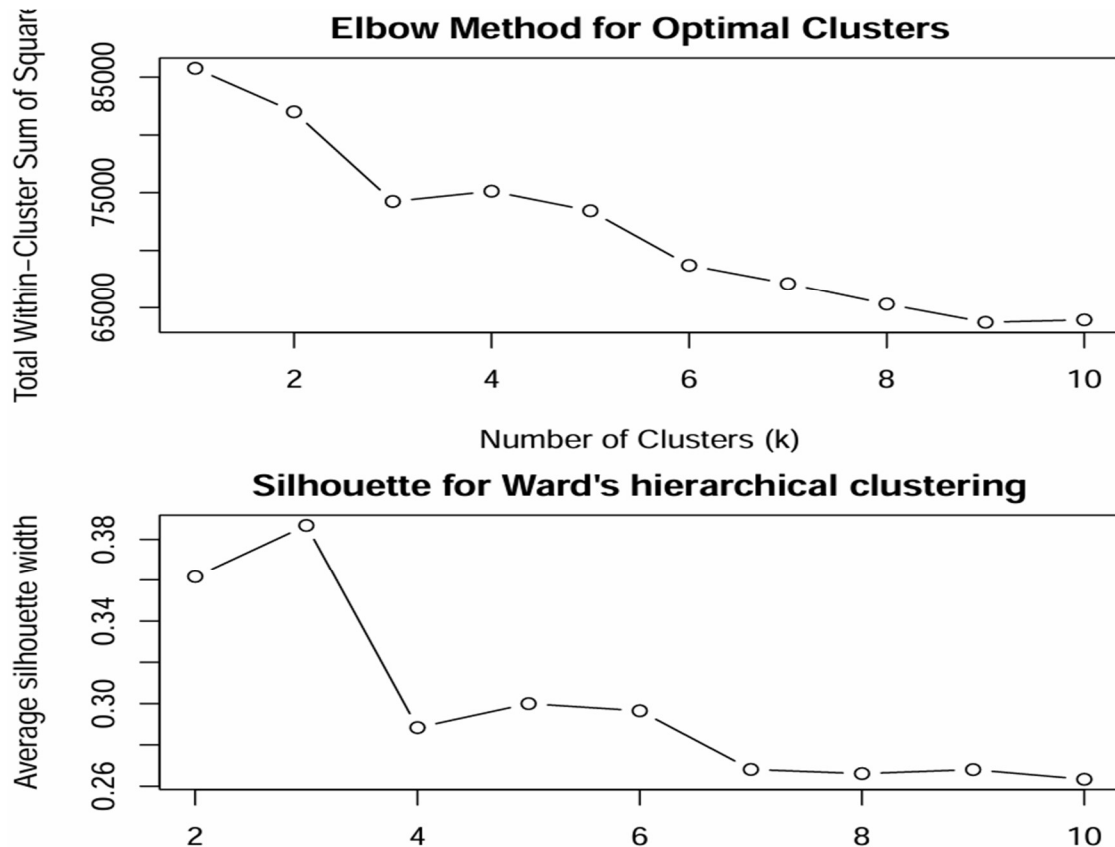


Figure 3 Elbow method and Silhouette Coefficient for Ward's hierarchical clustering  
Source: Author's elaboration.

The optimal number of three clusters was also confirmed by the silhouette coefficient value, which reached its highest value of 0.39 for this distribution. This value indicates adequate quality, internal consistency, and sufficient distinguishability of the clusters created.

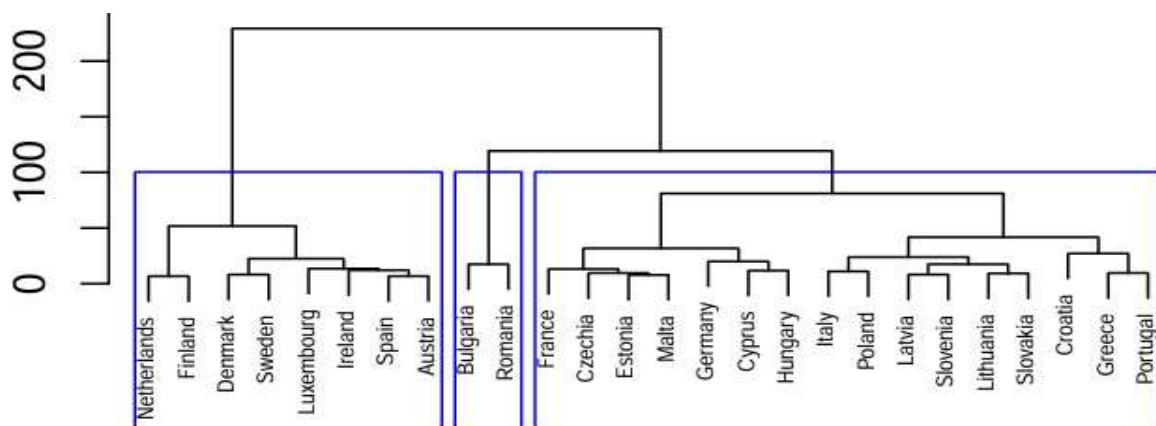


Figure 2 Clustering of countries based on observed variables.  
Source: Author's elaboration.

Based on the analyzed variables, the most populous cluster was Cluster 2, which represents countries that achieved average results in the areas we observed. This cluster includes all the

countries of V4. Among the leaders in Cluster 3 are mainly countries from Northern and Western Europe, such as Finland, the Netherlands, and Ireland. Table 3 provides an overview of the countries included in each cluster, illustrating their distribution across the identified groups.

Table 3 Cluster membership of countries

Cluster 1	Bulgaria, Romania
Cluster 2	France, Czechia, Estonia, Malta, Germany, Cyprus, Hungary, Italy, Poland, Latvia, Slovenia, Lithuania, Slovakia, Croatia, Greece, Portugal
Cluster 3	Netherlands, Finland, Denmark, Sweden, Luxembourg, Ireland, Spain, Austria

Source: Author's elaboration.

As already mentioned, countries in cluster 1 lag behind the rest of the European Union, as confirmed by the z-score values for the first-order variables of the digital divide shown in Table 4. Z-scores show that countries in cluster 1 lag significantly behind in all areas monitored, countries in cluster 2 achieve average values, and countries in cluster 3 significantly exceed the average, confirming their leading position in the field of digital technologies.

Table 4 Cluster centroids (z-scores) – first-level digital divide

Cluster	Access	Use	Frequent user	Ever used
1	-0.9010	-1.3199	-1.3105	-2.1781
2	-0.4441	-0.3949	-0.3505	-0.2552
3	1.1135	1.1198	1.1073	1.0548

Source: Author's elaboration.

Similar results are also evident in the z-scores of variables focused on digital skills. Based on the results in Table 5, it can be concluded that the areas of creation and digital content are relatively problematic even for Cluster 3, i.e., the leaders. Although the z-scores in these areas are above average, they are lower than 1, which indicates that the cluster does not achieve significantly above-average results in these areas, as is the case with Problem Solving.

Table 5 Cluster centroids (z-scores) – second-level digital divide

Cluster	Digital skills	Information	Communication	Digital content	Safety	Problem solving
1	-2.1781	-2.0073	-1.0745	-2.2619	-2.3114	-2.0966
2	-0.2551	-0.1979	-0.4353	-0.2068	-0.2016	-0.3931
3	1.0548	0.8976	1.1392	0.9790	0.9810	1.3104

Source: Author's elaboration.

To obtain a clearer interpretation of the individual clusters, we applied principal component analysis (PCA) to the variables. Based on the results of the elbow graph, two main components were identified.

Table 6 Description of the principal components.

	PC1	PC2
Standard deviation	2.8295	1.0324
Proportion of variance	0.8006	0.1066
Cumulative Proportion	0.8006	0.9072

Source: Author's elaboration.

The basic characteristics of both components are shown in Table 6, where both components together explain 90.72% of the variability in the data. However, the PC1 component is of greater importance, as it explains 80% of the variability in the data. The composition of the components is further defined in Figure 3.

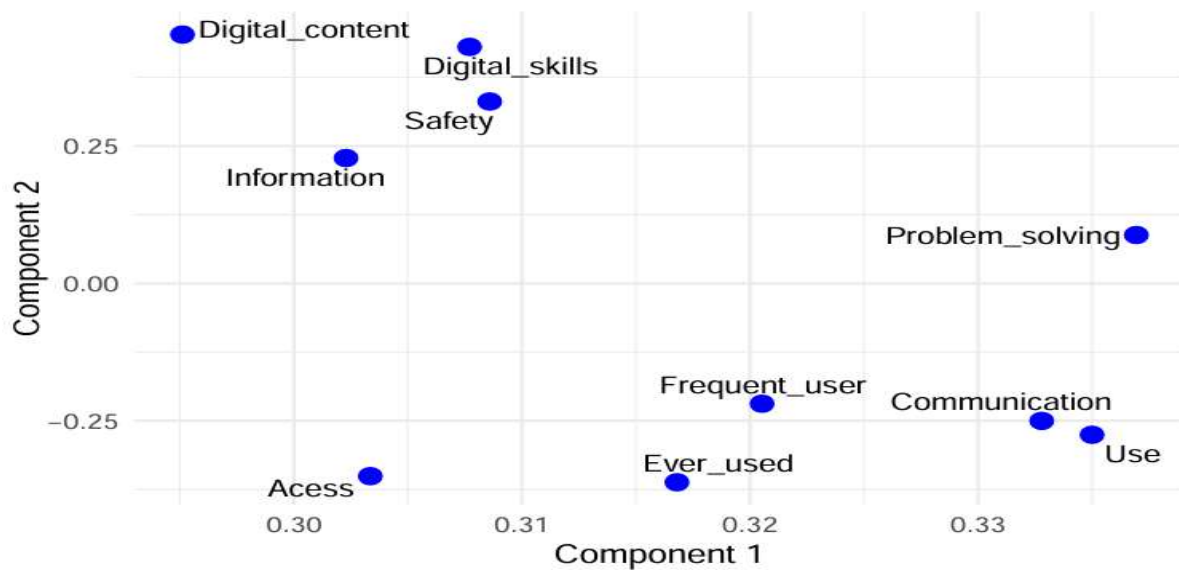


Figure 3 Composition of the principal components PC1 and PC2.  
Source: Author's elaboration.

The first component is composed of variables primarily related to internet connectivity and its usage, although the placement of the variable "access" in the graph indicates its relatively low weight within the PC1 component. On the other hand, digital skills in communication and

problem-solving are relatively significant for PC1. In the case of the second component, PC2, only variables from the domain of digital skills were included.

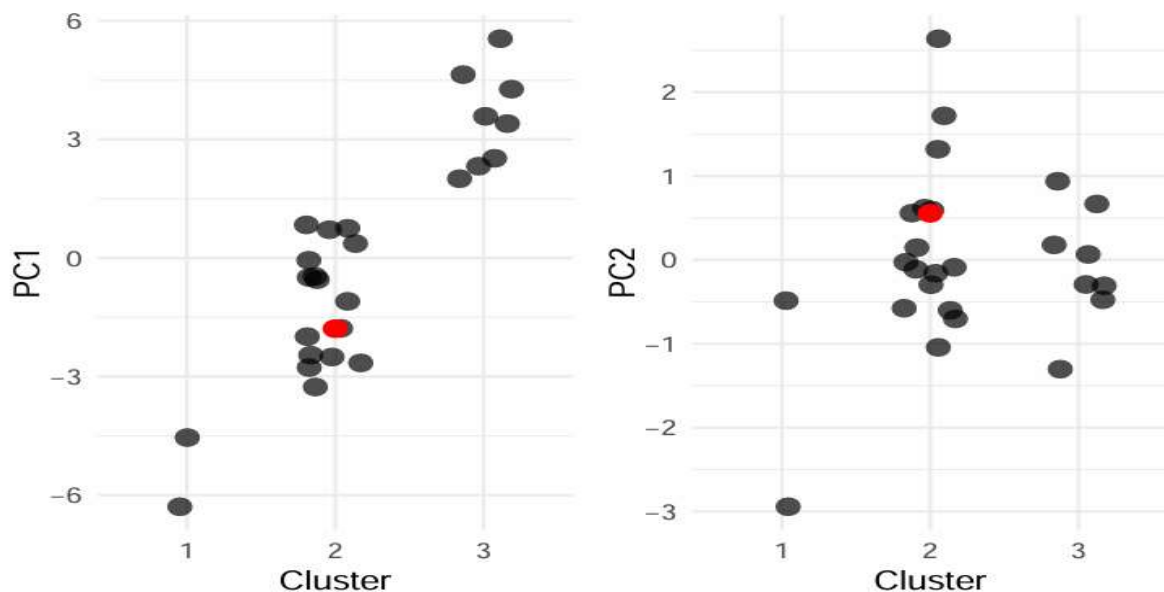


Figure 4 Characteristics of clusters based on principal components.  
Source: Author's elaboration.

From the perspective of the scores of components achieved by countries in each cluster, we can see that higher variability is present in the case of component 2, with the most significant issue observed in cluster 1, namely Romania and Bulgaria, which lag behind the rest of the EU in both components. On the other hand, relatively positive results were achieved by countries in cluster 3, particularly in the first component, based on which they can be considered leaders in internet connectivity, its usage, and digital skills in communication and problem-solving. From Slovakia's perspective, the country achieved better results in Component 2, and thus in the area of digital skills, compared to the other countries in Cluster 2. In the case of Component 1, Slovakia ranked among the countries that achieved a lower score.

## 5. Conclusion

The aim of this study was to investigate the digital divide in the European Union, specifically focusing on access to technology and the disparities in digital skills, with an emphasis on various types of skills. The results based on selected variables highlight the fact that the digital divide is shifting from the internet access to digital skills, which variability is more pronounced among EU countries. These results are consistent with those of James, 2020 and Dijk, 2017. For these reasons measures to enhance digital skills are necessary, particularly

in areas such as digital content creation and safety, which based on our study, pose the greatest challenge for EU countries. The implementation of measures is particularly crucial in countries that are lagging, namely Bulgaria and Romania. However, it is necessary to mention that due to the unavailability of data in certain areas, Belgium has been excluded from the analysis. Despite this limitation we can see that it is necessary to delve deeper into the area of digital skills, considering both the distinctions of types of skills and the regional differences.

### Acknowledgement

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## Appendices

### Appendix A

Table A1. Scores of digital skills dimensions by country

	Digital skills	Information	Communication	Digital_content	Safety	Problem_solving
Bulgaria	31.18	70.44	78.84	48.34	50.75	57.47
Czechia	59.69	89.86	90.11	73.77	81.98	87.41
Denmark	68.65	95.34	98.11	76.56	83.95	97.67
Germany	48.92	74.34	91.13	71.29	71.03	84.72
Estonia	56.37	89.97	89.99	70.54	74.97	89.51
Ireland	70.49	89.44	92.62	78.50	80.69	91.08
Greece	52.48	82.30	80.25	63.46	66.03	70.86
Spain	64.16	88.23	94.88	73.83	80.12	87.41
France	61.96	81.96	90.11	71.81	72.69	88.04
Croatia	63.37	80.96	81.32	81.55	63.90	73.93
Italy	45.60	75.35	83.98	60.14	59.00	73.58
Cyprus	50.21	88.45	90.12	60.94	65.26	80.42
Latvia	50.80	84.69	89.67	62.24	54.61	86.65
Lithuania	48.84	86.59	84.51	62.20	62.68	79.98
Luxembourg	63.79	85.03	95.02	76.96	75.49	92.31
Hungary	49.09	88.96	90.27	67.06	74.81	82.37
Malta	61.23	87.50	90.81	68.91	78.96	86.29
Netherlands	78.94	97.55	98.86	86.46	92.70	98.15
Austria	63.33	87.50	94.30	76.20	77.67	88.17
Poland	42.93	82.10	80.99	60.00	54.06	76.86
Portugal	55.31	80.58	84.61	62.10	73.07	72.54
Romania	27.82	71.56	87.71	40.89	46.81	59.67
Slovenia	49.67	85.83	87.43	61.95	56.34	79.70
Slovakia	55.18	81.13	84.84	63.95	63.91	81.65
Finland	79.18	96.13	96.63	84.60	92.35	96.39
Sweden	66.60	92.99	95.76	78.26	77.42	96.24

Source: Eurostat



## THE IMPACT OF FOOD INFLATION ON GRAIN PRODUCTS EXPENDITURES IN SLOVAKIA

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### ABSTRACT

#### **Purpose:**

The food crisis of 2022–2023 was one of the most significant global food crises since World War II. At that time, several factors, including climate change, rising energy prices, and export restrictions, caused a sharp increase in food prices, which led to an increase in household spending on food. The aim of this paper is to assess the impact of food inflation on the consumption expenditure of different types of Slovak households on grain products, as grains represent a significant component of the population's diet.

#### **Design/methodology:**

The main research method is multivariate regression, which allows us to examine the impact of one independent variable - food inflation - on several dependent variables, which are different types of households – employees, self-employed, retired, and others and different types of grain products – semi-coarse wheat flour, wheat-rye bread, and pasta. The examined period is 2004 - 2023. We drew the data from the database of the Statistical Office of the Slovak Republic.

#### **Findings:**

The food inflation rate in Slovakia in 2022 reached 19.3%, which was the highest in the last 20 years. This increase was reflected in household spending in 2023, with pensioners' spending increasing the most, from 15.21 EUR/capita per month to 23.04 EUR/capita per month. However, in the long term, other household groups (unemployed, students) react the most to the growth in food inflation, whose spending will increase by 0.34 EUR/capita with a 1% increase in food inflation. Food inflation affects spending on flour the most, by 0.11EUR/capita by 1% increase of food inflation.

#### **Research/practical implications:**

Since food inflation causes a significant increase in the expenditure of all types of households on grain products, we recommend that government authorities closely monitor the development of food inflation and grain product prices and, in the case of a significant increase, use tools for direct and indirect price regulation. We also recommend targeted help to vulnerable population groups - retired, single mothers, students. The impact of price increases on the consumption of grain products in Slovakia can be further examined.

#### **Originality/value:**

This paper is the first to examine the impact of food inflation on the consumption expenditure of Slovak households on a specific food group. Thanks to the narrow focus, we can find out which household type is most affected by food inflation when purchasing grain products and by which product is the greatest increase in expenditure.

**Keywords:** household expenditures, cereal products, food inflation, multivariate regression.

**JEL Classification:** Q02, Q11

## 1. Introduction

Over the past 20 years, the world has faced numerous food crises, including climate change, commodity exchange speculation, rising energy and fertilizer prices, export restrictions, and supply chain disruptions. The 2022 and 2023 food crises were the largest since World War II, triggered by factors such as COVID-19 recovery, fertilizer shortages, and prolonged drought. The lack of food supply in food commodity markets has led to increased world prices, reflected in European prices. Food crises worsen the availability of food for the population, both physically and economically. Developing countries face physical inaccessibility, while developed countries face increased consumer prices and expenditure on food.

Consumers spend a larger portion of their income on food, reducing their purchasing power. Food inflation significantly affects the expenditures of Slovak households on grain products, with lower-income households such as pensioners and the unemployed increasing their expenditures more significantly. This paper aims to assess the impact of food inflation on the consumption expenditure of different types of Slovak households on grain products as grains represent a significant component of the population's diet.

## 2. Theoretical background

Food inflation is characterized by high volatility. During the 21st century, the rate of food inflation ranged from negative values (food deflation) to positive double-digit values. The development of food inflation was influenced by several factors, such as global economic crises, changes in food demand, climate change and price shocks on commodity markets (Algieri et al., 2024). Since Slovakia is a small open economy, world and European prices influence domestic consumer food prices (Pokrivcak & Rajcaniova, 2014).

At the beginning of the 21st century, the growth of world food prices was stable due to economic growth (Cecchetti & Moessner, 2008). The financial crisis in 2007-2008 led to a global food crisis, with high oil prices, speculation on commodity exchanges, and droughts in Australia and the USA causing an increase in undernourished people (Bellemare, 2014). Food prices stabilized relatively after the financial crisis, but inflation remained high in developing countries. A global food crisis occurred in 2011 and 2012, caused by increased oil prices, demand for biofuels, speculation in commodity markets, and a shortage of supplies caused by poor harvests due to drought (Wegren, 2023). Global food prices fell in 2014-2016 due to falling oil prices and favorable weather conditions which created oversupply in cereal commodity markets (Stanisławska, 2019). In 2020, the COVID-19 pandemic disrupted supply chains,

causing supply shortages, increased transportation costs, and labor shortages. Increased consumer demand for basic foods also pushed up food prices (Harding et al., 2023). In 2021, fertilizer prices increased due to export restrictions from China and Russia (Wegren, 2023). The military conflict in Ukraine led to restrictions on grain and oilseed exports, with Russia and India also restricting them to protect domestic markets (Bilali & Hassen, 2023). The severe food crisis led to double-digit food inflation in 2022-2023, peaking in March at 15.5% in the euro area (European Commission, 2025). However, in 2024, food supply chains stabilized, global food production increased, and falling energy prices contributed to lower food prices, with a 2.1% drop in the FAO food price index and an average inflation rate of 2.6% in the euro area (FAO, 2025), (European Commission, 2025).

High food inflation leads to increased household spending on food, resulting in food insecurity. In Europe, if food prices increase by 1% more than household income, it increases subjective food deprivation by 0.06% (Reeves et al., 2017). The outbreak of the war in Ukraine resulted in a 10.7% increase in food prices in European retailers and a 3.6% decrease in food sales. Organic food sales fell by 5% as consumers prioritized low prices over health benefits (Matthews, 2023). The 20% of European households with the lowest incomes experienced high inflation 3–4 times more than the 20% of European households with the highest incomes, as low-income households spend a larger share of their income on food (Chepeliev, 2023).

Cereals are an important source of nutrition, providing over 50% of energy worldwide (Poutanen et al., 2022). In 2022, 177.38 kg of cereals were consumed per capita worldwide and 140.15 kg/capita in Europe. The most consumed cereal worldwide was rice, followed by wheat. In Europe, the most consumed cereal was wheat (FAO, 2025). In Slovakia, cereals have the lowest price elasticity of demand, with a 1% increase in cereal demand causing a 0.081% decrease in quantity demanded (Hošková & Zentková, 2021). Rural households and high-income households are more price elastic than urban and low-income households (Rizov et al., 2014). Cereal prices have greater volatility than the average food price volatility. Sharp increases in cereal prices during food crises cause subjective concerns about food security and social unrest (Bellemare, 2014).

### 3. Methods

To meet the main objective of our research we decided to analyze the data available in the Datacube database of the Statistical Office of the Slovak Republic. Data on total and food inflation are available in Chapter 2 – Macroeconomic Accounts; 2.3.1 – Consumer Price Indices

(Inflation). Data on household expenditure can be found in Chapter 1 – Demographics and Social Statistics; 1.6.2 – Household Income and Expenditure (Family Accounts). The given subsection of the Datacube database also provides average monthly expenditure of individual types of households – employees, self-employed, pensioners, others; on bread and cereals. Data are given in euros per capita. The average monthly expenditure per capita on individual types of cereal products – wheat flour, wheat-rye bread and egg pasta; we calculated by multiplying the consumption of the above products in kg per capita by the consumer prices of these products per 1 kg. Data on consumption are available in subsection 1.12 – Food consumption and data on prices in subsection 2.3 – Consumer prices and prices of production statistics.

We decided to examine the impact of food inflation on the expenditure on grain products of the above-mentioned types of households, as well as the impact of food inflation on the expenditure of Slovak households on the above-mentioned types of grain products using multivariate regression, as this allows us to analyze the impact of one independent variable – food inflation; on several dependent variables. We included annual data for the period 2004 – 2023 in the models, i.e. a total of 20 periods.

Multivariate regression for one independent variable can be expressed mathematically as follows:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_m \end{bmatrix} = \begin{bmatrix} \beta_{10} & \beta_{11} \\ \beta_{20} & \beta_{21} \\ \vdots & \vdots \\ \beta_{m0} & \beta_{m1} \end{bmatrix} \begin{bmatrix} 1 \\ X \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_m \end{bmatrix}$$

Where:

$Y_1, Y_2, \dots, Y_m$  – values of individual dependent variables,

$\beta_{10}, \beta_{20}, \dots, \beta_{m0}$  - constants for each dependent variable,

$\beta_{11}, \beta_{21}, \dots, \beta_{m1}$  - coefficients for each dependent variable,

$X$  – independent variable,

$\varepsilon_1, \varepsilon_2, \dots, \varepsilon_m$  - residuals for each dependent variable (Mardia et al., 2024).

#### 4. Results and discussion

Our research focuses on the analysis of the development of food inflation and expenditure of Slovak households on grain products. Figure 1 shows the development of the overall inflation rate and the food inflation rate in Slovakia during the years 2004–2024.

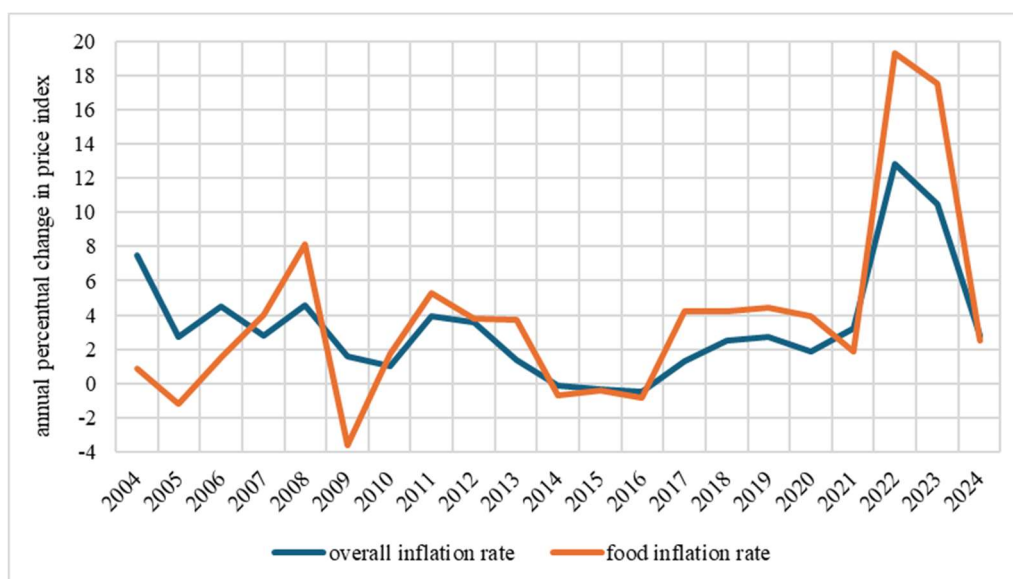


Figure 4 Overall and food inflation rate in Slovakia 2004 – 2024  
Source: Statistical Office of the Slovak Republic (2025); own processing

Figure 1 shows that during the observed period, fluctuations in food inflation were larger compared to the overall one. It is the impact of weather conditions and the vulnerability of supply chains that make food prices more sensitive to environmental and macroeconomic changes than most commodities (Harding et al., 2023). Global financial crisis had a great impact on food inflation in Slovakia, it reached 8.1% in 2008. Subsequently, in 2009 food prices recorded a sharp decline due to a decrease in demand and energy. In the following years, both overall and food inflation were relatively stable, despite the global food crisis of 2011–2012 because this crisis did not have a significant impact on European prices. European food prices influence domestic prices more than global prices because Slovakia is part of the single European market, where common regulatory mechanisms are applied (Pokrivcak et al., 2025). The low share of third countries in Slovakia's foreign trade in agricultural commodities means that global factors have less direct impact on food prices (Qineti & Lazorčáková, 2020). In 2022, the inflation rates reached their 20-year maximum, with overall inflation at 12.8% and food inflation at 17.5%. The reasons for the price increase were the increase in energy and fertilizer prices and the lack of supply of food commodities on the world market (Matthews, 2023). In Slovakia, energy inflation had a smaller effect thanks to government support measures that limited gas and heating price increases and froze electricity prices. By contrast, food prices had a much stronger impact. This was partly because food carries a higher weight in Slovakia's CPI basket (26.3% compared with 16.1% in the euro area in 2023), and partly because food prices are more volatile. The volatility may stem from inefficiencies in Slovakia's domestic food production and higher markups in certain parts of the food supply chain (Casalis, 2023).

High inflation persisted in 2023, but in 2024 there was a sharp decline in price growth. It can be explained with the resumption of food commodity exports, a decline in energy prices and restrictive measures by the ECB (European Commission, 2025).

Figure 2 shows the development of average monthly expenditures of various types of Slovak households on bread and cereals during the years 2004 - 2023 in EUR/capita.

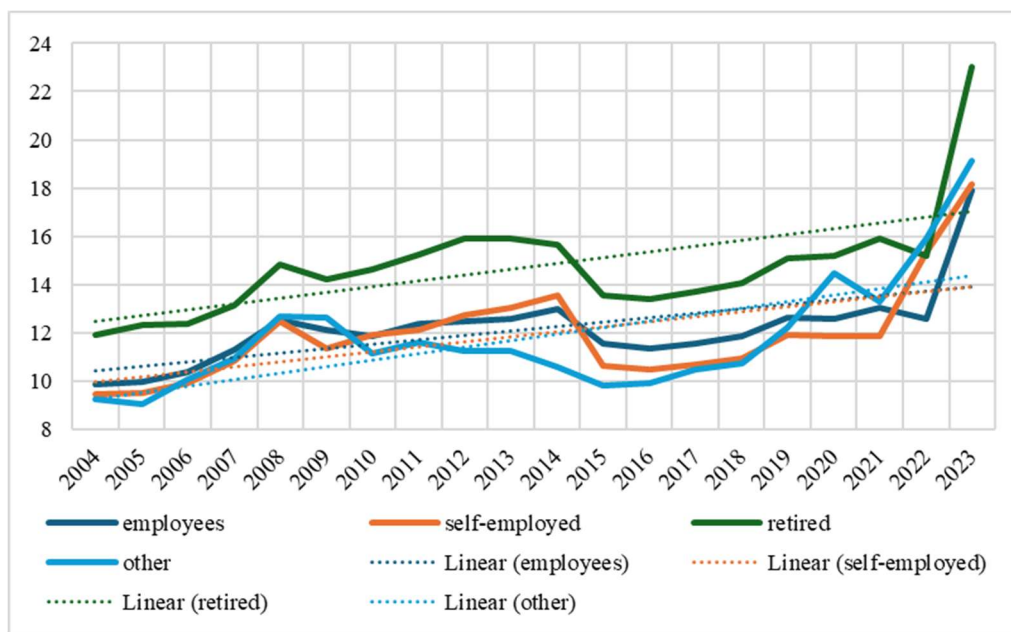


Figure 2 Monthly expenditures of different household types on grain products in Slovakia 2004 – 2023  
Source: Statistical Office of the Slovak Republic (2025); own processing

The development of household expenditure on grain products follows the development of food inflation with a lag of one period. Retired had the highest expenditure on grain products throughout the entire monitored period, while their expenditures were approximately 2-3 euros higher than the expenditures of other types of households. Employees and self-employed had almost the same amount of expenditures, and other types of households had the lowest expenditures during most of the monitored period, but since 2020 they have had the second highest expenditure. In 2023, the expenditures of all types of households increased significantly, with this increase being highest for pensioners. In 2023, pensioners' expenditure amounted to 23.04 EUR/capita, others' expenditure 19.15 EUR/capita, self-employed expenditure 18.18 EUR/capita and employees' expenditure 17.89 EUR/capita. International Monetary Fund (2024) notes in country report of Slovak Republic that elderly and low-income households are particularly vulnerable in context of food inflation. In the EU, the largest share of food expenditure in 2023 was for households of people aged 60 and more, unemployed households

and manual workers. Conversely, the smallest share of food expenditure was for households of people under 30 and non-manual workers (Eurostat, 2025).

Figure 3 shows the development of average monthly expenditures of Slovak households on grain products during the years 2004–2023.

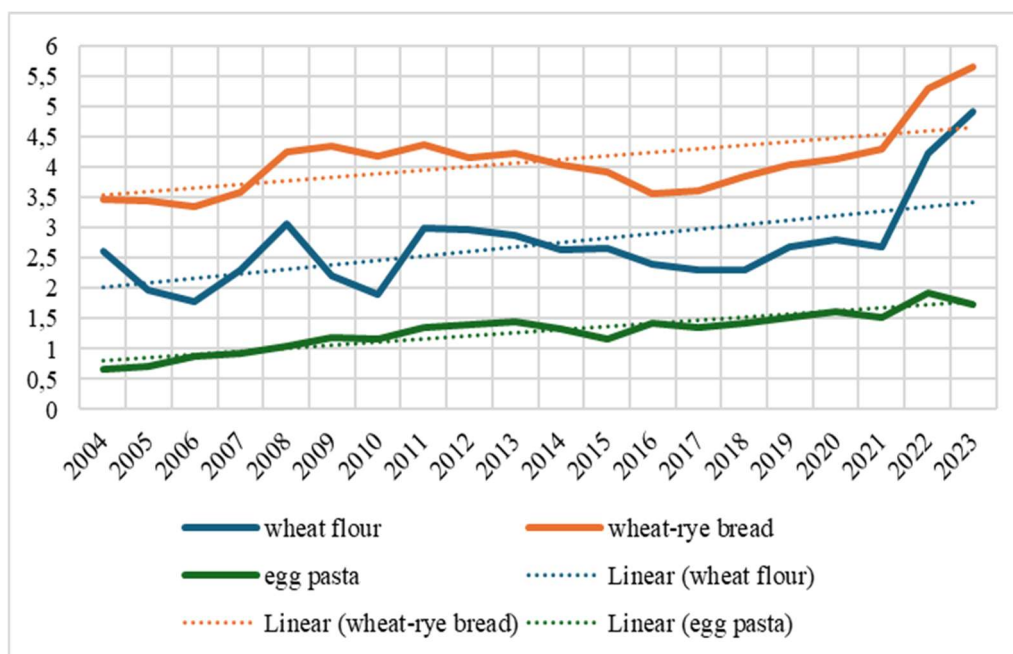


Figure 3 Monthly household expenditures on different grain products in Slovakia 2004 – 2023  
Source: Statistical Office of the Slovak Republic (2025); own processing

Expenditures on all the above-mentioned grain products increased slightly during the period monitored. The development of expenditure on wheat flour most closely followed the development of food inflation, while expenditures on bread were less volatile and expenditure on egg pasta grew almost constantly. Households spent the most money on wheat-rye bread and, conversely, the least on egg pasta. There was a sharp increase in expenditure on both wheat flour and wheat-rye bread in 2022 and 2023. In 2023, household expenditure on wheat-rye bread amounted to 5.65 EUR/capita, on wheat flour 4.92 EUR/capita and on egg pasta 1.73 EUR/capita. In 2023, Slovakian households spent on food 19.6% of total expenditures what is the third largest share among EU countries (Eurostat, 2024).

Table 1 contains the values of the multivariate regression model, in which the independent variable is the food inflation rate, and the dependent variables are the expenditures of different types of households on cereal products.

Table 7 Impact of food inflation on grain products expenditures of different household types

	coefficient	standard error	p-value	R <sup>2</sup>	constant
Employees	0.181	0.051	0.000	0.394	11.478
Self-employed	0.283	0.049	0.000	0.618	10.847
Retired	0.255	0.071	0.000	0.392	13.779
Other	0.339	0.058	0.000	0.627	10.507

Source: Statistical Office of the Slovak Republic (2025); own calculations

The coefficients for all types of households are statistically highly significant, as the p-value is less than 0.01. The constant is the highest for retired, as retired had the highest expenditure on cereal products during the years 2004 –2023. If food inflation is at 0%, retired people will spend an average of 13.779 EUR/capita per month on grain products. The constant is the lowest for other types of households, as they had the lowest expenditure on cereal products during most of the monitored period. However, the coefficient value is highest for other types of households, which means that they react most sensitively to changes in food inflation. If food inflation increases by 1%, then their expenses will increase by 0.339 EUR/capita. Prokeinová (2018) states that other households and pensioner households in Slovakia have the smallest income elasticity for grain products. Several studies have examined the uneven impact of food inflation across household types. Pokrivčák, Tóth, and Watter (2025) found that food inflation disproportionately affected vulnerable households in Slovakia. Pensioners and single-parent households are most exposed to food price shocks, as they allocate a larger share of income to staple foods. The situation is similar in the EU. Pallotti et al. (2023) highlight that in various EU countries, the unemployed and retired experienced the largest decline in well-being in 2023. Chepeliev et al. (2023) emphasized that low-income households in Europe experienced inflation 3–4 times higher than wealthier households during the Ukraine war crisis. In various EU countries, various measures were adopted in order to mitigate the negative impact of food inflation of citizens' wellbeing. For example, in some member states, value added tax on food were reduced, food margins or prices were capped and some countries also implemented support measures including one-time allowances and humanitarian aid subsidies (Albaladejo Román, 2023).

Table 2 summarizes the values of the multivariate regression model, in which the independent variable is food inflation, and the dependent variable is Slovak households' expenditure on various cereal products.

Table 2 Impact of food inflation on household expenditures on different grain products

	coefficient	standard error	p-value	R <sup>2</sup>	constant
Wheat flour	0.113	0.015	0.000	0.747	2.275
Wheat-rye bread	0.079	0.015	0.000	0.606	3.779
Egg pasta	0.034	0.011	0.006	0.353	1.158

Source: Statistical Office of the Slovak Republic (2025); own calculations

The coefficients for all variables are statistically highly significant. The values of the constants confirm that if food inflation is zero, Slovak households spend the most money on wheat-rye bread (3,779 EUR/capita) and, conversely, the least on egg pasta (1,158 EUR/capita). Consumers react most sensitively to changes in food inflation when purchasing wheat flour; if the food inflation rate increases by 1%, then household expenditure on wheat flour increases by 0.113 EUR/capita. Consumers react least sensitively when purchasing egg pasta. If the food inflation rate increases by 1%, consumer spending on egg pasta will increase by 0.034 EUR/capita. Hošková and Zentková (2021) discovered that price elasticity of grain products in Slovakia is the lowest among all food groups. Low price elasticity is the reason why the consumers expenditures on grain products grow by food inflation. Prokeínová (2018) states that bread has the greatest income elasticity of demand for grain products in Slovakia, followed by flour and finally pasta. Flour was the least price elastic grain product. Matthews (2023) observed that in EU, consumers began to buy more relatively cheaper food products, including basic grain products like wheat flour or bread.

## 5. Conclusion

Food prices are highly volatile and sensitive to environmental and macroeconomic changes. Grains represent a significant component of the population's diet and therefore the affordability of grain products is important for food security. The aim of this paper was to assess the impact of food inflation on the consumption expenditure of different types of Slovak households on grain products. To achieve the aim, we built multivariate regression models, and our examined periods were years 2004 – 2023. We drew the data from the database of the Statistical Office of the Slovak Republic.

The food inflation rate in Slovakia reached its 20-year maximum in 2022 due global food crisis after the outbreak of war in Ukraine. The 19.3% food inflation rate caused a rise in household expenditures on grain products in the next year. The expenditures of retired increased in that year the most, to 23.04 EUR/capita per month. However, in the long term, other household groups react the most to the increase in food inflation. Their expenditures on grain

products rise by 0.34 EUR/capita with a 1% increase in food inflation. Consumers react most sensitively to changes in food inflation when purchasing wheat flour; if the food inflation rate increases by 1%, then household expenditure on wheat flour increases by 0.113 EUR/capita.

Given that food inflation substantially elevates household expenditures on grain products, we advise government authorities to carefully observe the trends in food inflation and grain product pricing, and to implement direct and indirect price regulation measures in the event of a considerable increase. We also recommend targeted help to vulnerable society groups, for example retired, single mothers, students because the well-being of low-income groups is influenced by food inflation the most. For future research, we suggest focusing on analysis of the impact of price increases on the consumption of grain products in Slovakia.

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# THE ROLE OF OCCUPATIONAL ACCIDENT INVESTIGATION TRAINING IN ADVANCING HUMAN RESOURCE MANAGEMENT

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## ABSTRACT

### **Purpose:**

This paper explores the role of competent occupational accident investigation training as a critical component of effective human resource management (HRM). The study emphasizes that well-trained staff equipped to investigate occupational accidents can improve organizational learning, strengthen workplace safety, and enhance employee well-being. The aim is to highlight how targeted training could support HRM strategies by improving investigation outcomes, identifying root causes more effectively, and promoting a proactive safety culture as key indicators of strong HRM.

### **Design/methodology:**

The collected data were systematically analysed, key findings were categorized to identify common patterns, skill gaps, and training deficiencies.

A qualitative case study was conducted using a Training Needs Analysis (TNA) framework to identify competence gaps in accident investigation practices. Data was collected through semi-structured expert interviews and post-training feedback from health and safety (H&S) professionals and human resource (HR) managers in high-risk industries.

### **Findings:**

The findings reveal that organizations face significant challenges in effectively integrating human factors into occupational accident investigations, which has implications for human resource management. Interviews with accident investigators and HR professionals highlighted gaps in investigator training, particularly regarding human factor analysis. Participants emphasized a lack of structured training programs, insufficient use of standardized investigation tools, and limited understanding of human factor principles. These gaps hinder effective learning from incidents, impacting employee well-being, engagement, and retention whereas strengthening investigator training is crucial for HR strategies aimed at improving workplace safety, supporting employee development, and fostering a proactive safety culture within organizations.

### **Research/practical implications:**

Findings highlight the need for organizations to enhance investigator training as part of their human resource management strategy. Developing and piloting targeted training programs is essential to address identified skill gaps and improve human factor integration in accident investigations. By investing in structured training, organizations can improve their ability to identify systemic causes of incidents, implement effective preventive measures, and strengthen their safety culture. This, in turn, contributes to improved employee well-being, engagement, and retention. Future research should focus on piloting and evaluating such training programs to assess their impact on investigation quality and overall HR management effectiveness.

**Originality/value:**

This study offers perspective of positioning occupational accident investigation training as a strategic element of effective human resource management. While previous research has focused primarily on technical investigation methods, this study emphasizes the role of investigator competencies and human factor awareness as key contributors to workplace safety and employee well-being.

**Keywords:** Human factors, accident investigation, workplace safety, training needs analysis

**JEL Classification:** J28, M53

## 1. Introduction

A growing body of literature acknowledges the importance of human factors in occupational accident causation, highlighting the need to look beyond technical or procedural failures to provide more accurate understanding of accident root causes (Dekker et. al. 2011; Hollnagel, 2014; Randle, 2021; Reason, 1990;). Recent studies confirm that accidents often emerge from complex socio-technical interactions rather than isolated unsafe acts, highlighting the importance of systemic and behavioural perspectives in modern safety science (Aven, 2016; Chen, Li, & Goh, 2021; Bhandari & Hallowell, 2021).

Research have shown that H&S professionals are often trained in compliance and procedural tasks, with limited focus on human factor (Man et al., 2025; Ricci et al., 2016; Swustle, 2010). At the same time, Guldenmund's (2010) and Hollnagel's (2014) safety culture studies highlight that learning from incidents, especially through cross-departmental collaboration, is a key driver for organizational improvement. However, practical mechanisms for integrating occupational safety into HRM remain underexplored (Delery & Gupta, 2016; Man et al., 2025; Muecklich et al., 2023; Walters & Wadsworth, 2019).

As noted by safety scholars, occupational accident investigations are often approached as legal compliance, which restricts wider application of their outcomes. Human resource (HR) departments are typically involved after incidents for administrative follow-up but rarely participate in investigative or preventive activities. This approach weakens learning potential from incidents and limits contribution of investigations to the broader goals of building resilient safety culture (Burke et al., 2002; Porter et. al., 2025; Vinodkumar & Bhasi, 2010) and reduces the opportunity to translate investigation outcomes into systemic learning or competence-building initiatives, weakening the connection between safety performance and HRM strategy (Nunes et al., 2025; Ojo et al., 2025).

Recent research in H&S and HRM indicates that cross-functional collaboration is critical to preventing accidents and strengthening safety culture (Man et al., 2025; Ojo et al., 2025; Wang

et al., 2025). Despite this, evidence of structured training programs that unite HR and H&S professionals to explore the human and organizational dimensions of incidents remains limited. Studies in high-risk sectors suggest that training effectiveness increases significantly when it involves interactive, scenario-based methods and focuses on communication, leadership, and group learning (Babalola et al., 2023; Duan et al., 2024; Trolljeng, 2023). Therefore, there is a need for integrated training approaches that align investigation practices with HRM strategies.

This study aims to address the gap by presenting a pilot training initiative that incorporated human factors into accident investigation practices and included both H&S and HR participants. The training was designed following TNA framework and was implemented in an organizational setting. The purpose was to explore how training could support HR management functions and contribute to safety culture.

## 2. Theoretical background

Occupational accident investigation has traditionally been shaped by a compliance-driven and technically oriented approach, where the focus lies predominantly on identifying procedural violations, equipment malfunctions, or unsafe behaviours. Root cause analysis in such frameworks often leads to recommendations for enhanced procedures, training, or disciplinary measures. However, this narrow focus has been increasingly criticized for its limited potential to foster organizational learning or address the complex sociotechnical systems in which accidents occur (Dekker, 2011; Hollnagel, 2014).

Contemporary safety science views incidents as outcomes of complex socio-technical systems, requiring analysis of organizational context, human variability, and everyday work management (Aven, 2016; Hallowell & Gambatese, 2010; Xia et al., 2020). Empirical studies further show that safety climate shapes workers' risk tolerance and safety behaviour across cultural contexts (Bhandari & Hallowell, 2021) and that unsafe behaviours frequently arise from social and cognitive group processes rather than isolated rule violations (Porter et al., 2025; Xia et al., 2020).

A growing body of literature demonstrates that safe behaviour operates through multilevel social processes: supervisory leadership shapes safety climate and participation (Zohar & Luria, 2005), leader-member exchange influences psychological capital (He et al., 2021), and peer relations, team identification, and knowledge sharing drive safety actions (Chen et al., 2021; Wang et al., 2025).



Because workers' risk perception and coping behaviours differ across roles, teams, and cultural settings, investigation and prevention strategies must be adapted accordingly (Liu et al., 2021). Effective investigations should therefore address organizational and interpersonal dimensions - leadership behaviour, communication, peer influence, psychological climate, and workload distribution, as these factors determine whether corrective actions achieve lasting improvement. Within this framework, HRM assumes a central role by translating safety principles into structured systems of planning, training, evaluation, and engagement.

Empirical evidence shows that occupational health and safety management systems perform better when supported by strong HRM practices such as participatory planning, continuous training, wellbeing initiatives, and equitable evaluation (Jones et al., 2021; Neumann et al., 2020). Consistent with Industry 4.0 and 5.0 perspectives, which emphasize human-technology integration and workforce adaptability (Neumann et al., 2020; Sgarbossa et al., 2020), the value of accident investigations is realized when their findings are incorporated into HRM systems - onboarding, leadership development, feedback, and participation, transforming lessons learned into lasting behavioural and cultural improvement.

Yet major limitation in many current safety practices lies in the insufficient integration of incident-learning outcomes into HRM. Accident investigations are typically managed by H&S teams, while HR involvement often remains administrative or disciplinary, overlooking HRM's strategic potential in learning, competence development, and behavioural transformation (Hollnagel, 2014; Man et al., 2025).

HRM embeds organizational learning through competency frameworks, targeted training, and continuous feedback (Neumann et al., 2020; Nunes et al., 2025). Safety improvements rely on leadership quality, communication, and participation - core HRM domains that turn investigations into proactive learning for training, leadership, and performance development (Duan et al., 2024; Chen et al., 2021; Man et al., 2025; Wang et al., 2025).

Though, despite growing attention to human and organizational factors, a gap remains in linking accident investigation outcomes with HRM systems. Organizations still treat investigations as compliance tasks rather than strategic human-capital processes (Neumann et al., 2020; Sgarbossa et al., 2020).

Addressing this gap, the present study applies a TNA framework to examine how integrating human factors into investigation training can enhance HRM functions and support a proactive safety culture.

### 3. Methods

This study adopted a qualitative case-study design structured around the TNA framework (Merriman et al., 2025; Nunes et al., 2025). The TNA model was selected because it allows the systematic identification of competence gaps and the alignment of training with both HRM and H&S objectives. While previous accident-investigation studies have focused on technical or procedural training, this research extends the approach by applying TNA cross-functionally, jointly to H&S and HR professionals. Following contemporary research on human resource development and occupational safety (Nunes et al., 2025), the study proceeded through four TNA-based phases:

1. **Needs identification:** Semi-structured interviews with accident investigators and HR professionals from high-risk industries were used to explore current practices, perceived competence gaps, and the existing role of HR in post-incident processes.
2. **Training design:** Findings from the needs phase guided development of a pilot cross-functional training programme focused on human-factor analysis, communication, and collaborative investigation.
3. **Training implementation:** Programme combined short theoretical sessions with case-based group analysis and peer discussions, enabling learning through reflection and interaction (Annett et al., 2000; Duan et al., 2024).
4. **Evaluation:** Participant self-assessments, facilitator observations, and post-training discussions were analysed to identify perceived changes in knowledge, confidence, and cross-department collaboration.

The research was conducted as a pilot within the heavy-industry sector, which is characterized by high operational risk and complex human–machine interactions. Participants included 24 professionals: H&S advisors and HR managers. Training objectives were set to improve understanding of human and organizational contributors to accidents and encourage shared responsibility for safety between H&S and HR functions.

### 4. Results and discussion

The results of the pilot training program are presented in two thematic areas: (1) understanding of human factors and investigative confidence and (2) cross-functional collaboration. Data sources included participant feedback, self-assessments, training observations, and a post-training roundtable discussion.



### **Understanding of Human Factors and investigative confidence**

The pilot training aimed to shift participants' perspectives from a narrow, compliance-based view of incident investigation toward a systems-oriented understanding grounded in human factors. To achieve this, the training introduced key human factor models such as the Swiss Cheese Model, the Human Factors Analysis and Classification System (HFACS), and Reason's "Dirty Dozen" framework (Dekker, et. al., 2011; Hollnagel, 2014; Reason, 1990; Wiegmann & Shappell, 2003).

Participants demonstrated shift from a compliance-based mindset to a broader systems perspective. Prior to training, investigations were primarily focused on rule violations and technical faults. Post-training, participants more frequently were able to identify organizational and behavioural contributors to incidents. Participants reported increased confidence in conducting investigations, particularly in identifying root causes and applying human factor principles.

### **Cross-functional Collaboration**

The mixed-group format promoted active collaboration between H&S and HR professionals, a dynamic previously underutilized in participants' workplaces. Training highlighted different departmental perspectives, which helped establish a shared language and better mutual understanding. Participants recognized how incident investigations could inform broader HRM functions. Key areas identified for integration included onboarding, leadership development, training design, and performance review processes. Several participants reported plans to review HR processes using insights gained during the training.

While overall feedback was positive, participants noted the need for more industry-specific examples and follow-up support. Suggestions included access to post-training resources, templates, and the creation of a cross-functional peer learning group. Several participants highlighted that sustained impact of the training would require organizational-level commitment and support

The findings of this study support the argument that occupational accident investigation training, when designed to incorporate human factors and foster cross-functional collaboration, can serve as a tool within HRM. Traditional accident investigations often serve compliance purposes rather than contributing to long-term organizational improvement (Reason, 1990; Swuste, 2010).



Moreover, the training contributed to improving dialogue between departments, making accident prevention a shared responsibility rather than a task owned solely by the H&S team, which aligns with current literature findings.

However, challenges were noted. Some participants struggled with applying human factors models due to unfamiliar terminology or lack of prior exposure to systems thinking. This highlights the need for ongoing support, practical tools, and leadership endorsement to sustain this cross-functional approach beyond the training.

Overall, the pilot suggests that embedding human factor training into HRM and OHS development programs can act as a catalyst for cultural change, moving the organization toward a more proactive and resilient safety culture. It also opens the door to rethinking traditional training delivery by promoting joint ownership of safety performance.

Despite the promising results, the study also revealed barriers to implementation. Participants noted the challenge of applying new knowledge without sustained managerial support or structured follow-up. This echoes previous findings that training effectiveness is limited when organizational systems do not support application (Goldstein & Ford, 2002). Without reinforcement mechanisms - there is a risk that the acquired competencies may not translate into lasting organizational change. Furthermore, the lack of shared terminology between departments and limited time for reflection were noted as challenges. Addressing these barriers may require not only enhanced training design but also broader organizational change, including leadership engagement.

### 5. Conclusion

This study explored the role of occupational accident investigation training as a strategic component of HRM. By integrating human factors and promoting collaboration between H&S and HR professionals, the pilot training program demonstrated the potential for investigation practices to move beyond regulatory compliance and support broader organizational goals.

The results highlight that traditional approaches to accident investigation - focused largely on procedural errors are insufficient for addressing the complex organizational and behavioural factors that contribute to workplace incidents. Participants gained a deeper understanding of systemic root causes and reported increased confidence in applying human factor principles. The training also enabled meaningful dialogue between departments, fostering cross-functional awareness and shared responsibility for workplace safety.

A key contribution of the training was its emphasis on connecting investigation findings to HRM functions such as onboarding, communication, training design, and leadership development. This alignment supports the concept of “internal fit” within HRM, where safety objectives are integrated into core people management processes. The ability of HR professionals to contribute proactively to investigation processes also strengthens the organization’s capacity for learning, employee engagement, and continuous improvement.

Despite the positive outcomes, the study identified several areas requiring attention. These include the need for ongoing support, access to practical tools, and a more explicit role for HR in post-incident organizational learning. Participants emphasized that long-term impact would depend on leadership support and a structured approach to integrating training insights into daily practice.

Overall, the findings suggest that targeted, interdisciplinary training can enhance the effectiveness of occupational accident investigations and extend their value beyond immediate incident resolution. Embedding such training into HRM systems may contribute to a more resilient safety culture, where learning, prevention, and employee well-being are collectively pursued.

Future research should explore the long-term effects of this training model, including its influence on organizational policies, leadership behaviour, and employee retention. Larger-scale studies across different industries would help validate the generalizability of the findings and further define best practices for integrating safety and HRM strategies through investigation training.

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# REDEFINING QUALITY MANAGEMENT: FROM COMPLIANCE TO BUSINESS ASSURANCE FOR SUSTAINABLE SUCCESS IN DEVELOPING ECONOMIES

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## ABSTRACT

### Purpose:

Despite its widespread use, Quality Management (QM) often remains a compliance-driven function disconnected from profitability, leadership, and sustainability. In developing economies, this has led to short-termism, inefficiencies, and systemic waste. This paper identifies three root causes: the misperception of quality, rigid frameworks, and a lack of executive education. It proposes a shift from Quality Assurance (QA) to Business Assurance (BA), aligning quality with financial, strategic, and sustainability goals. It reframes quality to the degree to which each process meets its defined requirements not a separate task, but an outcome assured within the process itself.

### Design/methodology:

A qualitative, multi-method approach was used, combining literature review, root cause analysis (RCA), interviews, comparative case analysis, and a pilot survey. Data from Azerbaijan, Georgia, Kazakhstan, and Turkey, along with insights from CQI Quality Week and ISO 9001 statistics, were analysed to compare symbolic certification vs. embedded practice. The study validates the need for scalable, outcome-oriented models and supports the Business Assurance Model of Excellence (BAME) as a way to embed quality into strategic, financial, and sustainability frameworks.

### Findings:

QM is widely misunderstood and narrowly interpreted as a compliance task. Poor QM leads to inefficiency, rework, and reputational risk, undermining sustainability. Quality is rarely integrated into strategic or financial planning. Most executives lack education in quality leadership. Existing frameworks are too rigid or generic for diverse business environments.

### Summary of Findings:

These insights confirm the need for a scalable, leadership-owned, and sustainability-aligned model. The proposed BAME framework enables each process to define and assure its own quality, aligned with business strategy. Quality is not a separate department, it is characteristic of process effectiveness, owned where it happens.

### Research/practical implications:

This study calls for rethinking QM as a strategic pillar of sustainability. It recommends embedding quality into financial management, leadership development, and governance. Practical actions include adapting frameworks for SME scale, enhancing executive-level quality education, and reforming procurement and regulatory policies to reward sustainable quality performance. Research implications include assessing quality's long-term impact on resource efficiency, stakeholder trust, and economic resilience. BAME offers a practical pathway to transition from audit-oriented QM to value-focused Business Assurance.

**Originality/value:**

This paper reframes quality from a compliance function to a sustainability enabler, introducing Business Assurance as a forward-looking alternative to traditional QA. It challenges the notion of quality as a separate function and positions it as an adjective, describing how well each process meets its intended requirements. Drawing from case data, leadership interviews, and systemic analysis, BAME delivers a scalable, context-aware framework. It shows how quality, when assured within every process, drives profitability, competitiveness, and long-term sustainability in developing economies.

**Keywords:** Business Assurance, Quality Management, Sustainability, Strategic Quality, Adaptive Frameworks

**JEL Classification:** M10, L15, M21

**1. Introduction**

Quality Management (QM) is globally recognized as a foundational enabler of competitiveness, customer satisfaction, and sustainable performance. However, in many developing economies, it remains a misunderstood and often symbolic function. Rather than fostering long-term value creation or operational excellence, QM is frequently reduced to formality, typically fulfilled through ISO 9001 certification to meet tender eligibility or pass client audits. This transactional mindset limits the strategic value of quality systems and detaches quality from broader business outcomes such as profitability, innovation, and sustainability.

Despite widespread ISO 9001 adoption, implementation often reflects external validation more than internal transformation. Organizations may hold valid certificates yet still experience systemic inefficiencies, inconsistent service or product delivery, and weak stakeholder trust. This misalignment contributes to rework, customer dissatisfaction, and waste, directly undermining sustainability goals such as resource efficiency, social accountability, and long-term resilience.

At the core of this challenge is a fundamental misperception: quality is often treated as a standalone function, managed externally, delegated to a department, or applied after the process is completed. This view stems from its historical roots in Quality Control (QC), where quality was defined by inspection rather than integration. However, this interpretation is no longer adequate in modern, complex business environments.

In this research, I challenge this assumption. Quality is not a department, it is the degree to which any process meets its defined requirements. It is an adjective that describes how well procurement, finance, logistics, training, or operations fulfil their intended outcomes. Each



process has its own quality, determined by its ability to meet business-aligned criteria. Therefore, quality must be embedded within the process, not applied from outside.

This misperception is further reinforced by the rigidity of traditional frameworks. Many organizations adopt these systems without adapting them to their size, maturity, or context. In particular SMEs may over-engineer their systems by mimicking large corporations, or conversely, reduce them to audit checklists, both of which fail to improve performance or deliver sustainable value.

Another key factor is the absence of quality education in business, management, and engineering curricula. As a result, many executives and process owners enter leadership roles without a practical understanding of how quality applies within their domain. This leads to poor ownership and a persistent belief that quality is the job of a technical team rather than an enabler of strategic performance.

This paper argues that the root cause of these challenges lies in how quality is defined, taught, and positioned in organizations. To address this, I propose a strategic shift from traditional Quality Assurance (QA) toward Business Assurance (BA), a model that embeds quality directly into the purpose and governance of every process. The Business Assurance Model of Excellence (BAME) is introduced as a practical framework to help organizations move beyond compliance and toward integrated, process-owned quality that drives strategic, operational, and sustainability outcomes.

With BAME, quality is no longer seen as an external requirement or a certification milestone. It becomes the result of internal ownership, strategic clarity, and process effectiveness. This transition repositions quality as a true business enabler, owned by every function and contributing directly to sustainable growth.

## 2. Literature review/theoretical background

The evolution of Quality Management (QM) reveals the roots of many current misunderstandings, particularly in developing economies. Foundational thinkers such as Deming, Juran, and Crosby advanced QM from post-production inspection toward process orientation and continuous improvement. Later models, including TQM, Six Sigma, Lean, and sector-specific standards like API Q1/Q2, ISO 9001, etc provided organizations with structured tools to reduce variation and embed systemic learning. However, despite these advancements, the outdated perception of quality as a departmental function remains largely unchallenged.



Many established frameworks including the ISO 9001, European Foundation for Quality Management (EFQM) and Baldrige Performance Excellence Program continue to frame quality as something to be managed and audited rather than embedded within processes. Although such systems have supported organizational discipline, recent studies indicate that in developing economies they often remain symbolic and certification-driven, rather than effective levers of strategic performance. For example, Riaz et al. (2023) identify top-management commitment, inadequate quality education and weak culture as key impediments to TQM implementation in the construction-sector of developing countries. Meanwhile, Vivek et al. (2024) find that in Indian MSMEs the effectiveness of ISO 9001 implementation is directly linked to sustainable performance but only when process ownership and leadership engagement are present.

Scholarly work also points to a paradigm shift: quality management is moving from audit-control models towards process-embedded assurance and internal ownership (Durak Uşar et al., 2024).

These findings underline that the core challenge is not the absence of quality frameworks, but their misalignment with organizational maturity, leadership capacity, and local context in developing economies. The gap between certification and performance thus provides the rationale for the proposed Business Assurance Model of Excellence (BAME), which seeks to embed assurance where the work happens, aligning quality with strategic, operational and sustainability outcomes. This research challenges that view. Quality is not a standalone function; it is the degree to which each process meets its requirements. It is an adjective describing how effectively a process achieves its intended outcomes. Every business function, procurement, logistics, HR, training has its own quality. That quality must be assured by the process owner, not by a parallel department. When organizations fail to see this, they implement frameworks mechanically, achieving compliance without performance.

Even advanced models such as EFQM and TQM retain structures and language that fail to challenge this separation. Academic sources including the International Journal of Quality & Reliability Management and Journal of Operations Management confirm that quality frameworks in developing economies are often implemented in name but not in function. Businesses focus on audits rather than embedding performance in daily operations resulting in systems that are reactive, overly documented, and misaligned with strategy.

This has direct consequences for sustainability. Systems that treat quality as external to operations often generate duplication, waste, and disengagement. Without process-level



ownership, accountability is diffused. Without strategic alignment, quality efforts become disconnected from outcomes like efficiency, resilience, and stakeholder trust.

Organizational learning theory and systems thinking (e.g., Senge, 1990) emphasize that sustainable improvement requires integrated, feedback-driven systems. Yet even integrated management systems often list quality as one pillar among others, missing the opportunity to position it as a unifying principle.

This is where the Business Assurance Model of Excellence (BAME) diverges from conventional frameworks. It begins with the recognition that quality is already inherent in every process. It does not need to be added; it must be assured where the work happens. Each process applies its own business-aligned criteria and assumes responsibility for its own outcomes.

This reframing shifts quality from technical responsibility to an operational characteristic. BAME empowers leadership to define expectations and enables process owners to assure results within their own domains. It is a model built not on external validation, but on internal alignment and visibility addressing the foundational misconception that quality is separate from the business.

### 3. Methods

This study adopts a qualitative, multi-method approach to explore how quality is perceived, interpreted, and applied across business environments in developing economies, and to understand why existing Quality Management Systems (QMS) often fail to deliver sustainable value. The methodology was designed to identify the root causes behind the disconnect between certification and performance and to validate the need for a new model based on process ownership and business alignment.

The research combines four key elements:

#### 3.1 Root Cause Analysis (RCA)

A structured RCA was conducted using case data from organizations in Azerbaijan, Georgia, Kazakhstan, and Turkey, representing sectors such as manufacturing, logistics, training, and public services. The analysis categorized findings into three levels:

- **Immediate causes:** Quality is viewed primarily as a compliance requirement, focused on documentation and audit readiness. ISO 9001 certification is often pursued to meet external demands (e.g., client or tender requirements), with limited connection to process effectiveness or strategic improvement.

- **Underlying causes:** Quality is perceived as a technical or support function, disconnected from leadership and decision-making. The structure and language of frameworks reinforce the idea that quality is managed externally by auditors or a central department rather than by those responsible for the work.
- **Foundational causes:** The core misperception lies in viewing quality as a standalone function. In reality, quality is the degree to which each process meets its requirements. Without this understanding, systems become fragmented, poorly owned, and unsustainable. Process-level accountability is often absent, leading to minimal business impact.

These findings directly informed the design of the **Business Assurance Model of Excellence (BAME)**, which aims to address these causes by aligning quality with strategy and embedding assurance within each process.

### 3.2 Interviews

Fifteen semi-structured interviews were conducted with senior professionals from the same four countries. Interviewees included directors, senior managers, and heads of operations or compliance from sectors such as manufacturing, logistics, and education. The interviews explored:

- How quality is defined and communicated across functions
- Who holds responsibility for quality within processes
- The degree of integration between quality and strategic planning
- Perceptions of ISO 9001's value beyond certification
- Barriers to sustainability and long-term improvement

Table 1 Interview Results

Theme Explored	Key Insight from Participants
Definition of quality	Often seen as compliance-focused rather than business-integrated
Responsibility for quality	Generally perceived as the task of a specific team, not owned across functions
Integration with strategic planning	Rarely embedded in board-level discussions or KPIs
Perception of ISO 9001	Seen more as a certification tool than a driver of operational improvement
Barriers to sustainability and long-term performance	Lack of leadership engagement, poor communication, resource constraints

Source: own elaboration



A recurring theme was the perception of quality as something done to processes rather than something built into them. Participants highlighted that quality functions were under-resourced, disconnected from strategy, and often seen as compliance checkpoints rather than value enablers.

This feedback helped shape practical components of BAME, emphasizing strategic alignment, process-level ownership, and internal assurance.

### 3.3 Survey

To complement the qualitative data, a pilot survey was conducted involving 100 mid-to-senior-level managers across Azerbaijan, Georgia, Kazakhstan, and Turkey. Participants represented diverse sectors, including manufacturing, logistics, education, and public services. The survey assessed how quality is perceived, managed, and integrated in daily operations.

Key findings included:

- **72%** associated quality with compliance and audits.
- **78%** lacked formal education in quality management; many had attended only short courses (e.g., ISO 9001 awareness, Lead Auditor, API standards), which were viewed as useful foundations but insufficient for building a quality mindset or process assurance capabilities.
- **82%** of employees had never received any quality training, reflecting widespread organizational gaps.
- **85%** of employees did not know their organization's quality policy or objectives. Poor internal communication of quality systems was seen as a major barrier to engagement.
- **67%** reported ISO 9001 was implemented primarily for external validation.
- Only **23%** of respondents viewed quality as a leadership concern.
- Over **70%** stated that quality had a minimal influence on decision-making, KPIs, or strategic planning.

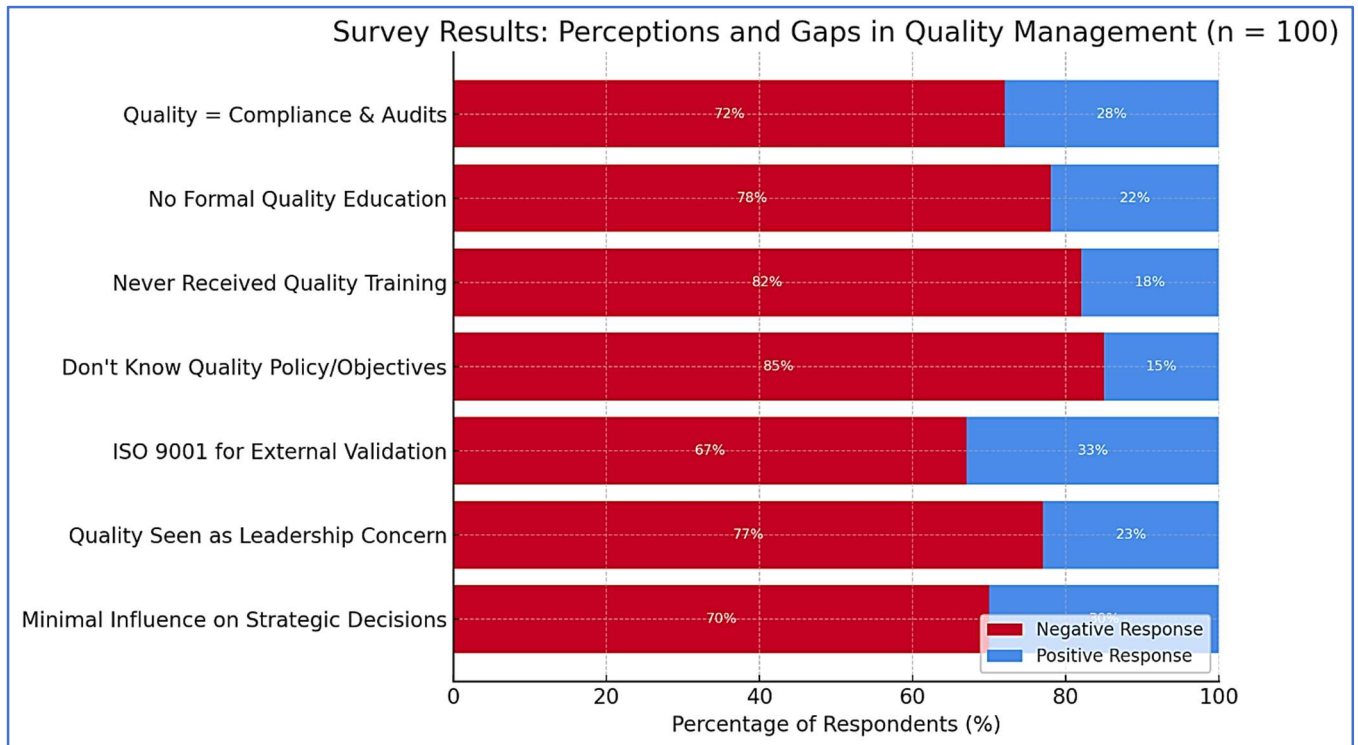


Figure 1 Survey Results.  
Source: own elaboration

The findings confirmed a systemic gap between certification and embedded quality practice. These insights validated the need for a model like BAME focused on ownership, business alignment, and sustainability.

Interview transcripts and RCA summaries were reviewed manually and coded thematically, guided by the six-phase framework of Braun and Clarke (2006). Codes were organised in tabular form to identify recurring patterns and themes. Findings from these qualitative methods were then triangulated with survey data to enhance overall validity and coherence.

### 3.4 Literature Integration

Insights from RCA, interviews, and the survey were compared with academic literature discussed in Section 2. A consistent pattern emerged: quality systems in developing economies are hindered by poor ownership, misinterpretation of frameworks, and misalignment with strategy. Despite widespread use of ISO 9001 and similar models, literature often fails to challenge the core misconception that quality is a separate, externally managed function.

BAME addresses this gap by recognizing that quality must be owned where it happens within each process. It redefines quality as an operational characteristic and integrates assurance into daily performance, enabling a shift from symbolic compliance to sustainable value creation.

#### 4. Results and discussion

Survey and interview data confirm that quality is still widely seen as a compliance task, owned by a department and validated through audits. This mindset limits quality's strategic role and reduces it to a reactive activity rather than a performance enabler.

Language plays a role. Terms like "Quality Assurance" or "Quality Control" reinforce the idea that quality is something done by specialists, separate from the core business. As a result, process owners fail to recognize their role in achieving quality outcomes, and executives rarely link quality to financial or operational goals.

This research redefines quality to the degree to which each process meets its requirements. It is not an external function but an internal characteristic of effective operations. Quality exists in how procurement delivers value, how finance ensures accuracy, or how logistics maintains consistency and so is other processes achieve their expected outcome. Each process has its own quality, and that quality must be maintained and assured by those who run it.

This is not a rejection of existing systems, but an evolution. Organizations already have quality structures in place, BAME helps reposition them from compliance-based to business-integrated systems of value creation.

##### 4.1 Limitations of Traditional Approaches

Frameworks like ISO 9001 have helped organizations formalize documentation and adopt structured procedures. However, their implementation often stops at certification. Quality becomes an administrative objective rather than a strategic advantage.

In many cases, the QMS is managed in isolation developed by quality teams, reviewed during audits, and rarely embedded in KPIs or executive dashboards. As a result, it remains disconnected from process ownership and business performance.

This disconnect has consequences: missed opportunities for improvement, diffused accountability, and low return on quality investment. Over time, organizations may maintain certification without enhancing performance or stakeholder trust.

Importantly, the issue is not with the frameworks themselves, it is how they are perceived and applied. When quality is viewed as separate from the business, it cannot lead the business.

##### 4.2 Introducing Business Assurance (BA)

To address these limitations, this research proposes Business Assurance (BA) a concept that repositions quality as a strategic characteristic embedded across every process.



BA does not discard traditional systems. Instead, it reframes them around ownership, alignment, and value. Under BA:

- Each process defines and assures its own quality.
- Quality is aligned with strategic and sustainability goals, not just audit readiness.
- Assurance becomes a daily practice, not a periodic review.
- Executives view quality as a performance outcome, not a compliance metric.

This concept reflects the reality that business success depends on process effectiveness. Quality must therefore become a shared, cross-functional responsibility not confined to a single team.

### 4.3 The Business Assurance Model of Excellence (BAME)

The Business Assurance Model of Excellence (BAME) operationalizes the Business Assurance (BA) concept by transforming how quality is understood, implemented, and owned across the organization. Rather than treating quality as a standalone system, BAME positions it as the degree to which every process meets its defined purpose, aligned with strategic business outcomes.

The structure of the proposed model is illustrated in Figure 3, showing the relationship between the central operational process and the supporting functional processes that assure its effectiveness. The large grey gear represents the operational core and its adjustable subprocesses, while the surrounding gears symbolize enabling functions, Finance, HR, Procurement (PSCM), Marketing, Governance, and Internal Control that must interact to sustain performance. The model also highlights that every business begins and ends with the customer, forming a continuous assurance loop.

The grey central gear represents the operational process and its internal subprocesses. The surrounding colored gears denote enabling functions (HR, Finance, Procurement [PSCM], Marketing, Governance, Internal Control, and Commercial Processes) that provide assurance support to the operational core. Customer gears at both ends signify that every business starts and ends with customer value. Together, these interconnected elements visualize quality as a system-wide characteristic linking strategic alignment, process effectiveness, and sustainability.

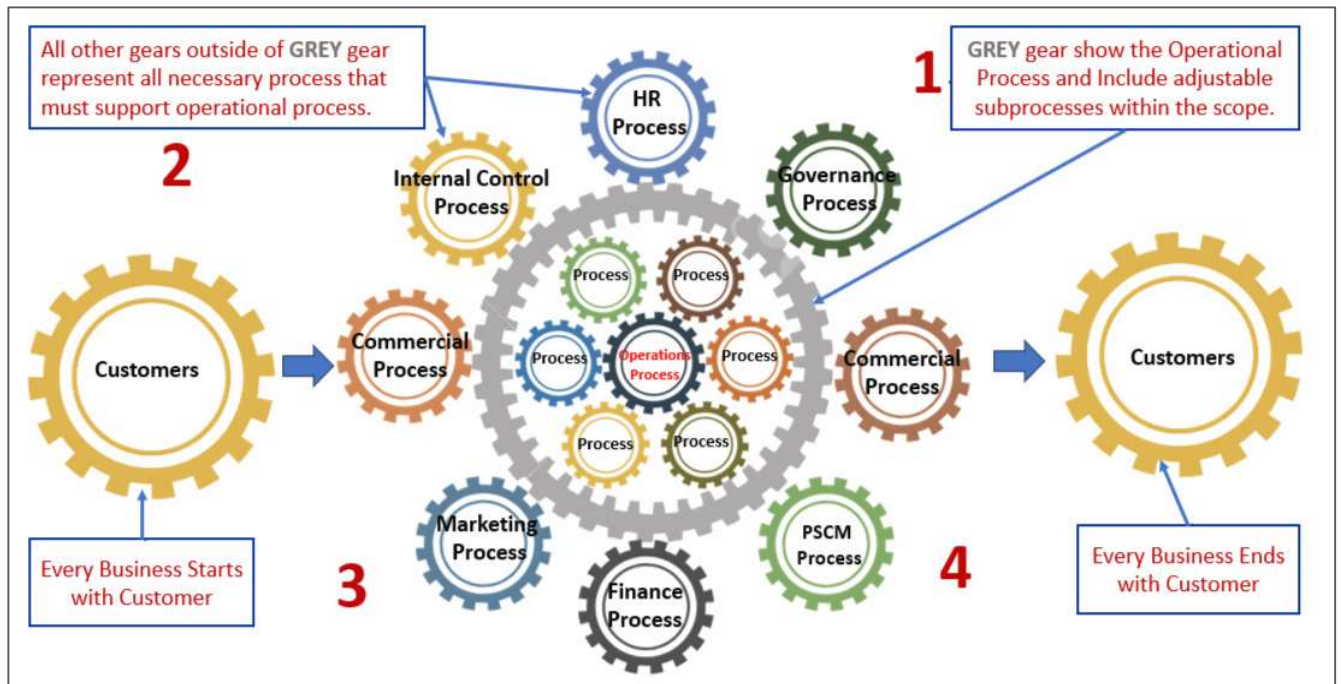


Figure 2 Business Assurance Model of Excellence (BAME).  
Source: own elaboration

BAME does not replace frameworks like ISO 9001, EFQM, or sector-specific models. Instead, it enhances them by embedding quality into the way each function operates daily, not just during audit cycles.

The model is built on six foundational pillars, each representing a key benefit of this approach:

1. **Strategic Alignment**

Quality objectives are derived directly from business goals and made visible across departments. This ensures every process contributes to the organization’s strategic direction.

2. **Integrated Processes**

There is no parallel quality system. Instead, quality is embedded into procurement, HR, operations, logistics, and finance making assurance part of routine management, not an afterthought.

3. **Leadership Accountability**

Executives and senior leaders own quality outcomes. They are responsible for aligning resources, monitoring KPIs, and ensuring visibility across the organization.

4. **Process-Based Assurance**

Each process defines its own quality criteria and assures outcomes internally. This



distributes ownership and reduces dependency on external audits or central quality departments.

### 5. Scalability and Simplicity

BAME is adaptable to businesses of any size or complexity. It avoids unnecessary documentation and focuses on real outcomes, making it ideal for both SMEs and large enterprises.

### 6. Sustainability Enablement

By promoting accountability and transparency, BAME supports resource efficiency, stakeholder trust, and long-term value creation. It helps quality evolve from compliance to contribution.

With BAME, every process and every person can see their impact on the quality of others. This creates transparency, alignment, and shared responsibility. Departments are no longer isolated in pursuit of internal targets; instead, they work together to deliver consistent, customer-aligned value. Organizations shift from certificate-driven activity to outcome-driven quality, where business interest is centralized and sustained through operational excellence.

### 4.4 Comparative Case Study: Manufacturing Sector

Building on the conceptual structure presented in Figure 3, the following comparative case study demonstrates how the BAME model translates into practical organizational outcomes.

To illustrate the contrast, two mid-sized manufacturing companies operating in similar markets were examined:

Company A (Traditional QA): ISO 9001-certified for 7+ years. Quality was managed by a central team focused on audits. Process teams had little engagement with quality objectives. Improvements were reactive, and certification was viewed as a necessity, not a tool.

Company B (BAME-Aligned): Rebuilt its quality system around BAME. Each department defined process-specific goals tied to business strategy. KPIs reflected internal assurance, not audit readiness. After 12 months, the company saw a 25% drop in nonconformities, improved interdepartmental collaboration, and greater engagement. Quality became part of performance discussions at the executive level.

This case comparison reinforces the core message: having a quality system is not enough. It is how quality is understood, owned, and aligned that determines impact. When quality is assured by those who execute the process, it becomes real.



These cases validate the practical relevance of the BAME framework, showing that its process-ownership principles can be applied effectively in real industrial contexts and measured through tangible performance improvements.

### 5. Conclusion

This study contributes to redefining Quality Management in developing economies by confronting the persistent gap between compliance-driven systems and strategic business performance. While frameworks like ISO 9001 and EFQM have supported procedural structure and external accountability, their potential remains underutilized not because of their design, but due to how quality is positioned, interpreted, and implemented.

The findings reveal that quality is still perceived as a technical or support function detached from leadership, strategy, and process ownership. This misperception prevents organizations from leveraging quality as a source of value, innovation, or sustainability. The issue is not poor documentation or ineffective tools, but the failure to see quality as a characteristic of business success.

In response, this paper introduces the Business Assurance Model of Excellence (BAME) a practical and conceptual shift that redefines quality as the degree to which every process meets its own requirements. BAME challenges the idea of quality as a department or certificate. It positions quality as an outcome of strategic alignment, internal assurance, and process effectiveness.

By embedding quality within each process and distributing responsibility across functions, BAME transforms quality from a symbolic practice into a driver of performance, trust, and sustainable growth. It provides a scalable framework for organizations to evolve from audit readiness to business readiness enabling long-term resilience.

Quality is no longer something we inspect; it is something we enable. And with BAME, every process and person contribute to that enablement, creating a shared platform for excellence in business and sustainability.

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## TEACHERS' AI COMPETENCIES SEEN BY DIFFERENT AI TOOLS

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## ABSTRACT

**Purpose:**

Artificial intelligence (AI) is rapidly transforming daily life through its integration across sectors such as research, medicine, business, and education. Understanding AI's competencies is crucial not only for information science professionals but also for educators shaping future generations. This paper aims to analyze and compare suggested AI competencies for teachers as identified by various AI tools using a structured set of prompts. By examining similarities and differences, these competencies are grouped into relevant areas, providing valuable insights into the role of AI in education and its potential to empower teachers in navigating this evolving technological landscape.

**Design/methodology:**

The methodology involved data acquisition from five AI tools—Claude, Perplexity, ChatGPT, Gemini, and Copilot—using personal free accounts, while excluding advanced research features such as Deep Seek (Perplexity), Deep Research (Gemini), and Think Deeper (Copilot). Data was generated using four identical prompts across all tools. The analysis was conducted using qualitative content analysis through Atlas.ti software to uncover similarities, differences, recurring themes, and their categorization into proposed competencies. This approach ensured a systematic comparison of the outputs, highlighting key aspects of each tool's response capabilities.

**Findings:**

The research findings revealed both differences and similarities in the suggested AI competencies for teachers, categorized into overlapping themes across multiple AI tools or unique to specific tools. Emerging themes highlighted the significance of strategies for leveraging AI in educational settings and underscored the need for continuous professional development to enhance teachers' competencies in using AI tools effectively. These insights emphasize the critical role of AI in education and its potential to empower educators to navigate and adapt to the evolving technological landscape while fostering their ability to integrate AI into teaching practices.

**Research/practical implications:**

Equipping teachers with competencies to integrate AI in their teaching is essential for fostering learners' AI skills, ensuring a more capable workforce for their future careers. This is particularly crucial within the economic sector, as AI tools are increasingly embedded in daily life, offering significant cost-saving opportunities while also requiring substantial investment in AI research. The development of skilled professionals is vital to maximizing the potential of AI, both in practical applications and in driving innovative advancements, underscoring the importance of continuous teacher training and professional development to meet the demands of an AI-driven world.

**Originality/value:**

The originality of the paper lies in its dual focus on education and economics in the AI era. It highlights the importance of equipping teachers with AI competencies to foster students' skills,

preparing them for professional roles that increasingly depend on AI tools. Additionally, it bridges the gap between the education and economic sectors, demonstrating their interdependence in shaping future workforce readiness. By addressing this connection, the paper underscores the mutual impact of these domains on national and international development, offering a unique perspective on the intertwined evolution of education, technology, and economic progress.

**Keywords:** artificial intelligence, AI, teachers, competencies, education, economy

**JEL Classification:** I20, A20

## 1. Introduction

The rapid integration of artificial intelligence (AI) into diverse domains of daily life has become increasingly apparent, often in inconspicuous ways. From personalized financial services in banking and insurance to tailored recommendations in e-commerce platforms, AI has revolutionized user experiences. Its applications extend to critical sectors such as healthcare, where it assists medical professionals in interpreting diagnostic results, and education, where it is reshaping pedagogical approaches. As AI continues to permeate human activities, a foundational understanding of its principles and applications has become essential across all spheres of life. Unlike transient technological trends, AI is anticipated to remain a pivotal force, necessitating the development of competencies that enable its effective and ethical utilization by future generations.

In this context, educators hold a central role in equipping learners with the skills required to navigate an AI-driven world. Teachers are instrumental in preparing individuals to seamlessly integrate AI into their personal and professional lives. This imperative has catalyzed global initiatives, exemplified by the publication of guidelines and regulatory frameworks by organizations such as UNESCO, which have subsequently been adapted for regional contexts, including the European Union. A particularly innovative approach involves leveraging AI tools themselves to identify the competencies educators must acquire, thereby utilizing AI's capabilities to inform and shape this critical area of development.

This article examines the outputs generated by free versions of widely recognized AI tools—Perplexity, ChatGPT, Claude, Gemini, and Copilot—while excluding features such as “deep seek” in Perplexity, “deep research” in Gemini, and “think deeper” in Copilot. Employing a consistent initial prompt supplemented by three additional, more detailed prompts, the study elicits a range of classifications and concrete examples of the competencies recommended by these tools. Furthermore, the analysis considers the resources referenced by each AI platform. By synthesizing these findings, the research provides insights into AI's transformative potential



within education and highlights its capacity to empower educators in adapting to rapid technological advancements. Through an exploration of the competencies proposed by AI systems, this paper contributes to the broader discourse on teacher preparation and professional development in an era increasingly influenced by AI.

## 2. Literature review/theoretical background

AI has emerged as a transformative paradigm across diverse domains, including education, necessitating the development of novel competencies among educators. While definitions of AI vary, the Encyclopaedia Britannica characterizes it as *“the ability of a digital computer or computer-controlled robot to perform tasks that are typically associated with intelligent beings, such as reasoning, learning, and problem-solving”* (Encyclopaedia Britannica, n.d.). The integration of AI tools into pedagogical practices is grounded in established theories such as digital literacy, technological pedagogy, and adaptive learning environments. Notably, the TPACK model (Technological Pedagogical Content Knowledge) delineates the dynamic interaction between technological expertise and instructional methodologies (Mishra & Koehler, 2006; Schmid, Brianza & Petko, 2020), while UNESCO’s guidelines on AI in education advocate for ethical implementation, equitable accessibility, and robust teacher training initiatives (UNESCO, n.d.).

AI-driven tools are pivotal in reshaping contemporary educational practices. They facilitate personalized learning, optimize administrative workflows, and enhance creative capacities among students. However, these advancements impose a critical need for educators to cultivate specialized skills, fostering digital agency and ethical discernment. Of particular significance is the concept of digital competence, defined in the European framework for lifelong learning as *“the confident and critical use of Information Society Technology (IST) for work, leisure, and communication, underpinned by foundational IT skills, encompassing the retrieval, assessment, storage, production, presentation, and exchange of information, as well as engagement in collaborative networks via the Internet”* (European Commission, 2007).

Institutions such as UNESCO have underscored the importance of integrating AI into educational contexts, emphasizing the role of educators in fostering AI literacy. Their recommendations advocate for the development of competencies encompassing ethical AI utilization, critical appraisal, and effective instructional application. Concurrently, European Union frameworks on digital education policy stress equipping educators with the requisite skills to bridge technological, pedagogical, and curricular dimensions effectively (European Commission, n.d.).



Furthermore, the ramifications of AI competencies extend beyond the educational sector, intersecting with economic development, workforce adaptability, and policy formulation. Scholarly publications frequently draw parallels between equipping educators with AI-related skills and preparing learners for AI-integrated professions. For instance, reports such as *“Boosting Productivity and Business Growth”* by Business at OECD (Business at OECD, n.d.) and *“Skill Needs and Policies in the Age of Artificial Intelligence”* by OECD underscore the intrinsic linkages between educational preparedness, technological advancement, and economic prosperity (OECD, n.d.). This interconnectedness is exemplified by Hadi Partovi, founder of code.org, who remarked, *“AI won’t take your job. Somebody who knows how to use AI better than you will take your job”* (Partovi, n.d.). Such insights underscore the imperative of fostering comprehensive AI literacy as a cornerstone of global progress.

### 3. Methods

This study examined the response capabilities of five AI tools—Copilot, ChatGPT, Claude, Gemini, and Perplexity—under standardized conditions. Access was provided via free personal accounts, ensuring the exclusion of advanced features such as Deep Seek (Perplexity), Deep Research (Gemini), and Think Deeper (Copilot) to maintain consistency across comparisons. Data was collected by administering four predefined standardized prompts uniformly across all tools.

Additionally, two identical prompts were used to elicit responses from the five AI tools. These prompts were as follows:

1. *What competences of teachers in using AI do you consider the most important?*
2. *Could you add the resources you used for the replies?*

Five responses to each prompt were obtained from each tool, and the original outputs are presented as QR-coded images categorized by the respective prompts:



Figure 1 Responses to prompt 1

Source: author's elaboration using Atlas.ti



Figure 2 Responses to prompt 2

Source: author's elaboration using Atlas.ti

The data collection process involved using free accounts for all tools, with identical phrasing across the prompts to minimize variability in inputs. Each tool generated five responses per prompt, which were subsequently compiled into a database for detailed analysis. Advanced functionalities and customizations beyond the baseline settings of the tools were intentionally excluded to maintain a uniform experimental setup.

Two analytical methodologies—quantitative and qualitative analysis—were employed to process the generated outputs. This systematic approach ensured consistency by using identical prompts, applying qualitative methods to uncover thematic patterns, and categorizing competencies. Furthermore, key features of the AI tools' response capabilities were identified through thematic categorization.

Qualitative content analysis was conducted using Atlas.ti software (ATLAS.ti Research Hub, n.d.), facilitating the analysis of textual data obtained from each tool. The analysis aimed to identify similarities, distinctions, recurring themes, and their classification into relevant competencies for teachers' effective use of AI in educational practice. The categorization process was guided by the following research questions:

1. *What competences do the AI tools seen as the most important for the teachers and their teaching practice?*
2. *Are there any major differences among the chosen AI tools and the suggested areas of competences?*

Quantitative analysis was applied to measure the volume and type of resources (if any) referenced by each AI tool during response generation. The data was systematically tabulated to compare the frequency and nature of resources cited across tools, addressing the research

question: “What is the number of listed resources the AI tools used for generating the answers?”.

#### 4. Results and discussion

To measure quantitative indicators, the distribution of resources across various AI tools was analyzed based on their responses. These resources were quantified and categorized, as illustrated in Table 1, which provides an overview of the distribution of resources by AI tool, including relevant notes on their form and content.

Table 1 Distribution of Resources Across Tools

Tool	Number of resources	Percentage of Total Resources	Notes on Cited Resources
ChatGPT	8	50%	framework, reports, researches, academic publications, practical tools and initiatives
Claude	4	25%	UNESCO, ISTE, DigCompEdu, researches
Copilot	0	0%	mix of general knowledge
Gemini	1	6.25%	UNESCO + general knowledge
Perplexity	3	18.75%	UNESCO, CEDEFOP Toolkit, LinkedIn Analysis

Source: own elaboration

The data indicate that ChatGPT serves as the most extensively utilized resource, accounting for 50% of the total resources. It predominantly supports frameworks, reports, academic publications, and practical initiatives. Claude ranks second, contributing 25% of the resources, with an emphasis on international standards and frameworks, such as UNESCO, ISTE, and DigCompEdu, in addition to research outputs. Meanwhile, Gemini plays a minor role with one resource (6.25%), blending general knowledge with UNESCO content. Perplexity accounts for 18.75% of the resources, with contributions highlighting UNESCO, CEDEFOP Toolkit (CEDEFOP, n.d.), and LinkedIn analyses (LinkedIn, n.d.). Copilot, despite being listed, does not provide quantified resources, implying potential reliance on general knowledge rather than specific cited materials.

This distribution suggests a reliance pattern skewed towards ChatGPT, followed by moderate use of Claude and Perplexity. Conversely, Gemini's minimal role and Copilot's lack of cited resources reflect divergent applications of these tools. These variances may be attributed to the distinct algorithms and resource schemes underpinning each AI tool.

In the qualitative analysis, Atlas.ti statistical software was employed to identify and apply the most relevant codes in relation to the stated research questions embedded within the prompt. This analysis comprised two stages: first, identifying relevant codes for content analysis, and second, comparing the suggested areas of competencies across individual AI tools in response to the prompt.

Table 2 Codes Distribution within the Responses

AI tool / Code	Claude	Copilot	Gemini	ChatGPT	Perplexity
Competence	14	9	2	22	6
Critical	5	8	5	7	8
Data	2	14	9	10	5
Digitals	7	11	10	11	2
Ethics	5	16	17	18	19
Literacy	3	8	5	6	3
Pedagogy, teaching, education	44	44	41	46	22
Resource	3	3	4	3	9
Student, learner	17	20	6	20	13
Teacher, educator	16	20	23	4	29
Tool	11	19	18	17	17

Source: author's elaboration using Atlas.ti

The analysis highlights several key patterns within the code distribution across AI tools. Notably, the category "Pedagogy, Teaching, and Education" consistently achieves the highest frequency across tools, underscoring its central role in addressing teacher competencies related to AI. Similarly, the category "Teacher and Educator" also features prominently, reflecting the specific focus of the research on teaching professionals. Interestingly, "Student and Learner" exhibits substantial input from certain tools (e.g., Claude, Gemini, Perplexity), with lower scores in Copilot and ChatGPT. This variance may signify differing emphases on learner-centered versus educator-centered competencies.

Ethical considerations are well-represented in four of the tools, with Claude as an exception. Such differences may stem from the diverse processing methodologies and resource dependencies inherent to each AI tool. Additional insights emerge in categories such as



"Competence," "Data," and "Digital," where certain tools exhibit stronger emphasis, revealing their alignment with specific aspects of educational AI implementation.

In contrast, the lowest-scoring categories—"Literacy" and "Resource"—expose disparities in tool configurations and their chosen focus on educational processes. Balanced data is observed within the "Tool" and "Critical" categories, indicating their significance in AI-driven recommendations for teacher competencies.

From these analyses, seven essential competency areas emerge as critical for educators in an AI-integrated pedagogical context:

1. Fundamental knowledge of AI.
2. Digital and data literacy.
3. Critical thinking and reflective application.
4. Ethical awareness and sensitivity.
5. AI-driven pedagogy.
6. Learner-focused AI literacy.
7. Continuous adaptability and lifelong learning.

These competencies span a spectrum from technical "hard" skills (e.g., foundational knowledge, digital literacy) to the more nuanced "soft" skills (e.g., ethical discernment, pedagogical innovation). Together, they reflect the evolving demands of integrating AI within educational practices.

Moreover, the competencies of educators are inextricably linked to their role as economic actors. By equipping students and learners with AI literacy, educators contribute to shaping a workforce prepared for an AI-driven economy. The relationship between teacher preparation, student readiness, and economic growth is evident, underscoring the importance of fostering AI-ready educators.

However, challenges persist, including the financial and environmental costs of AI implementation, the rapid evolution of AI-driven professions, and uncertainties surrounding future workforce demands. Addressing these issues requires comprehensive strategies to prepare educators for the transformative shifts in their profession while ensuring long-term sustainability in AI application.

### 5. Conclusion

The integration of AI into educational contexts represents a transformative paradigm shift, offering substantial potential to enhance pedagogical efficacy, streamline operational



workflows, and foster creative innovation. Nevertheless, this advancement necessitates the cultivation of specialized competencies among educators, including digital literacy, technological pedagogical proficiency, ethical discernment, and adaptive instructional methodologies. Theoretical constructs such as the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006; Schmid et al., 2020), alongside recommendations from authoritative bodies like UNESCO and the European Union (UNESCO, n.d.; European Commission, n.d.), underscore the imperative of equipping educators with AI literacy to effectively bridge the interconnections between technology, pedagogy, and subject content.

The present study employed both qualitative and quantitative methodologies to investigate the capabilities of AI tools—namely Copilot, ChatGPT, Claude, Gemini, and Perplexity—in identifying and addressing the critical competencies required for educators in AI-integrated pedagogical environments. Through an in-depth comparative analysis, thematic patterns were delineated, revealing notable variations in the strengths and applications of these tools. ChatGPT emerged as a dominant contributor, demonstrating versatility in providing theoretical frameworks, academic references, and actionable insights. In contrast, Claude demonstrated a unique emphasis on adherence to international standards and scholarly research, while Gemini and Perplexity addressed specialized niches within the domain of AI-driven educational applications. Copilot presented a divergent paradigm, relying predominantly on generalized knowledge without substantial integration of external resources.

The thematic analysis illuminated "Pedagogy, Teaching, and Education" as a cornerstone category across all AI tools, thereby reaffirming the centrality of pedagogical frameworks in AI-enhanced educational practices. Furthermore, the prevalence of themes such as "Teacher and Educator," "Competence," "Data," "Digital Skills," and ethical considerations aligns with broader educational imperatives and societal challenges. Ethical considerations were markedly absent in Claude's outputs, indicating a potential area for improvement.

This analysis culminated in the identification of seven key competencies deemed essential for educators to navigate AI-integrated pedagogical contexts. These competencies synthesize technical expertise with ethical, learner-centric, and adaptive strategies, fostering the preparation of students for an increasingly AI-driven workforce. The linkage between teacher preparedness and economic resilience further underscores the societal and global relevance of the study's findings.



The research also highlights pressing challenges that must be addressed to achieve sustainable AI integration in education. These include financial constraints, environmental implications, and the dynamic nature of AI-driven professions. The findings advocate for strategic, holistic approaches that empower educators to harness AI's potential effectively, ensuring pedagogical practices remain aligned with the exigencies of an evolving global landscape.

In conclusion, fostering educators proficient in AI literacy is not merely a pedagogical objective but a requisite for advancing educational practices, societal progress, and economic stability in the face of rapid technological transformation.

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## THE IMPACT OF ENTREPRENEURSHIP ON ECONOMIC DEVELOPMENT: CASE OF THE FEZ-MEKNES REGION IN MOROCCO

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### ABSTRACT

#### Purpose:

Entrepreneurship has become a central element of socio-economic development strategies at an international level. In Morocco, it serves as a tool for territorial development, helping to bridge the disparities' gap between rural and urban areas across regions. Accordingly, Moroccan public institutions have designed and implemented a set of programs aimed at promoting the contribution of entrepreneurs to regional development policies. The objective of our paper is to understand the role entrepreneurship plays in regional development policies. We will focus on analyzing the relationship between entrepreneurship and economic development in Morocco, with a particular focus on the Fez-Meknès region.

#### Design/methodology:

For the empirical development of our research, we used a mixed-methods approach. We combined the conduct of semi-structured interviews with the administration of questionnaires. We carried out the interviews with actors of the regional entrepreneurial ecosystem. Subsequently, we administered questionnaires to entrepreneurs who were located in the Fez-Meknes region. This allowed us to have a better understanding of the territorial dynamics that took place following the implementation of entrepreneurship-promoting policies and their economic outcomes on the region.

#### Findings:

Our results indicated that the implementation of entrepreneurial projects contributed to generating positive economic outcomes at a regional level. Furthermore, entrepreneurship played a pivotal role in enhancing local economic development as it created a mix of rural-urban dynamics that supported business growth and fostered innovation.

However, unlocking the full potential of entrepreneurship still requires overcoming external barriers related to ecosystem coordination, and lack of access to funding and infrastructure. Entrepreneurs also need to work on internal barriers such as self-doubt and fear of failure in order to ensure the success and viability of their entrepreneurial ventures.

#### Research/practical implications:

This research delves into the impact of entrepreneurship and regional economic development in Morocco. It contributes to our research field by providing empirical evidence regarding the contribution of entrepreneurial activities to the growth of the regional economy. By providing an overview of the perspectives of the actors of the regional entrepreneurial ecosystem, we provide practical recommendations for policymakers to improve the design and scope of future policies. Moreover, our study serves as a basis for further investigation about the role of



entrepreneurship in regional development. Thus, it provides a framework for future research in other contexts.

**Originality/value:**

The originality of our study lies in an integrated analysis approach, which takes into account both the perspectives of the actors of the regional entrepreneurial ecosystem and the experiences of local entrepreneurs. Accordingly, our paper offers a contextual outlook on entrepreneurship's impact, underlining success factors, challenges, and performance indicators. Furthermore, our research underscores the significance of the entrepreneurial ecosystem in regional dynamics and provides evidence to support its role in fostering economic development.

**Keywords:** Entrepreneurship, region, economic development, ecosystem.

**JEL Classification:** O11, L26

### 1. Introduction

Entrepreneurship consists of creating new organizations/activities or developing existing ones to produce value. In this sense, it serves as a key driver for economic growth and development. The literature on entrepreneurship provides a multifaceted overview of study angles. The relationship between entrepreneurship and economic development is increasingly becoming one of the main research topics due to its significant impact on the global economy as well as its practical implications on social and environmental contexts.

The evolution of the literature on entrepreneurship emphasizes how it managed to transcend its traditional perception of a mere driver of individual wealth into becoming a firmly established fundament of socio-economic progress (Audretsch et al., 2006; Porter, 1990). Accordingly, entrepreneurial activities have become a central tenet in the strategic development policies of both developed and developing economies. They generate employment, foster innovation, and contribute to growth (Baumol, 1996; Schumpeter, 1934). Furthermore, entrepreneurship serves as a tool for territorial development, helping to bridge the regional disparities gap and to promote balanced growth across various geographical landscapes (Florida, 2002; Glaeser et al., 2010).

Within the Moroccan context, territorial development is one of the major strategic priorities. The kingdom grapples with social disparities and economic heterogeneities across its regions, often pronounced between thriving urban centers and more economically marginalized rural areas. Hence, to address these challenges, the Moroccan government has strategically promoted entrepreneurship as a means of regional convergence and inclusive economic growth (Special Commission on the Development Model, 2021). Accordingly, Moroccan public institutions have designed and implemented a series of national and regional initiatives aimed at cultivating



a vibrant entrepreneurial ecosystem. This demonstrates their commitment to providing support and assistance to nascent ventures and to encouraging established ones to stimulate economic growth.

The Fez-Meknès region, renowned for its rich cultural heritage and diverse economic fabric, serves as a compelling context for examining the impact of entrepreneurship on regional economic development. The region exhibits a unique blend of traditional industries, burgeoning modern sectors, and a significant rural population. In this sense, it provides an appropriate setting to understand entrepreneurship's capacity to promote territorial development by merging urban dynamism and rural potential (Mamouni & Skouri, 2023). This understanding is pivotal to identifying the mechanisms through which entrepreneurship contributes to economic development, to discovering the challenges faced by entrepreneurs, and to evaluating the effectiveness of policy interventions. This will allow, in turn, informing future policies and enhancing the developmental impacts of entrepreneurial endeavors in this regional context.

Our work explores the role of entrepreneurship in regional development policies. We aim to analyze the relationship between entrepreneurship and economic development in Morocco, with a particular focus on the Fez-Meknes region. To carry out this study, we adopt a mixed-methods approach, integrating the perspectives of actors within the regional entrepreneurial ecosystem with the experiences of entrepreneurs located in the region. This integrated approach allowed building a clear understanding of the territorial dynamics that took place and their subsequent economic outcomes at the region level.

After this introduction, we will provide a literature review on entrepreneurship, its impact on economic development, and the role of the entrepreneurial ecosystem in this dynamic. In point three, we explain the methodological framework of our study, outlining the data collection and analysis procedures. In the subsequent section, we present the results obtained and their discussion. Finally, we will conclude the paper by summarizing our main contributions, stating their limitations and suggesting avenues for future research.

## 2. Literature review

### a. Entrepreneurship

Entrepreneurial activities foster innovation by disrupting existing markets through the assembly and use of new resources (Schumpeter, 1934). This concept of creative destruction is at the root of entrepreneurship research. Indeed, it highlights the contribution of innovation to economic development and growth generation.



Another perspective defines entrepreneurship as the capacity to identify and draw advantage from opportunities to create value (Engelen et al., 2009; Kirzner, 1973; Morris, Kuratko & Covin, 2008; Shane & Venkataraman, 2000). Contrary to radical innovation, the concept of alertness emphasizes the opportunity recognition and exploitation dimensions in the value creation process.

### b. The impact of entrepreneurship on economic development

Entrepreneurship's impact varies according to its objective, context, and type. Whereas innovation-driven entrepreneurship creates economic growth by introducing and implementing new technology (Ordeñana et al., 2024), activities based on proactiveness and opportunity recognition lead to stimulating the economic development dynamic and enhancing its influence (Stoica et al., 2020).

Furthermore, entrepreneurs serve as agents of economic development. Their activities support business growth by creating employment, generating income, and fostering innovation (Praag & Versloot, 2007). Thus, they play a pivotal role in shaping the economic landscape and enhancing its productivity. Numerous studies confirm the link between productive entrepreneurship and economic development (Bianchi, 2010; Wong et al., 2005).

### c. The entrepreneurial ecosystem

Entrepreneurship's ability to drive economic growth is substantially linked to the effectiveness of the entrepreneurial ecosystem. This concept refers to the conjunction of institutional, financial, social, and economic factors (Isenberg, 2010). Indeed, the magnitude of entrepreneurship's contribution to economic development is a direct reflection of the context where entrepreneurs conduct their business, the quality of its financial markets, and the quality of its institutional governance (Kasseeah et al., 2014; Neumann, 2020).

In addition, the Global Entrepreneurship Monitor highlights other variables, such as entrepreneurship-related education, entrepreneurship-promoting governmental programs, physical infrastructure, commercial and legal regulations, and research and development transfer (Kelley et al., 2016).

### d. Entrepreneurship in the Moroccan context

Literature on entrepreneurship and regional development is broad in scope and extensive in depth globally. In Morocco, studies have examined various aspects, predominantly related to the challenges and opportunities facing Moroccan entrepreneurs. These studies highlighted the need for overarching solutions to tackle challenges related to limited access to resources and funding, cultural stereotypes, and regulatory obstacles (Moutie & Elhamma, 2024; Khayati &



Lahrech, 2026; Robichaud et al., 2023). Accordingly, our study aims on one hand to assess the impact of entrepreneurship on the economic development of Moroccan territories. On the other hand, it aims to suggest appropriate solutions to the challenges entrepreneurs face.

### 3. Methods

For the empirical development of this paper, we adopted a mixed-methods sequential exploratory design (Creswell & Plano Clark, 2018). The rationale for using this design lied in the need for exploring the entrepreneurial dynamics and quantifying their contribution to regional economic development. Accordingly, the mixed-methods approach allowed us to conduct a broad quantitative inquiry with deep qualitative insights, and to proceed subsequently to a triangulation of findings to ensure their validity and credibility (Tashakkori & Teddlie, 2010).

This section begins with a brief presentation of the context of our study. Subsequently, it presents the sequential exploratory design combining qualitative and quantitative methods. Moreover, it explains the data collection and analysis techniques used to provide a multidimensional examination of entrepreneurship's contribution to the economic development of the Fez-Meknès region.

#### a. Context of the study: The Fez-Meknes region

The Fez-Meknès region is located in the north-central part of Morocco. As of 2015, it is one of twelve regions established by Morocco's administrative territorial reorganization. Its surface is approximately 40,075 km<sup>2</sup>, representing about 5.7% of the kingdom's area (Region of Fez-Meknès, 2017). It comprises the prefectures of Fez and Meknès and the provinces of Boulemane, El Hajeb, Ifrane, Moulay Yaacoub, Séfrou, Taounate, and Taza.

Its population, according to the 2024 census, is 4,467,911 inhabitants (HCP, 2024), representing 12.5% of the national population. The region contributed to the national GDP by 8.2% in 2021, ranking 4th nationally (HCP, 2023). Its key economic sectors are agriculture, industry, tourism, and offshoring/services. However, despite its numerous investment opportunities, the GDP per capita remains below the national average.

#### b. Qualitative phase: Exploring the Perspectives of the Entrepreneurial Ecosystem

The qualitative data collection phase focused on capturing the perspectives of the actors in the regional entrepreneurial ecosystem. Accordingly, we conducted semi-structured interviews with various stakeholders who were involved in the design and implementation of regional



development policies. The selection of interviewees was purposive, informed by maximum variation logic to capture a broad spectrum of roles and perspectives (Patton, 2015).

We targeted the four following categories of actors due to their complementary ecosystem roles and contribution to entrepreneurial outcomes (Etzkowitz & Leydesdorff, 2000; Audretsch & Belitski, 2021): a) Public policy/administration representatives, b) business support organizations and incubators, c) financial institutions, and d) Academia and researchers. Within each category, we selected participants based on decision-making authority and level of engagement with entrepreneurship programs. This approach allowed us to ensure representation of both the design and implementation phases and to gain a clear understanding of the community-level management mechanisms.

The inclusion criteria for interviewees included having at least five years' experience in entrepreneurship support programs in the Fez-Meknès region, occupying currently a role related to program design or implementation, and having the willingness to participate in the interview. The number of participants from each stakeholder group was determined based on their level of contribution, perceived influence, and relevance to the research objectives.

We developed an interview protocol to guide the discussions, based on a review of academic literature and preliminary stakeholder consultations. The protocol included a set of open-ended questions designed to explore four thematic areas. These areas included the role of entrepreneurship in the economic development of the Fez-Meknès region, the effectiveness of public support programs, key barriers and opportunities for entrepreneurs and recommendations for ecosystem improvement.

Following the participants' selection, we sent them invitations that described the study purpose, participation procedure, and confidentiality agreement. All participants provided informed consent. In total, we conducted twelve in person semi-structured interviews. They lasted on average sixty minutes. We recorded and transcribed them verbatim and used field notes to illustrate non verbal cues and situational context. The sample size provided sufficient information given the targeted nature and focused scope of the inquiry (Malterud et al., 2016).

Subsequently, we used thematic analysis to identify, organize, and interpret patterns of meaning within the qualitative data (Braun & Clarke, 2006). Accordingly, the qualitative data analysis provided a rich contextual understanding of the regional entrepreneurial landscape and informed the design of the quantitative instrument. The perspectives of the regional entrepreneurial ecosystem served as a foundation for the analysis of the relationship between entrepreneurship and regional development in Fez-Meknès.



### c. Quantitative phase: Assessing the impacts based on Entrepreneurs' Experiences

The quantitative phase of the research involved the administration of questionnaires to entrepreneurs in the Fez-Meknès region. This method aimed to gather data on their experiences, challenges, and the perceived impact of their ventures on the regional economy. We used a stratified random sampling technique to select a representative sample of entrepreneurs from various sectors and geographical locations within the Fez-Meknès region.

For the sampling frame development, we used business registration data and databases from business support organizations. We ensured a diverse representation of small, medium, and micro-enterprises, as well as businesses operating in both urban and rural areas. We developed the questionnaire through an iterative process merging literature review, expert consultation, and pilot testing. It comprised five thematic sections covering both entrepreneur and firm-level characteristics: a) demographic and business characteristics, b) entrepreneurial motivation and orientation, c) access to resources and institutional support, d) business performance indicators and e) perceived policy effectiveness and ecosystem quality.

The questionnaire's design aimed to quantify entrepreneurship's contribution to economic performance and to test insights generated from the preceding qualitative phase. We measured items on five-point Likert scales and included ratio-scale variables for indicators such as number of employees, change in turnover and export orientation. We refined the initial draft based on experts and practitioners' feedback. Furthermore, we conducted a pilot test with fifteen entrepreneurs to ensure content and construct validity. To assess the internal consistency reliability, we used Cronbach's alpha for multi-item scales. The results were satisfactory as the values exceeded the conventional 0.70 threshold (Tavakol & Dennick, 2011).

Questionnaires were distributed through various channels, including business support organizations, online platforms, and direct contact with entrepreneurs. Participation was voluntary and anonymous and respondents provided informed consent. In total, 140 questionnaires were successfully completed and returned. We stored data securely and used SPSS for the quantitative analysis. To test the association between entrepreneurial activity indicators and regional economic variables, we employed descriptive statistics, Pearson correlation, and linear regression.

## 4. Results and discussion

The study's mixed-methods research design provided a framework for the examination of entrepreneurship's role in regional economic development. Through the qualitative phase, we



gathered the ecosystem's perspectives and identified the design and implementation mechanisms of support programs. Subsequently, the quantitative phase served as an empirical examination of these programs' impact on entrepreneurs in the context of the Fez-Meknès region. At last, the triangulation of results from both phases yielded rich contextual insights confirmed through testing and empirical evidence.

Our results indicated that the implementation of entrepreneurial projects contributed to generating positive economic outcomes at a regional level. Furthermore, entrepreneurship played a pivotal role in enhancing local economic development as it created a mix of rural and urban dynamics that supported business growth and fostered innovation.

### a. Perspectives from the regional entrepreneurial ecosystem actors

The interviews revealed a shared understanding of entrepreneurship's growing importance for regional economic development. Public institutions representatives affirmed that governmental strategies played a key role in promoting entrepreneurial initiatives. Managers of incubators and financial institutions acknowledged an increase in the number of created ventures and consequently, the demand for funding from entrepreneurs. Figure 1 shows the evolution of enterprise creation in the Fez-Meknes region between 2014 and 2023. The regional center for investment's business registration data indicated a significant increase in the number of new legal entities due to the implementation of various programs aimed at providing financial support, such as the "Intelaka" initiative, as well as business development services, including training, mentoring, and assistance offered by diverse stakeholders.

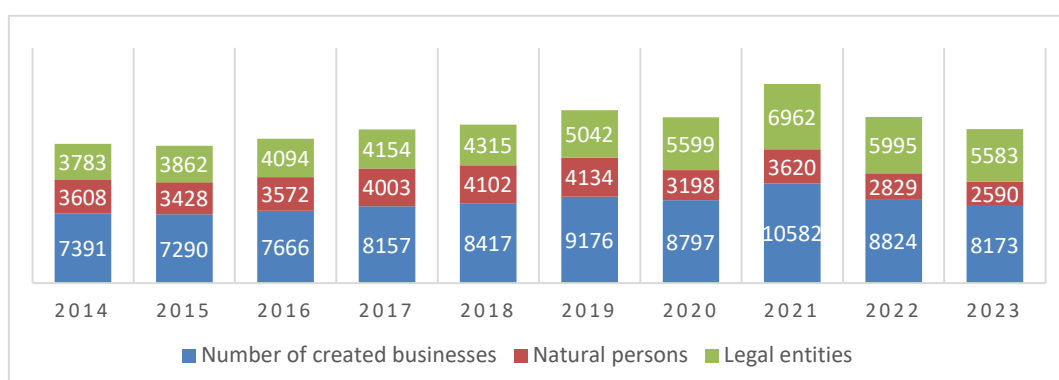


Figure 1 Evolution of entrepreneurial activities in the Fez-Meknès region (2014-2023)  
Source: Authors' original based on RCI Data

Researchers and faculty members also recognized the important role academia plays in fostering innovation and transferring knowledge. Thus, they developed entrepreneurship-



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related courses and programs to respond to the growing interest in entrepreneurship among students. In addition, university incubators and innovation hubs allowed strengthening the linkages between universities and the regional business community and fostering local development (Audretsch & Belitski, 2021; Etzkowitz & Leydesdorff, 2000).

Hence, we identified the four following emerging themes:

### Theme 1: Ecosystem and Institutional Coordination

Interviewees acknowledged the positive impact of entrepreneurship support programs on regional economic development. They, however, stated that coordination across ecosystem actors remained weak as it portrayed fragmented implementation strategies and inadequate management. Furthermore, they affirmed that this lack of coordination weakened the impact of public interventions and led to the dilution of their effectiveness.

### Theme 2: Financial access and firm performance

The entrepreneurial ecosystem underlined the importance of financial access in enhancing firm performance and developing the regional entrepreneurial dynamic. Accordingly, they focused on integrating various funding schemes into public policy design. These schemes included loans at preferential rates, microfinance and tailored funds for women and youth, especially in rural areas. Ecosystem actors recognized, nonetheless, that financial inclusion required further efforts to address entrepreneurs' diverse funding and investment needs.

### Theme 3: Capacity Building and Mentorship

Incubators and university partnerships served as catalysts of innovation and business growth. Participants explained how mentorship broadened entrepreneurs' perspectives and improved their managerial capabilities and risk management skills. The capacity building component in entrepreneurship programs also contributed to strengthen the knowledge transfer and innovation orientation, and to enhance global market access.

### Theme 4: Digital Infrastructure and Territorial Connectivity

Through the interviews, the entrepreneurial ecosystem actors affirmed Morocco's commitment toward the development of digital connectivity across its territories. Accordingly, they reported the implementation of an ambitious digital strategy that aimed to provide tools and trainings with concurrent investments in infrastructure. This strategy allowed increasing digital adoption among entrepreneurs, leading thereby to bridge rural-urban divides.

Ultimately, the qualitative phase revealed that entrepreneurship's developmental effects transcend mere economic indicators. They rely on ecosystem functionality and effective coordination. Accordingly, access to finance, mentorship and capacity building, and digital



integration emerged as primordial levers to ensure the growth and sustainability of entrepreneurial ventures and induce regional economic development.

b. Assessing the impacts based on the Experiences of Entrepreneurs

The analytic sample of the quantitative phase comprised 140 entrepreneurs based in the Fez–Meknès region. The sample included 57% micro enterprises (<10 employees), 30% small firms (10–49 employees), and 13% medium firms (50–249 employees). To assess the relationship between entrepreneurship and regional economic development indicators, we calculated Pearson’s correlation coefficients for all variables (business performance, innovation, job creation, employment growth, turnover, investment expansion). Correlations were positive and statistically significant ( $r = 0.48–0.65$ ,  $p < 0.01$ ), indicating a moderate to strong association between entrepreneurial activity and regional economic outcomes.

The questionnaires yielded responses that depicted diverse experiences of entrepreneurs in the Fez-Meknès region. The majority of respondents were micro and small enterprises operating in various sectors. We noted that 95% of them affirmed that the promotion of entrepreneurial activities was crucial to the growth of the regional economy. Regarding the effectiveness of public policies, entrepreneurs indicated that though the provision of training was beneficial to their entrepreneurial ventures, other aspects required more effort. These aspects included providing financial support and ensuring better coordination among different stakeholders.

The correlation between entrepreneurship intensity and regional GDP was positive and suggested that higher entrepreneurial performance and stronger innovation orientation positively associated with larger regional economic contributions. Correlations did not establish causality but indicated meaningful relationships. Corroborating results using nonparametric Spearman correlations produced similar magnitudes and significance levels, supporting robustness to distributional assumptions.

Across all provinces, businesses reported an increase in employment generation and annual turnover between 2014 and 2023, with a notable representation of commercial activities, industry, and construction services. This increase has led to strengthen regional value chains and contributed to enhancing the overall business climate. Figures 2 and 3 show respectively the distribution of newly established enterprises by province and by activity sector.

Both entrepreneurs and actors of the regional entrepreneurial ecosystem confirmed that entrepreneurship played a major role in bridging the rural-urban gap. Entrepreneurial dynamics contributed to creating linkages between urban and rural markets, allowing for an exchange of supplies, marketing channels, and information. Promoting entrepreneurship has also led to



fostering innovation through the integration of technology in various phases of product and service development. Entrepreneurs have also reported that rural areas leveraged online platforms to reach more customers and prospect new markets.

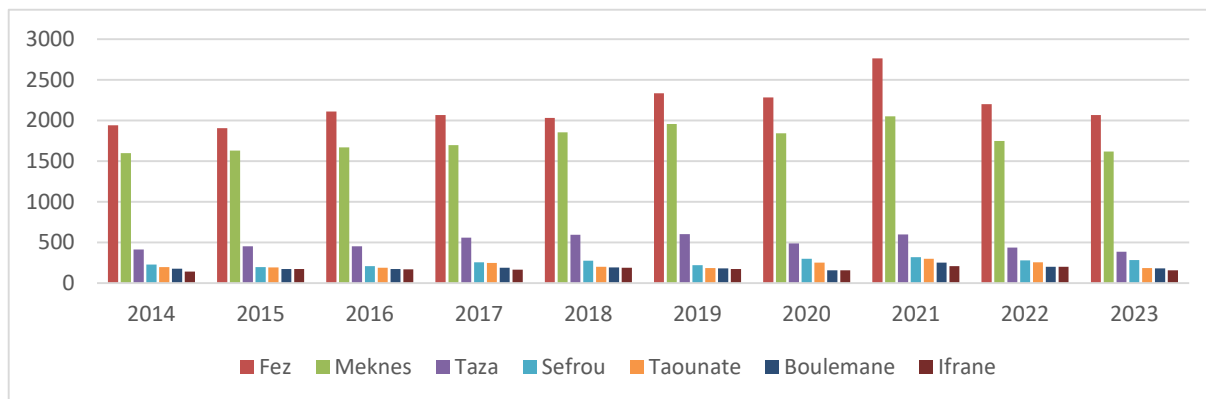


Figure 2 Newly established enterprises in the provinces of Fez-Meknès region (2014-2023)

Source: Authors' original

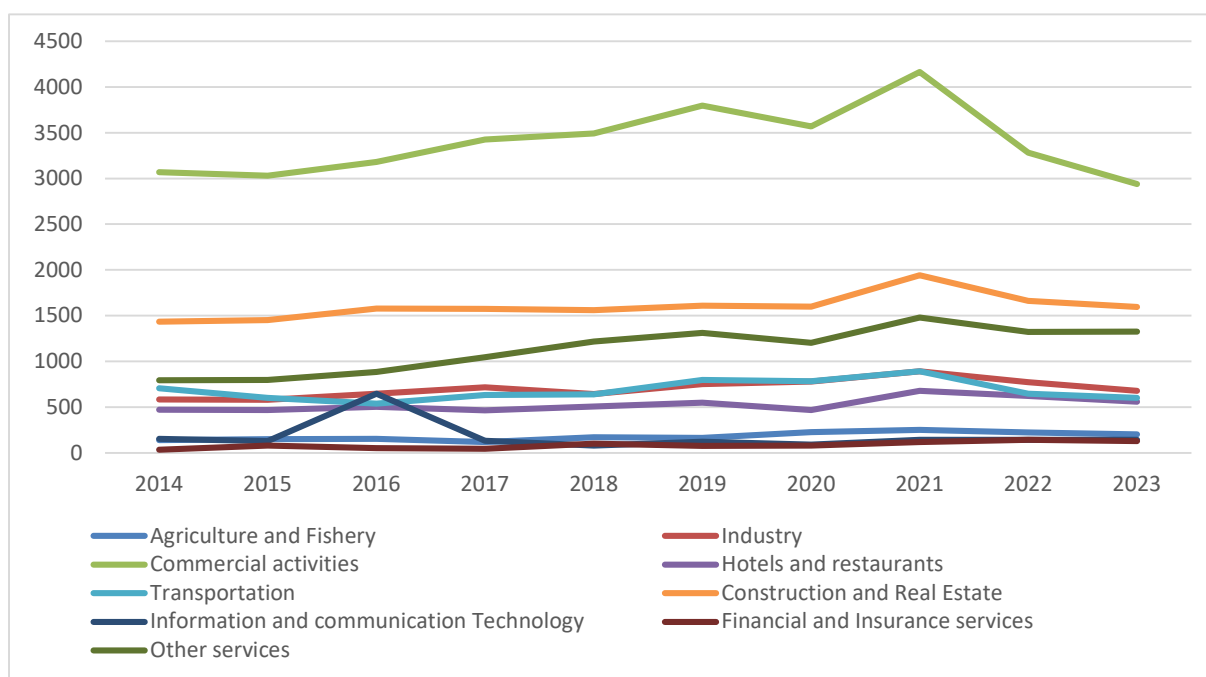


Figure 3 Evolution of new enterprises in the Fez-Meknès region by sector (2014-2023)

Source: Authors' original

Our results statistically confirmed that entrepreneurial capability and innovation orientation were the strongest predictors of regional economic contribution. Sectoral regressions revealed that the innovation effect is strongest in Industry and services but weaker in agriculture. This indicated that innovation's link to market expansion is more significant when a sector is integrated to formal markets and has a high technology adoption rate. Furthermore, rural-urban



heterogeneity tests indicated positive overall effects. Digital adoption served as an important factor to increase market access and bridge the urban-rural performance gap.

c. Triangulation and integration of findings:

The sequential exploratory mixed-methods design provided empirical validation of the themes emerging from stakeholder interviews. While qualitative insights allowed structuring the questionnaire's construct through the selection of variables and question wording, the quantitative method provided statistical rigor. Accordingly, the research design contributed to ensure data complementarity and integration, enhancing thus both the internal validity and the exploratory richness of the study (Creswell & Plano Clark, 2018).

The questionnaire data corroborated the interview findings regarding external barriers to entrepreneurial growth. Entrepreneurs identified lack of access to funding, unavailable or inadequate infrastructure, and bureaucratic and regulatory complexities as the most significant challenges they faced, aligning with findings in other emerging economies (Hamdan et al., 2021; Khayati & Lahrech, 2026; Rashid et al., 2025). 57% of respondents attributed lack of progress to fear of failure and lack of self-confidence. Conversely, 43% of entrepreneurs reported that training, mentorship and public support led to the growth of their enterprises.

Our findings indicated a positive correlation between entrepreneurial intensity and regional GDP. In this sense, they align with previous studies that affirm that entrepreneurship plays a pivotal role in fostering job creation, developing value-chains and creating economic growth (Ács & Szerb, 2007; Naudé, 2012). Furthermore, our study identified innovation orientation, access to finance, digital adoption and ecosystem support as enabling conditions for mitigating systemic barriers and generating an effective and sustainable regional economic development dynamic. These findings are supported by several studies that provide empirical evidence on the role of the ecosystem in enabling entrepreneurial activities (Mason & Brown, 2014; Stam, 2015; Vogel, 2013).

## 5. Conclusion

This study delves into the impact of entrepreneurship on economic development in Morocco's Fez-Meknès region. It contributes to our research field by providing empirical evidence that reinforces the theoretical framework demonstrating that entrepreneurship plays a pivotal role in regional economic development. By providing an overview of the perspectives of the actors of the regional entrepreneurial ecosystem and the experiences of entrepreneurs, we offer a contextual analysis of entrepreneurship's role in achieving regional economic



development based on measurable outcomes such as employment growth, turnover increases, and contributions to local value chains. Entrepreneurial performance and innovation orientation emerged as strong predictors of regional contribution. Access to affordable finance, mentorship and incubation, and digital adoption provided enabling conditions.

Trough our findings, we also identified systemic barriers that impeded entrepreneurship's contribution to regional development and undermined the effectiveness of public support programs. These barriers included limited access to funding and infrastructure, lack of coordination among ecosystem actors, a paucity of training and mentorship opportunities and regulatory burdens. Entrepreneurs also identified internal barriers such as self-doubt and fear of failure that further hindered the success and viability of their ventures.

Accordingly, we suggest practical recommendations for policymakers to mitigate regional disparities and improve the design and scope of future policies. Entrepreneurship-promoting policies should focus on introducing inclusive support programs that provide tailored financing mechanisms, mentorship and training services. Moreover, ensuring ecosystem coordination and investing in technology and infrastructure is a prerequisite to promote entrepreneurial activities and ensure economic growth. Entrepreneurs, both in rural and urban areas, need to have access to good quality public services, modern transportation networks, appropriate equipment, and affordable technological services.

In addition, policies should focus on creating an enabling environment for entrepreneurs by making the regulatory frameworks more flexible and simplifying bureaucratic procedures. This measure will help entrepreneurs gain time and focus on their core activities. At last, overcoming internal barriers requires integrating psychological support into public policies' design. The entrepreneurial ecosystem has also a major role to play in creating strong linkages among actors, providing guidance, and connecting entrepreneurs.

This study is subject to few limitations. Although we used an integrated mixed-methods approach to provide an understanding of the impact of entrepreneurship on economic development, relying on self-reported data from entrepreneurs during the quantitative data collection phase might have introduced some bias. For instance, the perception of policy effectiveness varied depending on personal experiences. While the majority was mindful of the existence of entrepreneurship-supporting policies, those who benefited from funding reported positive experiences, while those who did not receive funding attributed it to bureaucratic complexities and insufficient support.



Moreover, our statistical associations document correlations but do not establish causality. While robustness checks and qualitative mechanisms strengthen causal plausibility, establishing causality requires longitudinal or quasi-experimental designs (Angrist & Pischke, 2009). Furthermore, the sample of entrepreneurs, though diverse, might not be fully representative of all entrepreneurial activities' sectors and locations in the Fez-Meknès region. Informal enterprises were not included due to the absence of registration data. Consequently, caution is warranted when generalizing results to the entire regional economy or to other Moroccan regions with different economic structures. We recommend replication in other regions and scaling to administrative datasets.

In conclusion, our study serves as a basis for further investigation about the role of entrepreneurship in regional economic development. Thus, it provides a framework for future research. Subsequent studies could use longitudinal or quasi-experimental designs to estimate causal effects of policy programs, test econometric models of spillover effects, and conduct comparative analyses across Moroccan regions to inform national entrepreneurship policy.

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**SCIENTIA IUVENTA 2025**  
**ACCOMMODATION RECOVERY AND DESTINATION**  
**COMPETITIVENESS IN THE POST-COVID ERA: AN OPEN DATA**  
**ANALYSIS**

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## ABSTRACT

### **Purpose:**

This study investigates the impact of COVID-19 on the accommodation sector in Slovakia by employing publicly accessible data to quantify variations in capacity, recovery rates, and pricing trends. It seeks to evaluate the manner in which these alterations influence destination competitiveness, emphasizing accommodation availability as an essential component of regional tourism attractiveness. Based on established frameworks in tourism competitiveness, the paper offers both a theoretical and empirical foundation for comprehending the post-pandemic transformation of accommodation services.

### **Design/methodology:**

The research employs official secondary open data sourced from the Statistical Office of the Slovak Republic covering the period from 2019 to 2023. A descriptive quantitative methodology is adopted, encompassing the computation of recovery indices, growth rates, and occupancy metrics to identify structural alterations in accommodation establishments. This empirical investigation is amalgamated with an examination of competitiveness theories, facilitating the integration of data-driven insights with established models, thereby underscoring the significance of accommodation availability in augmenting destination competitiveness.

### **Findings:**

The empirical analysis demonstrates notable transformations in accommodation dynamics, particularly highlighting a strong resurgence in private accommodations as opposed to traditional hotels. Discrepancies on a regional scale were identified, with some regions experiencing recovery more rapidly than others. These results imply shifting visitor preferences and emphasize the essential function of innovative accommodation solutions in enhancing destination competitiveness. The findings are consistent with competitiveness frameworks, signifying that increased accommodation capacity significantly contributes to a destination's market attractiveness and overall tourism efficacy.

### **Research/practical implications:**

The results provide critical insights for academic researchers, policymakers, and tourism stakeholders by identifying the recovery of accommodation as a principal factor in enhancing destination competitiveness. The research indicates that strategic investments in diverse, innovative accommodation solutions have the potential to augment regional attractiveness and resilience. Furthermore, the integration of open data analysis with competitiveness benchmarks can inform strategic initiatives, thereby improving tourism infrastructure and facilitating sustainable post-crisis recovery. It is recommended that future studies further investigate the relationship between accommodation dynamics and broader competitiveness impacts.

### **Originality/value:**





This study contributes by integrating comprehensive open data analytics with established frameworks of tourism competitiveness. It provides an innovative viewpoint on the impact of variations in accommodation availability, induced by the COVID-19 pandemic, on the competitiveness of destinations. The amalgamation of empirical findings with theoretical perspectives delivers both scholarly significance and practical guidance, presenting a persuasive argument for the pivotal role of novel lodging solutions in bolstering tourism resilience and facilitating strategic regional planning.

**Keywords:** COVID-19, Open Data, Accommodation Recovery, Destination Competitiveness, Tourism Resilience.

**JEL Classification:** L83, C55, R12

### 1. Introduction

In recent years, the strategic use of open data has gained increasing attention, particularly within the travel and tourism industry. Data-driven insights have become crucial for understanding tourist behavior, enhancing destination management, and improving competitiveness across tourism markets (Bernabeu et al., 2018). Moreover, the growing digitalization of the sector and the integration of smart technologies underscore the role of open data as a key analytical tool for supporting resilience and sustainability in tourism management (Alcaraz et al., 2024).

The COVID-19 pandemic brought an unprecedented shock to the global tourism industry, drastically altering travel patterns, accommodation demand, and regional performance dynamics (Lo Duca & Marchetti, 2019). Within Slovakia, these disruptions exposed significant variations in the structure and recovery of the accommodation sector across different regions. Understanding these changes is vital for evaluating how destinations adapt and compete in the evolving tourism landscape.

This study examines the impact of the COVID-19 pandemic on Slovakia's accommodation sector, focusing on variations in capacity, recovery rates, and pricing trends across regions. Using publicly accessible datasets, the research analyzes how these structural shifts influence destination competitiveness, with particular attention to accommodation availability as a critical factor in regional tourism attractiveness.

By integrating open data analysis with established frameworks in tourism competitiveness and resilience, this research offers both a theoretical and empirical foundation for comprehending the post-pandemic transformation of accommodation services. The findings aim to provide valuable insights for policymakers, tourism managers, and stakeholders seeking



to enhance strategic decision-making and foster sustainable, competitive regional tourism development.

### 2. Literature review/theoretical background

Accommodation infrastructure has long been recognized as a key determinant of tourism destination competitiveness. Earlier research emphasized that improvements in hotel efficiency, service quality, occupancy rates, and visitor satisfaction positively affect a destination's competitiveness standing (Hallmann et al., 2015; Mendieta-Peñalver et al., 2018). Accommodation quality directly shapes tourist perceptions, destination appeal, and thus influences competitiveness metrics such as the Travel and Tourism Development Index (formerly known as Travel and Tourism Competitiveness Index).

However, the relationship between accommodation capacity and competitiveness is nuanced. Petrevska (2011) highlighted that an oversupply of hotel beds could dilute service quality and lead to price undercutting, ultimately weakening a destination's competitiveness. Similarly, Tumbali (2020) demonstrated that alternative forms of accommodation, such as Airbnb listings, have emerged as significant drivers of tourist arrivals, suggesting that flexibility and diversification of supply are increasingly important competitiveness factors.

Empirical findings from Maráková, Dyr, and Wolak-Tuzimek (2016) further refine this understanding. Their research across EU member states revealed a low and statistically insignificant correlation ( $r = 0.09$ ) between the volume of accommodation infrastructure and macroeconomic competitiveness indicators such as GDP per capita. In contrast, a high, statistically significant correlation ( $r = 0.81$ ) was observed between accommodation availability and the number of tourist arrivals, highlighting the pivotal role of lodging supply in enhancing tourism attractiveness, rather than directly boosting economic output.

Moreover, Maráková et al. (2016) identified a strong correlation between tourism expenditure and competitiveness ( $r = 0.76$  for outbound trips and  $r = 0.65$  for domestic travel), suggesting that higher spending levels, supported by accessible and diverse accommodation, contribute substantially to a destination's competitive advantage.

Taken together, these findings imply that accommodation infrastructure serves as a necessary but not sufficient condition for competitiveness. Its primary contribution lies in facilitating visitor flows and supporting tourist spending, both of which indirectly bolster regional competitiveness. In line with resilience theory (Biggs et al., 2012; Ritchie, 2004),



structural diversification and adaptability in accommodation offerings strengthen a destination's ability to withstand shocks and capitalize on evolving market demands.

This theoretical framing underscores the importance of analyzing accommodation sector transformations, particularly the shift toward private and flexible lodging models, in evaluating the post-pandemic competitiveness and resilience of Slovak tourism regions.

### 3. Methods

Economic transformations naturally arise from technology, globalization, demographic changes, or crises like recessions and pandemics. The dynamic tourism industry is especially vulnerable to such external factors, affecting demand and supply. The COVID-19 pandemic has accelerated changes in the sector, with some operators showing resilience through diversification, innovation, or alliances. The following quantitative research focuses on structural changes in the accommodation sector using secondary data (e.g., capacity, prices) from credible open-access platforms (Statistical Office of the Slovak Republic). Assessing through different accommodation categories illustrates the sector's reaction to the exogenous disturbances. It addresses a research gap by offering a transparent, quantitative understanding of the sector's recent development and transformation using national open data. Collected data includes the number of available accommodation establishments, the number of bedrooms and bed places, pricing, and occupancy rates, covering 2019 to 2023. The reliability of the data supports standardized comparisons over time and across regions, facilitating a data-driven approach to strategic planning in tourism. Descriptive statistics will identify key characteristics of accommodation establishments and their performance. Comparative analysis of descriptive variables will reveal the recent changes in Slovakia and its constituting regions. Time series visualization will present the data using Microsoft PowerBI. The methodology considers temporal and geographical factors, reflecting the tourism sector's context amid structural and global events like COVID-19. The open-data-based methodology ensures transparency, comparability, and replicability in crisis analysis. The research questions are: RQ1: How has the pandemic altered the structure of available accommodation establishments? RQ2: Which tourism enterprises showed positive transformation, and which declined in employment and turnover? The research will answer these questions and provide insights into tourism development and structural economic changes. This foundation will aid future research and strategic tourism policy recommendations, supporting strategy and policy development to strengthen tourism.



#### 4. Results and discussion

In the first step, an absolute increase or decrease of accommodation establishments is assessed through comparative comparison of absolute numbers in examined period. As shown in Table 1, mixed development was determined in all 8 self-governing regions of Slovakia. For the development analysis, CAGR was calculated. Looking closer, geospatial differences point at higher motivation of accommodation providers to create new capacities in mountainous regions of the republic. Regions that include National Park High Tatras and surroundings (Žilina, Prešov) exhibited the biggest growth. On the other hand, flat regions where city tourism prevail (Nitra, Trenčín or Bratislava) decreased relative to pre-pandemic maximum in 2019. Mixed trends reflect somewhat neutral motivation of businesses to create new accommodation options and widening the supply offer on the market. Accommodation services generally rebounded back with some regions showcasing slight negative trends. However, these results reflect the official statistics only and these might not account for alternative services and B2C platforms in grey economy.

Table 8 Total Number of Available Accommodation Establishments in 2019 and 2023 in Slovakia

Region	Accommodation Establishments in Slovakia			
	Year 2019	Year 2023	Difference	CAGR
Žilina	1 254	1 363	109	2,11%
Prešov	902	1060	158	4,12%
Banská Bystrica	693	716	23	0,82%
Košice	420	454	34	1,97%
Bratislava	438	398	-40	-2,37%
Nitra	423	386	-37	-2,26%
Trnava	336	338	2	0,15%
Trenčín	373	316	-57	-4,06%

Source: Own elaboration based on the data of the Statistical Office of the SR, 2025.

The findings indicate varied growth in accommodation establishments. Table 2 clarifies their capacity and structure. Nationally, overall capacity by beds declined during the pandemic, with a growth index of 95,49. Hostels were most affected, with a growth index of 89,44. Despite the COVID-19 pandemic, private accommodation grew with a national growth index of 107,01. Hotels, as bigger and stronger businesses remained and experienced slight growth.

Table 9 Index of growth of total available bed places representing recovery after COVID-19 pandemic

Accommodation Category	Growth Index (2019=100)	CAGR	Bed places in 2023
Total	95,49	-2,08%	229 719
Hotels	102,15	1,05%	33 453
Hostels	89,44	-2,82%	24 881
Other hotels	90,32	-3,01%	46 342
Guest houses	93,31	-1,45%	34 112
Private accommodation	107,01	2,40%	9 026
Other not specified	100,28	-3,26%	78 128

Source: Own elaboration based on the data of the Statistical Office of the SR, 2025.

Between 2019 and 2023, accommodation prices rose in every Slovak region, with cumulative growth indices ranging from 116,83 in Košice to 163,68 in Banská Bystrica. In annualised terms, Prešov recorded the fastest expansion (CAGR = 10,0 %), closely followed by Banská Bystrica (9,5 %), whereas Bratislava posted the slowest pace (3,9 %). Despite this deceleration, Bratislava remained the country's price leader, moving from 39,5 € to 46,0 €, while Trenčín, though advancing to 26,6 €, retained its position as the most affordable region. At the opposite end, Banská Bystrica (from 22,9 € to 37,5 €) and Prešov (from 26,9 € to 39,4 €) exhibited the sharpest absolute gains and cut their gap with the capital by roughly one-half.

Table 10 Average price of accommodation evolution from 2019 to 2023

Region	Average Price of Accommodation		
	Growth Index (2019=100)	CAGR	Price in 2023
Žilina	132,61	7,31%	36,60 €
Prešov	146,47	10,01%	39,40 €
Banská Bystrica	163,68	9,48%	37,50 €
Košice	116,83	3,96%	36,80 €
Bratislava	116,46	3,88%	46,00 €
Nitra	131,65	7,12%	31,20 €
Trnava	129,21	6,62%	37,60 €
Trenčín	118,75	4,39%	26,60 €

Source: Own elaboration based on the data of the Statistical Office of the SR, 2025.

Nationally, the mean nightly rate climbed from 28,00 € to 36.50 €, a 30 % increase (CAGR 6,9 %), echoing Europe-wide patterns of post-pandemic demand recovery and cost-push inflation.

The evidence thus points to a two-speed market. Flatter and urban areas are experiencing price



stabilization as supply meets demand, while mountainous central and eastern regions are converging rapidly toward the national average. This ongoing convergence is progressively redrawing Slovakia’s geography of affordability and underscores the shifting balance of tourism-driven investment across the country.

Table 4 reveals a clear divergence in post-pandemic occupancy trends across accommodation types and regions. Hotels suffered a nationwide retreat of roughly four percentage points, with the most pronounced declines in Košice (-8,8 pp.) and Bratislava (-8,3 pp.). Only Trenčín registered growth, gaining 3,3 pp. and hinting at a tighter local market. Hostels experienced the steepest overall contraction, losing almost eight points on average and collapsing by 23 pp. in Bratislava and 12 pp. in Košice, whereas mountain-oriented Banská Bystrica added 4,4 pp. and Žilina edged up marginally. The other hotels group and guest-house segment also slipped, typically by two to six points, although “other hotels” in Trenčín gained 2.70 pp. and guest houses in both Bratislava and Trenčín managed modest increases of about one point.

Table 11 Change of net occupancy of bedrooms in percentual points from 2019 to 2023

Accommodation category/	Bedroom net occupancy changes in pp. (2019-2023)							
	ZA	PO	BB	KE	BA	NR	TT	TN
Hotels	-2,8	-2,9	-5,6	-8,8	-8,3	-3,6	-4,9	3,3
Hostels	0,4	-6,9	4,4	-12,3	-23,0	-4,9	-6,5	-13,8
Other hotels	-2,6	-3,7	-1,6	-5,5	-3,5	-0,6	-5,4	2,7
Guests houses	-1,5	-5,6	-3,7	-5,5	1,0	-6,1	0,0	1,0
Private accommodation	1,0	-1,5	-2,1	-4,5	-4,5	3,3	8,8	1,1
Other not specified	-3,9	-15,8	-8,8	-0,7	-18,0	-7,8	2,9	-5,6

Source: Own elaboration based on the data of the Statistical Office of the SR, 2025.

Conversely, private accommodation saw minimal fluctuation, with most areas experiencing minor shifts. However, Nitra increased by 3,3 pp., while Trnava saw a significant increase of 8,8 pp., indicating strong interest in smaller lodgings beyond the capital city. Meanwhile, the diverse "other, not specified" category fell in nearly all areas except Prešov, where it soared by 15,80 percentage points, implying unique accommodation types or changes in classification in that area. Overall, the data suggests that conventional hotels and hostels have



not yet regained their pre-COVID occupancy levels, whereas flexible, privately-operated accommodations in various regions are now drawing a greater portion of overnight stays.

To draw the analysis together, Figure 1 below plots average room price against average occupancy for six accommodation categories in 2023. A clear hierarchy emerges.

Hotels form a tight cluster in the upper-right quadrant: they charge between 45,00 € and 65,00 € per night and still fill roughly half of their rooms. Two regional hotel markets stand out - Prešov and Trenčín, which reach occupancies about 55 % at prices just below 60,00 €. By contrast, Košice sets the highest nightly rate (about 65,00 €) but achieves a slightly lower load factor, hinting that its price ceiling may already be in sight. Hotels in Bratislava gather around 50,00 € with occupancies in the mid-forties, consistent with the slower growth observed in the

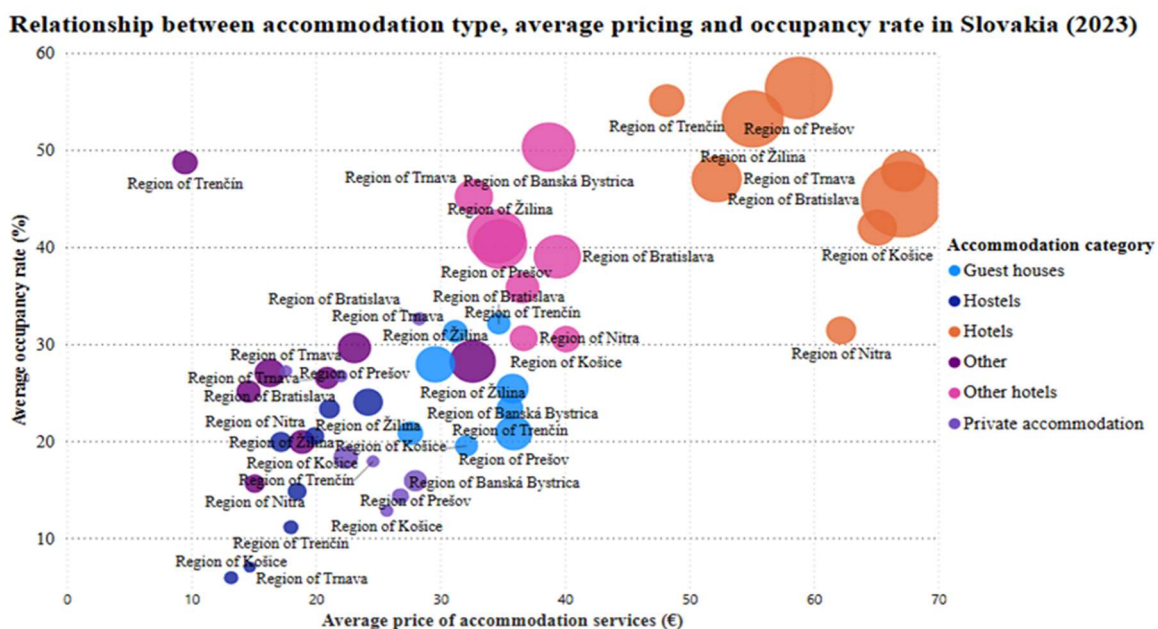


Figure 5 Relationship between accommodation type, average pricing, and occupancy rate in Slovakia (2023)  
Source: Own elaboration based on the data of the Statistical Office of the SR, 2025.

capital's longitudinal data. Mid-scale guest houses and private flats occupy the centre of the graph, with prices of 30,00 € – 45,00 € and occupancies of 25 % – 40 %. Demand here is steady rather than strong, profitability therefore rests more on cost control than on further price rises. Hostels concentrate in the lower-left corner, below 30,00 € and below 25 % occupancy, suggesting either an oversupply of low-budget beds or significant substitution toward short-term rentals, either officially registered accommodation or Airbnb listings, which hover around 20,00 € to 30,00 € a night (these are not part of this analysis).

Read together with the 2019-2023 price series, the scatter plot confirms a two-speed market. Mature western urban centres such as Bratislava exhibit slower price growth and only



moderate occupancy gains, whereas several central and eastern regions combine rapid tariff convergence with robust room uptake. For investors, this pattern indicates scope for new quality hotels outside the capital, while operators in Bratislava will need service differentiation rather than higher rates to lift returns. Policy makers, finally, may wish to encourage mid-scale developments in high-demand regions to ease emerging affordability pressures, especially for seasonal workers.

### 5. Conclusion

This research set out to clarify how Slovakia's accommodation sector has adjusted to the COVID-19 shock and what these adjustments imply for regional tourism competitiveness. The open-data analysis covering 2019-2023 successfully answered RQ1 and RQ2. The answers revealed four inter-related outcomes.

First, capacity has recovered unevenly. Mountainous regions with strong nature-based appeal, particularly Žilina and Prešov, expanded their supply of establishments, whereas flatter, more urbanised regions such as Bratislava, Nitra and Trenčín still operate below their 2019 peak. Second, private accommodation emerged as the most resilient segment, surpassing its pre-pandemic bed total and maintaining respectable occupancy at mid-range prices, the flexibility and low fixed-cost structure of these providers clearly facilitated rapid adaptation during periods of restricted mobility. Third, prices rose nationwide but at two distinct speeds. Flatter and urban regions registered only modest annual growth of about four per cent, signaling stabilization as supply meets demand, while mountainous central and eastern regions recorded double-digit gains and steadily closed the historic price gap with the capital. Nationally, the average nightly rate increased by 30%, climbing from 28,00 € to 36,50 €, in line with cost-push inflation throughout Europe. Fourth, the 2023 price-versus-occupancy plot confirmed a clear product hierarchy. Hotels occupy the premium, high-demand quadrant; guest houses and private flats sit in the middle band; and hostels cluster at the bottom with both low prices and low occupancy.

Taken together, these findings indicate that future investment opportunities lie primarily in the high-demand mountainous regions, where upscale or boutique projects could meet latent demand, while operators in Bratislava will need to rely on service innovation rather than further rate increases to boost returns. Local authorities may wish to encourage medium-size hotel developments in supply-constrained areas to prevent price-driven labour shortages and to sustain visitor flows. At the other end of the spectrum, the persistently weak performance of



hostels suggests that some properties would benefit from conversion into co-living or student housing, or from quality upgrades that reposition them in the mid-scale market. Routine publication of capacity, pricing and occupancy indicators, preferably in a user-friendly open-data format, would greatly assist both public agencies and private investors in making evidence-based decisions.

Several limitations exist. Relying only on official statistics ignores grey-economy rentals, using Airbnb or Booking.com data would provide a fuller picture. Detailed examinations, like separating hotels by star rating or differentiating private accommodations, could improve understanding of structural shifts. Comparative studies in Central Europe might reveal if Slovakia's two-speed recovery is a regional trend.

The Slovak accommodation market is rebounding from the pandemic era more diversified and resilient than ever before. While the flatter urban regions are regaining stability, the mountainous central and eastern areas are rapidly advancing, demonstrating remarkable growth and dynamism. Fortifying data transparency and strategically directing investment toward high-caliber projects, especially where the demand continues to eclipse supply, will be pivotal in transforming this fragile state of recovery into a sustained competitive edge, ensuring future economic prosperity.

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# SCIENTIA IUVENTA 2025

## DIFFERENCES OF SPATIAL CONVERGENCE IN THE NUTS2 REGIONS OF THE OLD AND NEW MEMBER STATES

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### ABSTRACT

#### **Purpose:**

The aim of the paper is to analyze the differences in the convergence process of the NUTS2 regions of the European Union and describe the possible disparities among the old and new member states based on economic and social indicators. In economic terms the specific gross value added (GVA) while in social terms the unemployment rate will be examined. To see the trends and changes of the indicators, the 2005-2022 period will be checked for 249 regions.

#### **Design/methodology:**

Through the research two types of methodologies will be used to achieve reliable data. To analyze convergence processes, I will use the sigma and beta convergence analysis further extended by spatial effects. To visualize the patterns of the economic and social indicators, the LISA (local spatial autocorrelation) methods will be applied to get further insights about the spatial distribution of the data.

#### **Findings:**

For the whole European Union, based on the NUTS2 regional distribution of the data, the convergence tendencies are not similar by the examined indicators. In the gross value-added data there is a slighter divergence than in the unemployment rate. When looking at the data divided by the old and new member states, the reasons for differences are quite visible. In both indicators the new member states' regions are showing convergent tendencies, while the old ones rather divergence. The patterns of the indicators are highlighting quasi-similar hot and cold spot areas, although their distribution (number of covered territories) is a bit diverse.

#### **Research/practical implications:**

With the results of this study, we can get broader knowledge about regional convergence of the EU and check the chances of convergence of the new member states. By checking the spatial patterns and the neighborhood relations in convergence, better forecast can be made in case of spatial spillovers.

#### **Originality/value:**

One of the main added values of the study is that it highlights the differences in the spatial distribution and convergence process of different types of indicators in two economic blocks (old and new member states) of the European Union. Besides that it also reflects to those areas where the spatial spillovers can be the most effective.

**Keywords:** spatial inequalities, convergence, spatial autocorrelation, old and new member states.

**JEL Classification:** R12, O18



### 1. Introduction

Territorial inequalities are a huge problem for the European Union also nowadays. Since the Southern enlargement of the EU (in 1981 and 1986) the disparities are more critical which was further strengthened with the accession of the ten new Central Eastern European Member States in 2004, and with Romania and Bulgaria in 2007. From the creation of the European Community, one of the main aims in the EU is the decrease of spatial differences and reach convergence across the Member States through the tools of the cohesion and regional policy. Only in the programming period of 2014-2020 a sum of 57.3 bn Euros from the Cohesion Fund, and further 52.6 bn Euros from the ERDF were transferred to the new EU13 countries (European Parliament, 2016), however significant convergence was not achieved.

Checking the latest data (2023), in the NUTS2 level there is a 12-fold difference in GDP per capita (Euro) between richest (Luxembourg) and poorest (Severozapaden) regions (Eurostat, 2025a). But as also the literature shows, there are different tendencies based on various indicators, so the pattern of the data shows uneven distribution among the regions of the EU. For example, based on the Regional Competitiveness Index of the EU, there is a 3.5-fold difference among the highest and lowest index scores (Utrecht: 151.1 and Sud-Est: 46.1 index values), while by the unemployment rate there is a more than 15-fold gap (Ciudad de Ceuta: 30.0 and Střední Čechy: 1.7% for ages 15-74) (European Commission, 2023; Eurostat, 2025b). Starting from the above, there is worth to examine the differences based on various indicators. That is why the aim of this study is to analyse the differences in the convergence process of the NUTS2 regions of the European Union and describe the possible disparities among the old and new member states based on different economic and social indicators (specific gross value added and the unemployment rate).

### 2. Literature review/theoretical background

Territorial inequalities are significant in the European Union, since the creation of the integration, and with the continuous accessions to the EU, the issue of convergence is more accurate. That is why the analysis of territorial inequalities is a critical issue also in the relevant literature. The European Commission creates a Cohesion Report regularly from the state of inequalities, and the latest version of it, the 9th Report on Territorial Cohesion (European Commission, 2024) notes significant steps of convergence inside the EU. It indicates a remarkable convergence process of the Central Eastern European region parallel with a slight



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decline in regional GDP in Southern Europe. It also highlights a significant drop in the unemployment rate in the whole EU between 2013 and 2022, especially in less developed regions. The report summarizes besides the above-mentioned areas, an uneven convergence in the EU with a significant lag of the Southern Member States.

The latest report of the OECD, which also deals with territorial disparities, indicates a decrease in GDP per capita disparities inside the European Union, although it notes that the reduction in inequalities realizes between countries, rather than across regions of the same country (the situation of Central Eastern Europe is especially hard in this case). It also notes significant gaps among old and new member states, with different growth dynamics of GDP between Central Eastern Europe and Southern Europe (Pina – Sicari, 2021). This analysis suggests that it is worth to check the different behaviour of old and new member states of the EU a bit more detailed.

A former analysis by Holobiuc (2020) of the old and new Member States underlines that although the Central and Eastern part of the EU has experienced higher GDP growth rates between 1995 and 2019 than the Old Member States, there is no absolute convergence among the territories. The reasons behind them are coming from several factors (e.g. differences in gross fixed capital formation, government deficit, or trade openness), and the economic and financial crisis of 2008-09 has also made a strong hit for the European economy, and mainly the Southern European Member States find increasingly difficult to maintain economic growth (Holobiuc, 2020).

For almost the same period, Alemu et al. (2024) has analysed the convergence of the CEE11 (who accessed the EU after 2004) to the four largest European economies (Germany, France, the UK and Italy) and found that unconditional beta convergence was realized among them. However, it also highlights, that the big crisis periods have resulted a fallback in the growth rates, and a divergence for the geographical region (Alemu et al. 2024).

Jankiewicz (2024) suggests besides the distinction of old and new member states also a division of regions into smaller groups (and checking club-convergence processes). He suggests that by the convergence models there is worth considering the differences in development path and initial conditions. The strongest argument of the theory is that the influence of the 2008/09 financial crisis and the European sovereign debt crisis was weaker than that of the COVID-19 pandemic on regional convergence, because of the different scope of crisis, and the regions' socio-economic conditions.



The analysis of Glawe & Wagner has also highlighted that inside Europe applying the club convergence hypothesis two different group of countries can be created. The Northern and Western European countries are mainly in higher developed clusters, while the Eastern and Southern European countries belong to a lower developed one. That is why only conditional convergence can be achieved (Glawe – Wagner, 2021). However also among the different country groups there are some differences based on their development level, like in the 1995 and 2006 time frame, there was a significant gap between the income growth rates of developed and less developed New Member States (Vojinovic – Oplotnik, 2008).

### 3. Methods

In this recent research, I have checked the differences in the patterns of specific gross value added and the unemployment rate across the NUTS2 regions of the EU member states with special focus on the old and new member states. Through the analysis I have checked the 2005-2022 period for a sum of 249 NUTS2 regions in Europe. The geographical focus of the analysis covered the 27 Member States of the EU without the territories of Ireland, which had significant data missing and also a distorting effect from the island status. There were two indicators examined in the research, the specific gross value added (GVA) and the unemployment rate (both based on the Eurostat database: nama\_10r\_3gva and lfst\_r\_lfu3rt).

To check the convergence process across the old and new Member States and inside the whole EU, I have used sigma and beta convergence analysis and to detect spatial patterns and verify neighbourhood effects I have applied the tools of LISA (local spatial autocorrelation) methods, from which I used the Local Moran I. With the results of this study, we can get broader knowledge about regional convergence of the EU and check the chances of convergence of the new member states. By checking the spatial patterns and the neighbourhood relations in convergence, better forecast can be made in case of spatial spillovers. The next, Figure 1. shows the applied methods of the article.

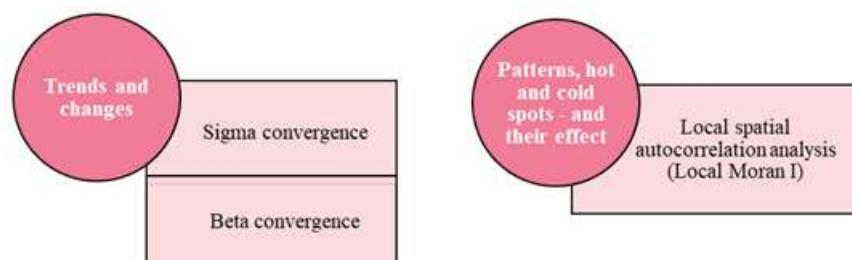


Figure 6 Applied methods of the study  
Source: own edition

In my tests, I used the sigma convergence indicator to see whether the dispersion of income and unemployment rates decreases over time (Kocziszky - Szendi, 2020), and then I used beta convergence to test the rate of change of average annual GVA and unemployment compared to the base period (Baumol, 1986; Andrei et al. 2023). The sigma convergence is using the CV (coefficient of variation) indicator for analysing convergence (which is calculated by the average/standard deviation of the data).

#### 4. Results and discussion

In my research, first I have checked the patterns of gross value added and the unemployment rate to see the dispersion of the values. To this I have applied a box plot map built in the GeoDa software, which is a quartile map with lower and upper outliers, based on inter-quartile range (Anselin, 2020). Here we can see such territories which behave based on the given indicators as outliers and can distort the results.

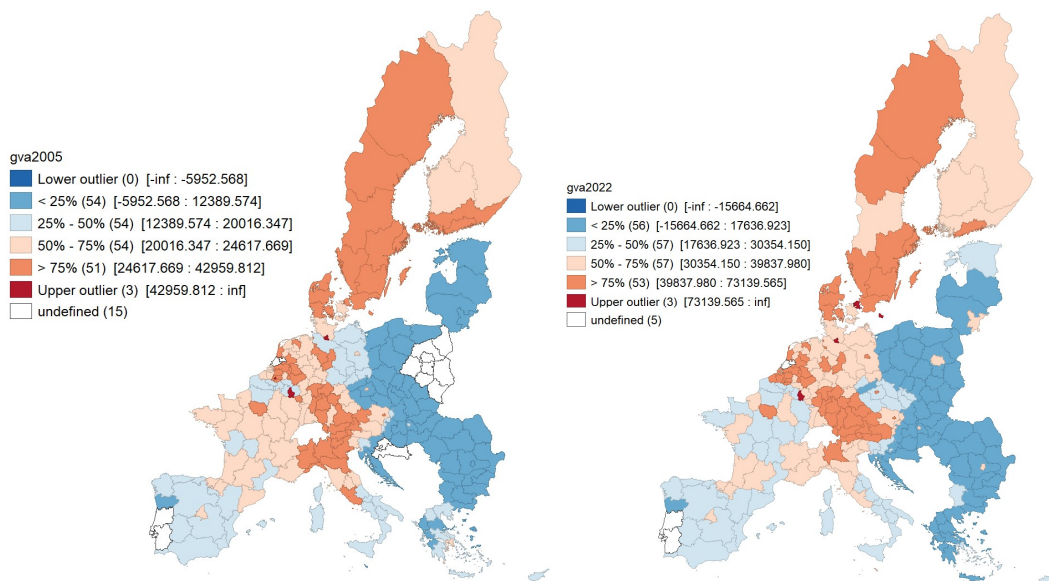


Figure 7 Differences in the GVA per capita (2005, 2022)  
Source: own edition

From the dispersion of the specific gross value added, in Europe besides the classical Western-Eastern division, there is also a slighter Northern-Southern difference, and e.g. in Central Eastern Europe only the capital regions have significant specific value added. It is also

visible, that the blue banana area can be considered as a continuous developed territory in case of GVA. The dispersion of data also indicates that all over Europe there are significantly higher values to 2022, so the economic performance was improved in these 17 years. In the cluster of higher/upper outliers (2005 and 2022: Hamburg, Luxemburg and Copenhagen), the improvement was more than 70%. The specific gross value added also differs along the EU14 and 13 of the European Union, as the so-called new member states have on average lower values than the EU average and that of the old member states.

In the case of the unemployment rate there is a clearer Northern-Southern division of the data, here the Southern member states have relatively higher values in 2022, which means significant problems in unemployment.

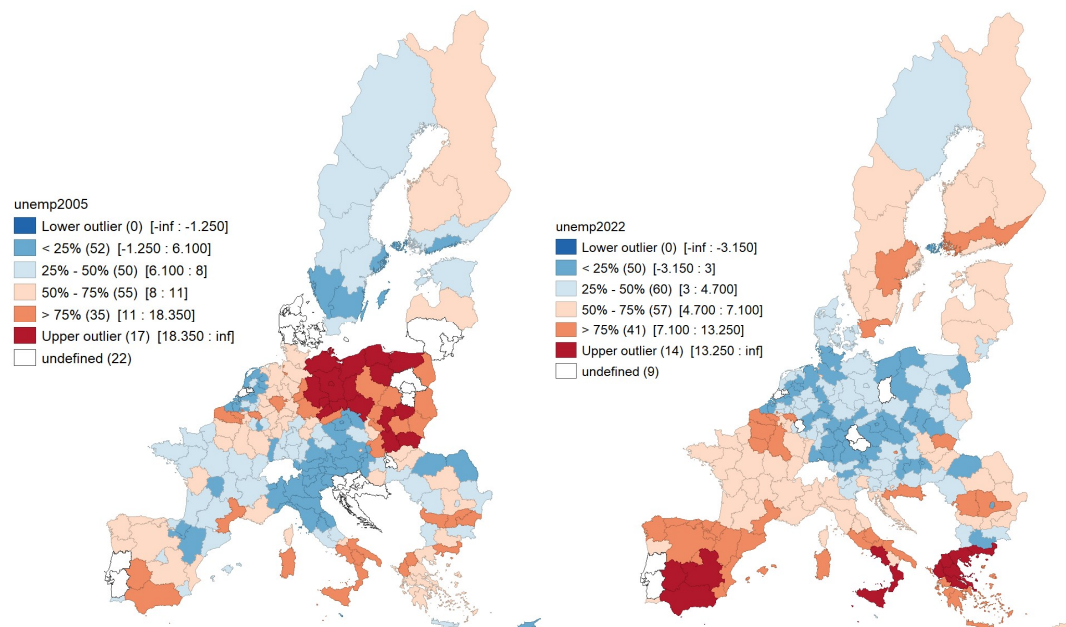


Figure 8 Differences in the unemployment rate (2005, 2022)  
Source: own edition

The comparison of the base year with 2022 shows that there are improving tendencies also in this case, we can see decreasing unemployment rates all over Europe. The highest rates can be verified in Southern Europe, so there is a difference compared to GVA dispersion. The unemployment rate (in the 15 to 75 years age group) has improved the most in the following areas: Eastern Germany, Poland and Slovakia. The upper outliers have moved to Southern Spain (e.g. Andalusia, or Extremadura), Italy (e.g. Campania or Calabria), and Northern Greece.



In the next step I have checked the sigma convergence of the two indicators, where I have applied the CV indicator of the data. Here a decreasing tendency indicates convergence among the territories while the opposite the widening of the differences.



Figure 9 Sigma convergence of the GVA and unemployment in the whole EU (2005-2022)  
Source: own edition

For the whole EU there are different tendencies based on the given indicators distribution, it is a slight divergence in GVA per capita (for the 2005-2022 period, although it was shadowed by some promising periods), and a more volatile process parallel with rapid divergence in the unemployment rate (most intensive after the first wave of the 2008-09 economic crisis, and in the European sovereign debt crisis). The indicator value has increased from 0.5 to 0.7.

When checking the EU14 and EU13 separately we can see different tendencies among old and new member states.

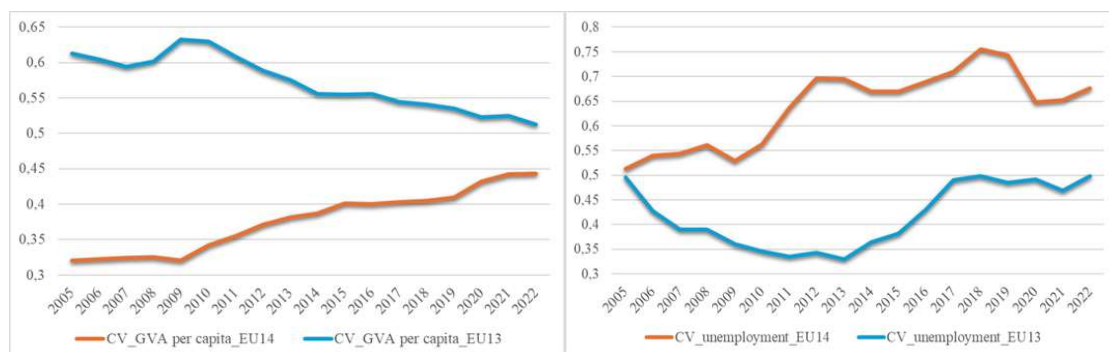


Figure 10 Sigma convergence of the GVA (left) and unemployment (right) in the old and new member states of the EU (2005-2022)  
Source: own edition



By the specific GVA the new member states are showing clear convergence from 2010 until the end of the period, while the old member states at the same time sigma divergence. In the case of the unemployment rate both blocks are diverging in almost the whole period except the new member states from 2005 to 2012, in the first period after their accession to the EU.

I have also checked the beta convergence of the indicators, as the sigma convergence can be in some cases misleading as on the one side it is sensitive on the outlier values (Nemes Nagy, 2005) and on the other side its value may decrease even if there is a decline in the value of the more advanced regions (and that is why the difference is narrowing). The results of the beta convergence are summarized in the following table.

Table 12 Results of the beta convergence analysis (2005-2022)

GVA per capita		
	Beta convergence	R <sup>2</sup>
total EU	$y = -0.0001x + 5.9847$	34.87%
EU14	$y = 3E-05x + 1.5287$	8.44%
EU13	$y = -0.0003x + 8.7916$	40.02%
Unemployment rate		
	Beta convergence	R <sup>2</sup>
total EU	$y = -0.4313x + 1.4119$	19.07%
EU14	$y = -0.3119x + 1.0016$	9.53%
EU13	$y = -0.5354x + 0.5601$	42.57%

Source: own compilation

As we can see for the total EU, both indicators are showing beta convergence, although the reliability of the model is stronger in the GVA per capita, with 15%points higher. In the new member states the specific GVA shows convergent tendency in the analysed period with quite high R2, while the old member states are showing rather beta divergent trends. In the unemployment rate both the old and new member states are showing convergence. Also, in that case the new member states are showing greater reliability.

I have also checked the spatial patterns in the whole EU based on the analysed dimensions, and have seen, that except the GVA in the new member states in 2022, the spatial autocorrelation, so the effect of the neighbouring territories is significant for the NUTS2 regions



of Europe. It means that the neighbouring territories are influencing each other, their values are not independent from each other, there can be significant spillover effects.

Table 13 Values of Moran I (with queen contiguity) – 2022

	<b>Moran I</b>	<b>z-score</b>	<b>p value</b>
	<b>Whole EU NUTS2</b>		
GVA	0.574	12.0457	0.001
unemployment	0.704	14.0784	0.001
	<b>EU14 - GVA</b>		
2005	0.342	5.9198	0.001
2022	0.383	6.8659	0.001
	<b>EU13 - GVA</b>		
2005	0.410	4.7376	0.001
2022	0.178	2.2782	0.025
	<b>EU14 - unemployment</b>		
2005	0.626	10.7940	0.001
2022	0.708	11.750	0.001
	<b>EU13 - unemployment</b>		
2005	0.620	6.8870	0.001
2022	0.407	4.5583	0.001

Source: own compilation

Neighbourhood relations matter, as it shows the first law of Geography, only in one case the Moran I not significant, there is a significant influence of spatial connections. However, when we make a deeper analysis of the indicators' spatial pattern (hot or cold spots, and spatial outliers), we can see different distribution. The spatial outliers are not dominant inside the EU for any of the indicators, in the case of GVA there are only 4 and by the unemployment rate only one significant unit of 249 regions.

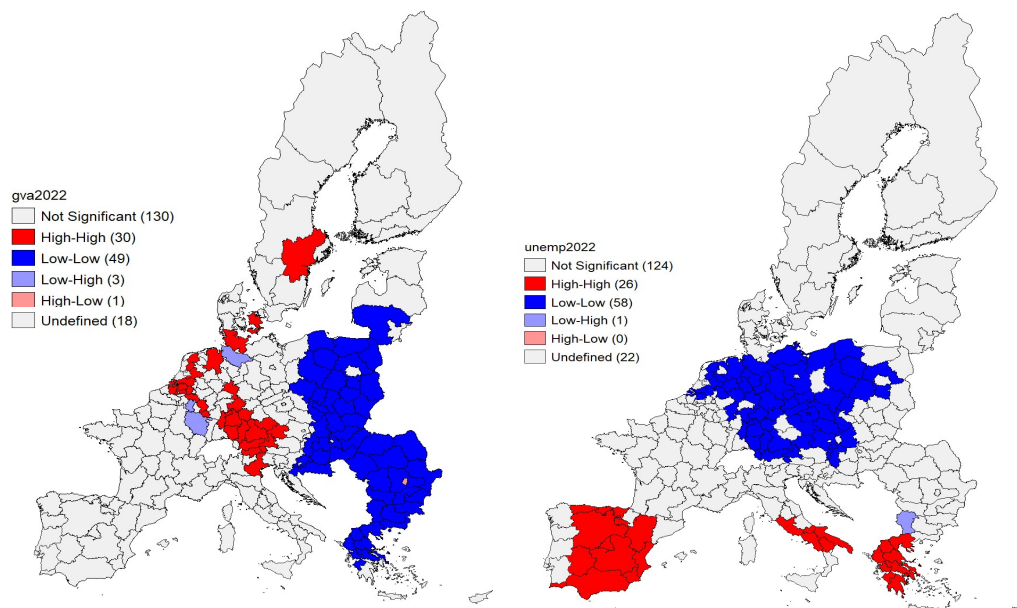


Figure 11 Local Moran clusters of the GVA (left) and unemployment (right) in 2022 in Europe  
Source: own edition

When checking the spatial patterns, we can see that in the case of the specific GVA, almost the whole Central Eastern European part, plus Greece and part of the Baltic states are cold spots, while the Southern and Western part of Germany and part of the Benelux states are hot spots (alongside the blue banana territory). A high-low cluster element can be verified in the capital of Romania, by the Bucharest region (here the GVA per capita is higher than that of its neighbourhood), while low-high indicated values can be found in the northwestern part of the continent.

By the unemployment rate the patterns are more diverse, here Southern Europe (huge part of Spain, the central and southern territories of Italy and Greece have high rates – although it indicates that here the situation is not promising with high unemployment rates). Here the cold spots (where the unemployment is homogenously low) can be found in the Northern and Central part of the European Union. The only spatial outlier is a low-high cluster member in Bulgaria (the capital region), where the unemployment rate is lower than its neighbourhood.

After checking the single clusters of the indicators, I have checked the old and new member states' spatial distribution compared to each other and made a common map of the patterns for 2022, which can be seen in the below Figure.

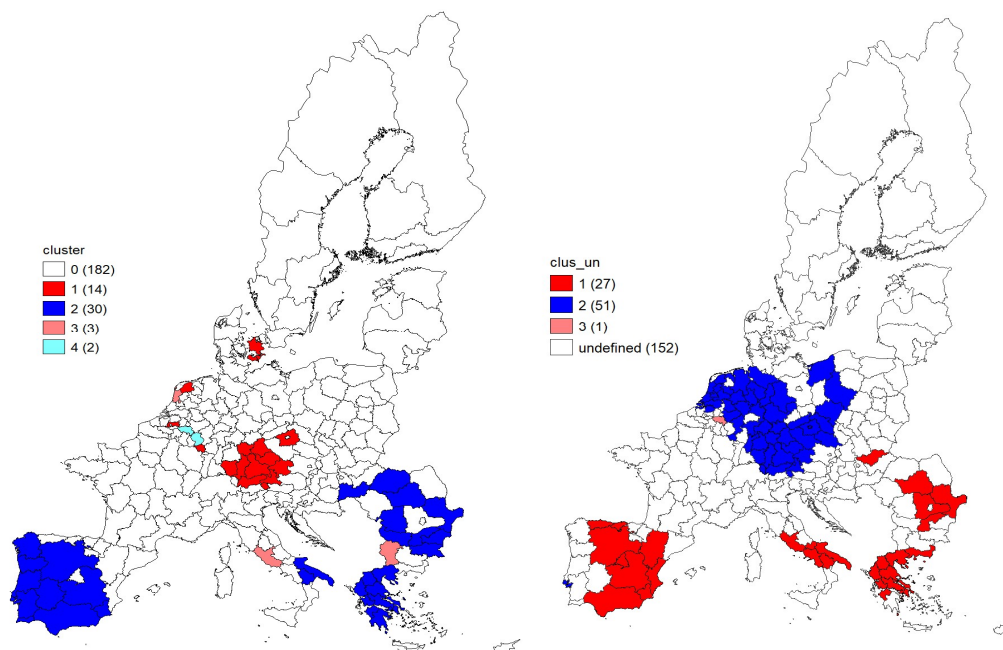


Figure 12 Local Moran clusters of the GVA (left) and unemployment (right) in 2022 in Europe (cross section of the old and new member states maps)

Source: own edition

Checking the old and new member states as single entities, there are different patterns among them which can be visualised. Here in both indicators, the northern-southern differences are even sharper. By the specific GVA the southeastern and southern part of the EU shows the biggest cold spot areas (whole Portugal and significant part of Spain, southeastern part of Italy, whole Greece, parts of Hungary, Romania and Bulgaria). The hot spots can be found in southern Germany, Denmark, the Benelux states and the wider region of Prague. The high-low cluster members are in the region of Sofia, Rome and Amsterdam.

By the unemployment rate, the hot spots (with homogenously high unemployment rates) are in Spain, southern Italy, Greece, some areas of Romania and Bulgaria, and the Northern Hungarian region is part of it. The low unemployment rates are concentrating in the Benelux states, in southern and western Germany, in western Poland, western Czech Republic.

## 5. Conclusion

Summarizing the main findings of the study, we can state that there are improving values in the regional specific GVA and unemployment rate, but the values distribution is uneven. There are strong western-eastern and northern-southern differences by both indicators, and there are differences among the EU14 and EU13 countries similarly to the analyses of Glawe and Wagner



(2021) or Holobiuc (2020). It also reflects the statements made by the European Commission (2022), which has reviewed long-term developments in regional disparities, and found that since 2001, Eastern Europe has been converging steadily with the rest of the EU (because of economic restructuring and the shift of production to sectors with higher added value), leading to a significant reduction in the gap in GDP per capita in Europe, however the differences are still high nowadays.

I have checked the convergence processes of the two indicators and have made the following statements. By the analysis of sigma convergence, there is a slight divergence in the GVA, while it is a more volatile and rapid divergence in unemployment rates, where the old and new member states are behaving unequal. Except the old member states' gross value added, the beta convergence of the values is fulfilling by both indicators. The spatial effects are significant, however the spatial outliers do not matter significantly. Checking the old and new member states as single entities, and visualizing them together, there are sharper northern-southern differences of the indicators, as it the whole EU's analysis suggests.

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## THE ROLE OF CSR IN SUSTAINABLE CONSUMPTION: HOW CAN FOOD COMPANIES INFLUENCE CONSUMER BEHAVIOUR TOWARDS MINIMIZING FOOD WASTE?

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### ABSTRACT

#### Purpose:

The primary objective of this paper was to analyze CSR as a strategic marketing tool used by food companies to communicate and implement their CSR and sustainability initiatives. The paper focused on how CSR activities, especially those linked to the environmental pillar. By examining the impact of these activities, the paper aimed to assess their effectiveness in shaping consumer behavior, promoting environmentally responsible consumption behaviors, and encouraging individuals to actively participate in reducing food waste.

#### Design/methodology:

This study is based on research conducted in Slovakia among consumers purchasing food products, with a specific focus on the CSR activities of food enterprises. The questionnaire survey targeted three generational groups X, Y, and Z examining their awareness of CSR in the food industry, with an emphasis on the environmental pillar. The primary objective of the survey was to assess the extent to which CSR initiatives implemented by food companies influence consumer behavior, particularly in terms of reducing food waste and fostering sustainable and responsible consumption patterns.

#### Findings:

Based on the results of the questionnaire, which included 687 respondents, we can conclude that most of them are familiar with the concept of CSR. The study also examined generational differences in consumer attitudes towards CSR initiatives and their impact on sustainable behavior and reducing food waste. The findings indicate that while all generations recognize CSR, younger consumers are more responsive to CSR-based sustainability efforts. Moreover, CSR activities positively influence purchasing decisions and promote responsible consumption. These findings point to the growing importance of CSR in the food industry and its role in supporting long-term behavioral change towards sustainability.

#### Research/practical implications:

This research highlights the impact of CSR activities, especially the environmental pillar, on consumer behavior in the food market. Such studies are limited in Slovakia and Europe, especially when it comes to food companies. The findings show that CSR initiatives influence consumer awareness, loyalty, and motivation to reduce food waste. In practice, food companies should strengthen CSR communication and sustainability efforts. Future research should examine long-term behavioral changes, cross-cultural comparisons, and the role of digital tools in CSR strategies.



**Originality/value:**

The main added value of this contribution lies in addressing the growing importance of sustainability and CSR of food companies. As CSR becomes a fundamental aspect of business strategy, it is no longer just a voluntary initiative but also an expectation of consumers and other stakeholders. This study highlights the role of food companies not only in implementing CSR activities, but also in actively educating and influencing consumer behavior towards responsible consumption and reducing food waste. Given the fundamental importance of food sustainability, the findings highlight the need for companies to lead by example and promote wider awareness and commitment to sustainable practices.

**Keywords:** Consumer Behaviour, Corporate Social Responsibility, Food Market, Food Waste, Marketing Communication.

**JEL Classification:** M14, O13, Q18

**1. Introduction**

In recent years, the importance of sustainability and environmental responsibility has grown significantly, particularly in relation to food production and consumption. Food waste, as one of the key challenges in this area, has prompted food companies to adopt Corporate Social Responsibility (CSR) initiatives aimed at promoting more sustainable consumer behavior. These initiatives, especially those focused on the environmental pillar of CSR, seek to reduce food waste, support recycling, and encourage responsible consumption habits. This study explores how such CSR activities influence consumer behavior in the Slovak food market, with a focus on the generational differences between consumers of Generations X, Y, and Z. It also examines how credible these activities are perceived to be and whether they effectively motivate individuals to take part in reducing food waste.

**2. Literature review/theoretical background**

Food consumption is an unavoidable part of everyday life, and it is also an area where personal consumption is closely related to environmental sustainability (Su et al., 2019). The problem of food waste is currently on the rise (Giroto et al., 2015). Globally, around 13.2 percent of food produced is lost between harvest and retail, while an estimated 19 percent of total global food production is wasted in households, in the food service and in retail all together. Food waste undermine the sustainability of our food systems. When food is wasted, all the resources that were used to produce this food - including water, land, energy, labor and capital - go to waste. In addition, the disposal of food waste in landfills, leads to greenhouse



gas emissions, contributing to climate change. Food waste also undermines food security, reduces availability, and contributes to rising food costs (United Nations, 2024).

In a context where food waste has received increased attention in recent years, food supply chain actors have started to act to reduce food waste in their corporate social responsibility strategies (Aschemann-Witzel et al., 2016). Corporate social responsibility is a self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public (Fernando, 2024). Carroll's Corporate Social Responsibility Pyramid of is a model that illustrates the four key components of corporate social responsibility: economic, legal, ethical, and philanthropic responsibilities. Developed by Archie Carroll in 1991, the pyramid emphasizes the importance of balancing these responsibilities to achieve a holistic approach to CSR (Anderson, 2024). CSR requires a shift in companies' understanding of their own social role from profit-only to a broader vision rooted in the highly relevant context of the oft-mentioned three Ps: People, Planet, Profit. This means seeking a triple bottom line, where the company focuses not only on economic growth, but also on the environmental and social aspects of its activities, so that the company becomes a natural part of the municipality and region in which it operates, as well as society (Švermová, 2018).

Ubrežiová et al. (2015) identify the environmental pillar as the most important pillar of CSR. According to Švermová (2018), this pillar includes environmentally friendly manufacturing, products and services, packaging, distribution and transportation practices; recycling; the use of recycled materials; energy/water saving practices; waste reduction practices; compliance with regulations and standards; protection of natural resources and the provision of accurate environmental information on products, services and activities. Kádeková et al. (2022) also explain in their study that food companies within the environmental pillar of CSR not only educate the public about food waste, but also care about the environment and recycling or meet national and international standards

Rybanská & Poláček (2022) argue that sustainability and environmental protection are not achievable without quality education. As children and teenagers grow up in different conditions than previous generations, education methods must adapt, especially through modern technology, the Internet, and social networks, where young people spend much of their time. Mateášiková et al. (2024) also highlight that digitalization brings both challenges and opportunities, as the Internet now plays a key role in shaping consumer behavior.

Osúchová et al. (2024) bring the finding that CSR marketing activities of food companies are increasingly influencing consumer behavior. CSR activities in marketing communication



can greatly benefit companies, increasing the sale of goods and services and creating competition in the food market (Igarová et al., 2023). Aschemann-Witzel et al. (2016) note that CSR activities provide a competitive advantage for food companies. Closely related is green marketing, which promotes products or services based on their environmental attributes, whether they are eco-friendly or produced in an environmentally responsible way (Ward, 2020).

Sahu (2021) distinguishes the following marketing strategies in green marketing through which businesses build respect and loyalty of customers to a brand or product:

- environmental protection through product design,
- brand positioning that shows the company's commitment to sustainability,
- highlighting the fact that green marketing products and services save customers money,
- the company's effort to reduce the environmental impact of its logistics,
- sustainable practices for the disposal of the waste produced.

Biggi et al. (2024) show that food companies with transparent environmental CSR strategies achieve better results in reducing food waste. Retail chains, aware of their role in sustainability, implement various initiatives—such as Lidl's sale of three-kilo fruit and vegetable packs for €1. This project has rescued over 200 thousand kg of produce and is part of broader efforts to raise awareness and educate consumers about food waste (Hrnčárová, 2023).

However, Igarová et al. (2023) point out that sometimes consumers do not identify with CSR or consider it only as a marketing strategy. As food companies try to build the company's good name and brand image with these activities, the public can view these activities as untrustworthy. In connection with this fact, Medzihorská (2021) characterizes the concept of greenwashing. This is a deceptive type of marketing in which brands overestimate the environmental and ethical qualities of their product and the customer mistakenly thinks that the product is healthier and more sustainable than its alternatives. Greenwashing means that a company uses, for example, misleading slogans, suggestive images on packaging, 'we are greener' statements or over-emphasizes one feature of a product. Igarová et al. (2023) found that the credibility of CSR activities is crucial for consumers. If consumers trust a CSR strategy, it influences their consumer behavior in the desired way. A key finding in a study by Bhagat (2024) shows that transparent and honest disclosure of both successes and challenges in sustainability initiatives can significantly increase public trust in a company.

Environmental awareness is increasingly recognized as a fundamental European value that shapes business practices, strategies, and policies across the EU (Mihajlović et al., 2016). In response to growing concerns about sustainable development and CSR, the EU has introduced



strategies and regulations that encourage companies to implement CSR initiatives and report non-financial information, helping stakeholders make informed decisions. As such, CSR plays a crucial role in promoting a socially and environmentally sustainable future. This is particularly important in the agri-food sector, which faces new challenges linked to the transition toward a bioeconomy (Zaman et al., 2020).

The European Green Deal is the EU's plan to transform its economy for a sustainable future, with the goal of becoming the first climate-neutral continent by 2050 (MŽP SR, 2020). At its core is the Farm to Fork Strategy, which aims to make food systems fair, healthy, and environmentally friendly. Transitioning to sustainable food systems also creates new opportunities for food chain stakeholders, supported by new technologies, scientific advances, and growing public demand for sustainability. The main areas addressed by the Farm to Fork strategy include:

- sustainable food consumption,
- food loss and waste prevention,
- sustainable food production,
- sustainable food processing and distribution (European Commission, 2020).

### 3. Methods

#### *Research Design and Objectives*

This study was focused on the environmental pillar of CSR activities in the food industry and their impact on consumer behavior in Slovakia. Special attention was given to differences between Generations X, Y, and Z, particularly in terms of food waste minimization, recycling motivation, and the perceived credibility of environmental CSR. The main aim was to obtain responses from food-buying consumers regarding their perceptions of the environmental CSR activities of food businesses, and to explore whether these activities lead to a reduction in food waste and motivate consumers to behave more responsibly.

Based on these objectives, three hypotheses were formulated and tested:

*H1: CSR activities have a different impact on minimizing food waste between Generation X and Generation Z.*

*H2: Environmental CSR activities of businesses have an impact on consumers' motivation to reduce food waste among Generations X, Y and Z.*

*H3: The proportion of people who consider CSR activities as trustworthy is more than 50%.*



### *Data Collection*

Primary data were collected through an online questionnaire created in Google Forms, consisting of 20 questions divided into several sections.

- The first section was focused on classification questions such as age, gender, place of residence, level of education, and other demographic variables.
- The second section examined the overall awareness of CSR, with a specific focus on its environmental dimension.
- The following sections contained questions examining consumer attitudes towards food waste minimization, motivation for food waste recycling, and the perceived credibility of environmental CSR initiatives.

The data collection was conducted from October 2024 to January 2025. The questionnaire was distributed through social networks, university mailing lists, and online consumer groups, allowing wide participation across Slovakia. A total of 687 respondents participated in the survey. Respondents were divided into Generations X, Y, and Z based on their age. The sampling method can be characterized as non-probability convenience sampling, as respondents participated voluntarily.

### *Data Analysis and Processing*

For the statistical evaluation of the selected hypotheses, the following methods were used:

- Pearson's Chi-square test of independence to test the relationships between categorical variables,
- Cramér's V to determine the strength of association,
- Kolmogorov-Smirnov test to verify the distribution of data,
- One-sample proportion test and Chi-square goodness-of-fit test to evaluate the proportion of respondents who consider CSR activities trustworthy.

All collected data were processed and analyzed using Microsoft Excel and IBM SPSS Statistics. These methods were selected to reflect the categorical structure of the dataset and to identify differences and associations between generational groups. Descriptive statistics were also used to summarize key demographic and behavioral characteristics of the sample.

## **4. Results and discussion**

The questionnaire was completed by 687 respondents, 53.42% women and 46.58% men, reflecting the official demographic structure in Slovakia (Statistical Office of the Slovak Republic, 2024). Generational distribution was as follows: Generation X (38.14%), Y

(41.78%), and Z (20.09%). Pearson’s Chi-square goodness-of-fit test confirmed the statistical representativeness of the sample in terms of both gender and generation, as shown in Table 1.

Table 1 Categorization of food waste types and their typical examples

Test subject	Test statistics	Critical value	Result
Gender	1.262	3.841	Sample is representative.
Generation	5.294	5.991	Sample is representative.

Source: own elaboration

**Results regarding hypothesis 1:**

One of the important aspects of environmentally responsible consumer behavior is the internal motivation to reduce food waste. In the questionnaire, we focused on whether respondents feel motivated by the CSR activities of food companies to reduce food waste. We deliberately compared Generation X and Generation Z, as these represent the most distinct age groups, which allowed us to capture possible generational differences in attitudes.

The Kolmogorov–Smirnov test revealed a statistically significant difference between Generations X and Z in how strongly they are motivated by CSR initiatives to reduce food waste, as the test statistic exceeded the critical value (Table 2).

Table 2 Results of the Kolmogorov–Smirnov Test – Generations X and Z

Test statistics	Critical value	Result
0.197	0.143	Null hypothesis rejected.

Source: own elaboration

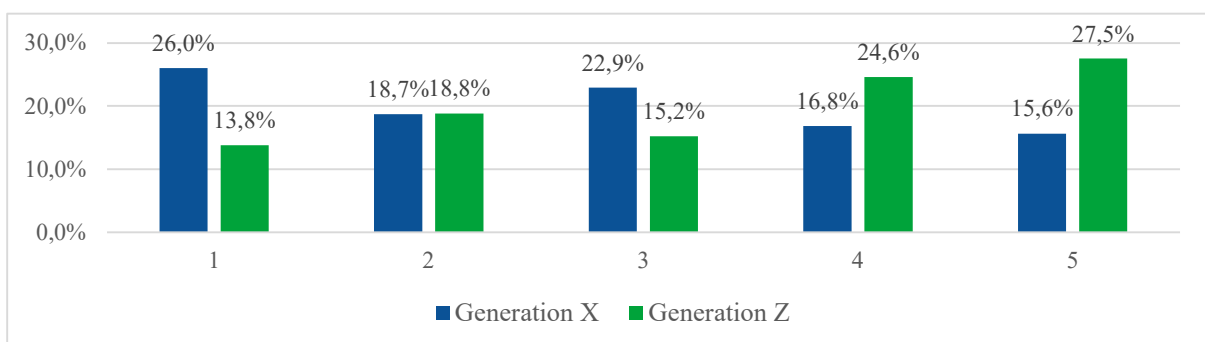


Figure 13 Motivation to Minimize Food Waste through CSR Activities – Gen X vs. Gen Z  
Source: own processing

The most frequently selected responses by Generation Z were the higher values on the Likert scale, indicating stronger agreement with the motivational influence of CSR activities. In



contrast, Generation X respondents more often chose the lower values. The overall results are illustrated in Figure 1. This difference is also supported by the study of Kymäläinen, Seisto and Malila (2021), which states that Generation Z is more conscious in areas such as recycling, reducing food waste, interest in product origin, and corporate social responsibility (CSR).

These findings are consistent with the United Nations (2024) perspective, which highlights that food waste undermines the sustainability of global food systems by wasting natural resources such as water, land, and energy, while also contributing to greenhouse gas emissions and food insecurity. The UN emphasizes that addressing this issue requires active engagement and responsibility from younger generations, who will shape future consumption habits and sustainability practices. From this standpoint, the stronger environmental awareness and positive attitude towards CSR observed among Generation Z are encouraging indicators.

This generation's willingness to engage with CSR initiatives aligns with the UN's call for behavioral change and intergenerational responsibility in building sustainable food systems. Therefore, food companies that effectively communicate authentic and transparent CSR messages towards younger consumers can not only strengthen brand trust but also contribute to broader sustainability goals. In this sense, Generation Z's responsiveness to environmental CSR represents both a strategic opportunity for businesses and a key societal lever for minimizing food waste and promoting responsible consumption.

### ***Results regarding hypothesis 2:***

The second hypothesis focused on whether CSR activities of food companies influence consumers' motivation to recycle food waste. Specifically, we examined the impact of companies' environmental initiatives within the CSR framework on consumer behavior. Respondents answered the question: "Do companies' environmental CSR activities influence your motivation to recycle food waste?" The possible answers were yes or no, and we compared the responses of different generations to see if there were statistically significant differences.

To test this assumption, we examined whether there is a statistically significant relationship between a respondent's generation (X, Y and Z) and their perception of how much CSR activities influence their motivation to recycle food waste.

The Chi-square test of contingency confirmed a statistically significant relationship between generations and their perception of CSR's impact on food waste recycling motivation. However, Cramer's V indicated only a weak association, suggesting that the influence of CSR is limited and likely shaped by other factors. Detailed results are shown in Table 3.



According to the results, CSR activities can influence consumer behavior and motivate them to recycle food waste. Although statistical analysis indicated only a weak correlation, the results suggest that businesses have the potential to shape more sustainable consumer habits. Similar findings were reported by Young et al. (2017), who demonstrated that companies could play a significant role in reducing food waste by actively influencing their customers' behavior. Their study highlights that businesses have the power to encourage more sustainable consumer choices and contribute to the overall reduction of food waste.

The results confirmed that CSR initiatives do have a motivational effect, even though the correlation strength was weak. This aligns with the theoretical assumptions of Osúchová et al. (2024), who found that CSR marketing activities of food companies are increasingly influencing consumer behavior. Their findings emphasize that CSR is not merely a reputational tool but also a behavioral driver, capable of encouraging more responsible consumer choices. Similarly, Igarová et al. (2023) argue that CSR activities integrated into marketing communication can significantly benefit food companies by increasing sales and competitiveness, while simultaneously promoting more sustainable purchasing and consumption patterns.

Table 3 Chi-square test and Cramer's V coefficient – Hypothesis 2

Test used	Test statistics	Critical value	Result
Chi-square test of contingency	7.428	5.991	Null hypothesis rejected.
Cramer's V coefficient	0.103		Weak relationship

Source: own elaboration

In addition to examining the impact of CSR on food waste reduction, the questionnaire also explored which types of food waste consumers are most likely to recycle. The four main categories are shown in Figure 2.

**Spoiled or expired food** – food that has spoiled or expired and has not been consumed. Examples: mouldy bread, spoiled meat, sour milk, expired products.

**Food leftovers** – food that is left over after cooking or eating and has not been stored or later consumed. Examples: Unfinished portions on the plate, leftover cooked rice, pasta, sauces.

**Non-edible food parts (biowaste)** – organic waste that naturally occurs during food preparation. Examples: peelings, bones, tea bags, coffee grounds, eggshells.

**Used oils and fats** – liquid fats that are often improperly disposed of although they should not be poured down the drain. Examples: frying oil, cooking fat and lard.

Figure 2 Categorization of food waste types and their typical examples

Source: own processing

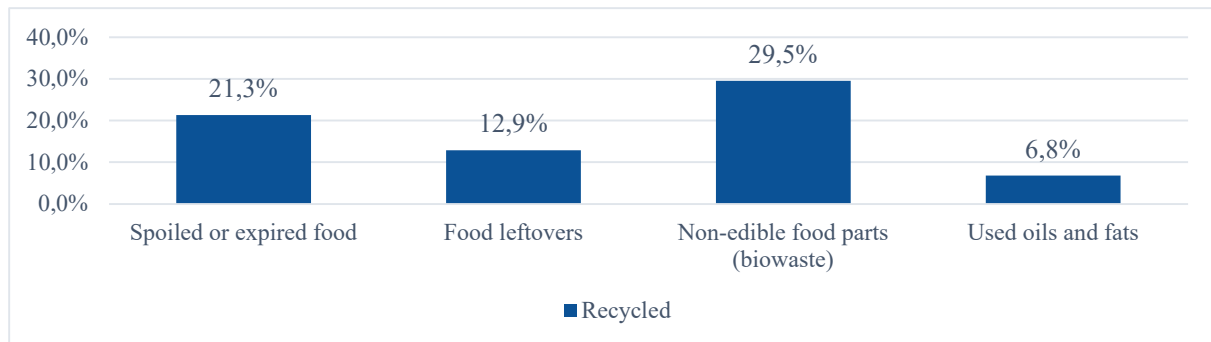


Figure 3 Recycling of Different Types of Food Waste  
Source: own processing

Respondents indicated whether they recycle each food waste category (yes/no). Biowaste was the most frequently recycled, followed by spoiled or expired food. Leftovers were recycled less often, while used oils and fats were the least recycled (Figure 3).

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### **Results regarding hypothesis 3:**

In the third hypothesis, we focused on how respondents perceive the environmental activities of companies within the concept of CSR. The study aimed to explore whether the public perceives these activities as genuine and meaningful contributions to environmental sustainability or merely as superficial marketing strategies with limited tangible impact. To explore this, we asked respondents a straightforward yes/no question: “Do you consider the environmental activities of enterprises within the CSR framework to be credible?”.

Based on the responses, we assumed that more than half of the participants perceive companies’ environmental activities as credible. To verify this, we used a propensity score matching test with a known constant. The null hypothesis predicted that the proportion of respondents who consider CSR activities trustworthy is 50% or less, while the alternative hypothesis stated that this proportion is greater than 50%.

The result showed that the test statistic did not exceed the critical value, which means that statistical significance was not reached. Therefore, we do not reject the null hypothesis. This suggests that the proportion of respondents who consider CSR environmental activities to be



credible does not significantly exceed 50%. Detailed results of the test are presented in Table 4. Therefore, based on our research, we cannot confirm that majority of the respondents perceive the environmental CSR activities of the companies as credible.

Our results showed that most of the respondents do not consider environmental CSR activities as credible. This suggests a certain degree of skepticism among consumers. In contrast, the findings of Cai et al. (2024) suggest that CSR can positively influence pro-environmental behavior, especially if companies establish a strong environmental reputation. This highlights the importance of credibility in how the public perceives CSR initiatives.

A similar contrast emerges when compared with the conclusions of Kádeková et al. (2022), who explain that food companies operating within the environmental pillar of CSR not only seek to educate the public about food waste, but also actively engage in recycling practices and strive to meet national and international environmental standards. While these corporate efforts indicate genuine environmental concern on the part of businesses, our findings suggest that such initiatives are not always perceived as credible by consumers. This gap between corporate intention and public perception highlights a key challenge for food companies—to communicate CSR activities more transparently and convincingly, so that consumers can better recognize their authenticity and real environmental contribution.

Table 4 One-sample proportion test – Hypothesis 3

Test statistics	Critical value	Result
0.724	1.645	Null hypothesis not rejected.

Source: own elaboration

## 5. Conclusion

This study examined the relationship between corporate social responsibility (CSR) and consumer behavior in the prevention and recycling of food waste. The issue of food waste is becoming increasingly urgent not only from an environmental but also from a societal perspective. CSR activities represent a tool through which food companies can contribute to addressing this challenge; however, their effectiveness depends largely on how consumers perceive and trust these initiatives.

Based on a questionnaire survey of 687 respondents from Generations X, Y, and Z, the results revealed that Generation Z shows a more positive attitude towards CSR activities and a stronger motivation to reduce food waste, while Generation X tends to be more critical and



reserved. Respondents most often recycle biodegradable waste (e.g., peels, bones), whereas used oils and fats remain the least recycled category.

Although CSR activities can serve as an effective means of encouraging sustainable behavior, less than half of the respondents considered these activities trustworthy. This indicates that while companies are indeed engaging in environmental initiatives, their communication often lacks authenticity and persuasive power.

To genuinely influence consumer behavior, food companies should adopt a more integrated and transparent approach to CSR, combining educational, motivational, and behavioral tools.

- First, transparent communication about CSR goals, measurable outcomes, and real environmental benefits can build credibility and trust.
- Second, companies can use behavioral nudges and consumer engagement campaigns, such as gamification, reward systems for waste reduction, or collaborations with influencers promoting responsible food use.
- Third, product and packaging innovation, such as clearer expiry labeling, resealable packaging, or portion-size adjustments, can help consumers prevent waste in everyday practice.
- Finally, educational partnerships with schools, communities, and retailers can reinforce awareness and social norms related to responsible consumption.

The paper contributes new insights into how CSR initiatives can influence consumer behavior regarding food waste, emphasizing that trust, transparency, and tangible consumer involvement are essential for meaningful impact. Future research could broaden this perspective by including the views of employees and managers, providing a more holistic understanding of the true role of CSR in shaping sustainable consumption and corporate culture.

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# SCIENTIA IUVENTA 2025

## ARTIFICIAL INTELLIGENCE IN CONSULTING



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### ABSTRACT

#### **Purpose:**

This research paper aims to identify and describe best-practice use cases of artificial intelligence (AI) in the consulting industry. It explores how AI is integrated into consulting practices to enhance efficiency and effectiveness, particularly in data analysis and automated reporting. The study also highlights the balance between AI's capabilities and the necessity of human expertise in project management and strategic decision-making.

#### **Design/methodology:**

The research uses a qualitative methodology, employing expert interviews to gather insights. Three individuals from the consulting industry and one from the financial sector were interviewed. The interviews were conducted online, transcribed, and analysed to understand AI's practical use in consulting and compare it with its application in finance.

#### **Findings:**

The findings show that AI primarily supports tasks like data analysis and automated reporting, enhancing efficiency. However, human expertise remains crucial for strategic decisions and project management. The study also highlights differences between AI's application in consulting and finance, with finance integrating AI more deeply into core processes.

#### **Research/practical implications:**

The research provides insights for practitioners and academics on integrating AI into consulting. It suggests that AI can enhance efficiency but should be viewed as a complementary tool, not a replacement for human consultants. The study emphasizes the need for careful evaluation of AI solutions to ensure they align with clients' business goals.

#### **Originality/value:**

This research contributes to the discussion on innovation in management by analysing AI's role in consulting. It offers new perspectives on AI's practical applications and highlights the importance of human expertise. The study's originality lies in its comparative approach, examining AI's impact in both consulting and finance sectors, and its focus on real-world applications through expert interviews

**Keywords:** Artificial intelligence, consulting, use cases, project management

**JEL Classification:** M & O

## 1. Introduction

Artificial Intelligence (AI) is an innovative concept that has fundamentally transformed how many industries operate and the quality of services they provide. AI is now present in a variety of areas, from autonomous vehicles and personal assistants to customized and personalized products. Particularly in the business world, AI has created the potential to better understand collected data, allowing companies to optimize processes, minimize risks, foster growth, and improve efficiency. However, it is important to note that AI is an extremely complex technology, and only a few companies are able to fully harness its potential. Most current AI applications rely on machine learning and deep learning.

While AI has radically changed many industries, the consulting sector has been slower in adopting and utilizing these tools. The Living Dictionary Lexico defines AI as “the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.”

The primary goal of this research is to provide readers with a clear understanding of how business consulting is currently conducted and to what extent AI is integrated into the solutions or services offered to clients. An important part of the study was also to determine when AI is seen as an appropriate solution to meet clients' needs. This research aims to introduce readers to the consulting industry and demonstrate how AI is currently applied and utilized in the field.

Another objective of this study is to examine whether the views of the interviewed expert align with the theoretical framework and literature and how the industry functions in practice. However, this research is not intended to be a scientific paper with precise research data. It relies on secondary data, such as literature and articles, as well as primary data from an interview conducted with an experienced consultant.

## 2. Literature review/theoretical background

Automation and efficiency

The application of Artificial Intelligence (AI) in management consulting is revolutionizing how firms deliver value, driven by advancements in data processing, predictive analytics, and machine learning capabilities. As industries across the board adopt digital transformation strategies, consulting firms are increasingly leveraging AI to enhance efficiency, enable data-driven insights, and address complex client needs. AI's capacity for rapid data analysis, pattern



recognition, and predictive modeling allows consultants to optimize processes and offer clients more customized solutions (Davenport & Ronanki, 2018, p. 70).

A core benefit of AI in consulting is its ability to automate routine, labor-intensive tasks, such as data cleaning, sorting, and initial analyses, freeing consultants to focus on strategic, high-impact work. For example, AI algorithms can automatically process and interpret data from various sources, allowing consultants to build detailed, data-driven reports in a fraction of the time previously required (Brock & von Wangenheim, 2019, p. 75). Additionally, predictive analytics enables consultants to offer forward-looking insights, helping clients make proactive rather than reactive decisions (Gentsch, 2018, p. 95).

### Data-driven decision-making

AI has demonstrated significant potential in data-driven decision-making processes, as well as in enhancing client interaction and relationship management. Natural Language Processing (NLP), for instance, can analyse client feedback or large amounts of textual data to identify sentiment, needs, and emerging concerns. This allows consultants to create tailored strategies that align with client expectations and market sentiment (Chui, Manyika & Miremadi, 2018, p. 103). NLP's capacity to interpret unstructured data makes it an invaluable tool in areas like customer relationship management and market analysis, as consultants can more accurately map consumer behaviours and preferences (Gamage et al., 2020, p. 185).

### Strategic Planning and Decision Support

In strategic planning, AI-driven tools such as simulation modelling and scenario analysis are becoming integral to consulting. These models allow firms to test multiple strategies against potential market changes, economic shifts, or regulatory impacts. Consultants can thus offer clients strategic recommendations backed by robust, AI-generated forecasts, which is particularly advantageous in dynamic industries like finance, healthcare, and technology (Gartner, 2021, p. 27).

A further area of AI application is decision support systems. By integrating machine learning algorithms, consulting firms can enhance decision-support platforms, allowing clients to assess scenarios with greater depth and precision. AI-based decision support tools streamline complex analyses, which can otherwise be time-consuming and resource-intensive, adding value across industries and enabling clients to make quicker, more informed decisions (Kaplan & Haenlein, 2019, p. 36).

Despite the clear benefits, the application of AI in consulting is not without challenges. A primary limitation of AI is its dependency on quality data inputs, as inaccurate or biased data can lead to erroneous conclusions. Moreover, AI models require human oversight for



interpretation, as they often lack the contextual understanding necessary for complex strategic decisions (Jones & Castle, 2020, p. 78). Consultants must therefore play an active role in ensuring the data's relevance, accuracy, and ethical use, which requires additional resources and expertise (Wilson & Daugherty, 2018, p. 47).

Another challenge lies in aligning AI outputs with the broader context of client needs. AI excels at processing data within set parameters, but it may struggle to adapt to unique or changing client contexts, limiting its utility in situations where a high degree of personalization or adaptive strategy is required (Ekbja & Nardi, 2017, p. 115). Consulting firms thus must balance AI's capabilities with the human insight required for contextual understanding and decision-making.

As AI technologies continue to evolve, their applications in consulting will likely expand, supporting areas such as cognitive computing and digital transformation. The integration of AI-driven virtual assistants and interactive client dashboards, for example, can improve client engagement by allowing real-time access to data insights and fostering more dynamic consultant-client interactions (McKinsey & Company, 2020, p. 30). Furthermore, as AI becomes increasingly sophisticated, its role in strategy development and decision-making will deepen, making it a core component of future consulting methodologies (Brynjolfsson & McAfee, 2017, p. 122).

A promising area for future research is the development of AI systems that can better mimic human intuition and adaptive reasoning. Hybrid AI-human models are emerging, enabling AI systems to assist rather than replace human consultants, which fosters "collaborative intelligence." This approach emphasizes the synergy between human insight and AI precision, ensuring that clients receive comprehensive, contextualized guidance that addresses both quantitative and qualitative factors (Raisch & Krakowski, 2021, p. 214).

The study form (Frey & Osborne, 2013, p. 27) categorizes work tasks into three broad areas: transactional, relational, and expertise tasks. Each category has a different level of susceptibility to AI automation and unique implementation considerations.

Transactional tasks are routine, day-to-day activities with standardized operational procedures and cadences. These tasks are highly susceptible to AI disruption. Before the implementation of AI, these tasks are predominantly performed by humans. However, after AI implementation, a significant portion of these tasks will be automated, leading to substantial productivity gains. The study indicates that 50% of transactional tasks will be automated, while the remaining 50% will be assisted by AI (Frey & Osborne, 2013, p. 27).

Relational tasks involve managing, consulting, and guiding others, requiring significant human interaction. These tasks have minimal susceptibility to AI disruption. Before AI implementation, relational tasks are entirely human-centric. Post-AI implementation, these tasks will largely remain human-centric, with 80% of these tasks continuing to be performed by humans and 20% being assisted by AI (Frey & Osborne, 2013, p. 28).

Expertise tasks are knowledge-based tasks that require the application of specialized skills. These tasks have low to moderate susceptibility to AI disruption. Before AI implementation, expertise tasks are primarily human driven. After AI implementation, there will be a balanced integration of AI, with 50% of these tasks being assisted by AI and the other 50% remaining human-driven (Frey & Osborne, 2013, p. 29).

### 3. Methods

#### Interview as a research method

The interview is a key data collection method for qualitative research, where information is gathered through structured, semi-structured, or unstructured questions (Adhabi & Blash-Anozie, 2017). As Adhabi and Blash-Anozie (2017) explain, an interview is an interactive process involving targeted questions to gain specific insights. In qualitative research, interviews aim to understand subjects' perspectives, uncover the meanings behind their experiences, and explore their lived realities (Kvale, 1996).

Despite its value, interview research faces criticism for potential bias, especially if alternative viewpoints are lacking, and for its perceived lack of scientific validity, as responses can be subjective or influenced by emotions (Adhabi & Blash-Anozie, 2017). In this study, interviews were chosen as the primary method due to limited literature on AI's application in business consulting, specifically on its implementation and recommendations to clients. Interviewing an experienced professional provided valuable insights into the practical use of AI in consulting and the thought process guiding consultants' decisions.

#### Selection of the Person Interviewed

In this study, three individuals from the consulting industry were interviewed to gather diverse perspectives on the impact of AI in consulting. The first interview was conducted with a senior manager from Campana & Schott, who works as a client advisor for project and transformation management. The second interviewee was the Head of AI at Klynfeld-Peat-Marwick-Goerdeler (KPMG) Switzerland, and the third was a consultant from the Tax and Legal department at KPMG Switzerland. This selection allows for drawing conclusions from a



range of hierarchical levels and client proximities, as the interviewees come from both a Big Four firm and a smaller boutique consultancy. This diversity provides a comprehensive view of the consulting industry.

All interviewees were asked the same set of open-ended and semi-structured questions. This approach allows for flexibility, enabling the interviewees to freely discuss relevant topics while also ensuring that key aspects are addressed. Each interview lasted between 50 and 70 minutes and was conducted in German. The interviews were conducted online, transcribed, and the statements were linguistically standardized, consolidated, and evaluated.

To gain a comparative perspective from another industry, the financial sector was selected, as it has undergone the most significant changes due to AI in recent years. An additional interview was conducted with a department head of sales management for private customers. The same set of questions was posed to this interviewee. This interview, also conducted in German, lasted 50 minutes. This approach allows for a comparison between the consulting and financial sectors, providing insights into the broader impact of AI across different industries.

### Interview Questions

Not all questions were asked during the interview, but all topics mentioned in the questions were addressed. Below are the questions that were prepared in advance:

- Could you please introduce yourself, including your background and job responsibilities?
- What is your perspective on AI?
- Can you provide an overview of how business consulting is typically conducted?
- What are the current hot topics in various industries?
- Do you offer AI solutions, and if so, what types?
- How do you assess the best AI solution for your clients?
- What is your perspective on AI within the consulting industry?
- What are your thoughts on the future of AI in consulting?
- Which tasks do you think remain largely or exclusively in human hands?

## 4. Results and discussion

### Analysis of AI Integration in Consulting Practices

The interviews provide an in-depth look into the interviewees' backgrounds, their views on AI, and the ways they integrate AI into consulting practices. The experts began by introducing their professional journeys, outlining their responsibilities and experience in consulting. This



context underlines their authority in discussing AI's role within the industry and offers valuable insights into how consulting is adapting to technological advancements.

On the topic of AI, the experts conveyed a balanced perspective, recognizing AI as a powerful tool for enhancing productivity and streamlining processes but also highlighting its limitations, particularly in areas where complex, nuanced problem-solving is required. According to the interviewees, AI serves as a valuable resource but should not be seen as a universal solution. This approach reflects a realistic view of AI's current capabilities, appreciating its contributions while maintaining a critical view on its boundaries within the consulting sector.

When asked to provide an overview of traditional business consulting practices, the interviewees explained that consulting is rooted in understanding client needs, analyzing their challenges, and delivering tailored solutions. While AI has become a significant focus, they stressed that the consulting process remains primarily about meeting the client's specific objectives, rather than focusing solely on the latest technological trends. This highlights a core value in consulting, which is to prioritize client needs over any given technology, no matter how advanced.

Regarding current industry trends, the interviewees noted that digital transformation, process automation, and data-driven decision-making are top priorities across various sectors. AI was identified as a key area of interest, particularly in industries seeking to optimize supply chains, improve customer experience, and harness predictive analytics for strategic planning. These trends align with broader industry insights, showing how businesses are increasingly leveraging AI to gain competitive advantages.

When discussing their company's AI solutions, the interviewees mentioned a range of offerings, including automation tools, data analysis capabilities, and machine learning models. These solutions are aimed at boosting operational efficiency and providing scalable, practical improvements. Notably, the experts emphasized that while AI solutions are available to clients, they are not positioned as one-size-fits-all answers. This suggests a thoughtful approach to AI, where solutions are tailored to the specific needs and objectives of each client.

In determining the best AI solution for clients, the interviewees described a methodical process that begins with an assessment of the client's unique requirements and challenges. They explained that potential AI solutions are only proposed after a careful evaluation of how well they align with the client's business goals. This approach underscores the importance of using AI thoughtfully, ensuring that it serves a real business purpose rather than being implemented for novelty's sake.



From an industry perspective, the interviewees view AI as both a promising opportunity and a potential disruptor within consulting. They acknowledged AI's ability to enhance productivity and expand consulting capabilities, while also recognizing that it could challenge traditional consulting roles. This dual perspective suggests that while AI might simplify or even automate some aspects of consulting, it is likely to shift the demand toward services that rely on complex human judgment and creativity.

Looking ahead, the interviewees expressed cautious optimism about AI's future in consulting. They predicted that AI will become a staple in the industry as more companies become aware of its advantages, particularly for data analysis and process optimization. However, the experts were careful to note that AI is unlikely to replace human consultants entirely; rather, it will serve as a complementary tool that allows consultants to deliver more impactful solutions. Their outlook suggests that AI will shape consulting practices and redefine how value is delivered to clients, while human expertise will remain essential in areas that require strategic insight and innovative thinking.

### Differences Between AI in Consulting and AI in the Finance Sector

The interviews revealed notable differences in how AI is applied in the consulting and finance sectors. In consulting, AI is primarily used to enhance productivity, streamline processes, and provide data-driven insights that help consultants deliver tailored solutions to clients. The focus is on using AI to support human consultants by automating routine tasks, enabling more efficient data analysis, and offering predictive analytics to inform strategic decision-making.

In contrast, the finance sector has seen a more profound transformation due to AI. Financial institutions leverage AI for a wide range of applications, including risk assessment, fraud detection, personalized financial services, and algorithmic trading. AI in finance is often integrated into core business processes, where it plays a critical role in enhancing operational efficiency, improving customer experience, and driving innovation. The finance sector's reliance on AI for real-time data analysis and decision-making highlights its potential to significantly disrupt traditional financial services.

The interview with the department head of sales management for private customers at a major financial institution provided valuable insights into these differences. The interviewee emphasized that the finance sector's early adoption of AI has led to substantial changes in how financial services are delivered, with AI becoming an integral part of daily operations. This



contrasts with the consulting sector, where AI is still primarily seen as a tool to augment human capabilities rather than replace them entirely.

By comparing the use of AI in these two sectors, it becomes clear that while both industries benefit from AI's capabilities, the extent and nature of its impact differ significantly. The finance sector's more advanced integration of AI serves as a model for other industries, including consulting, to understand the potential benefits and challenges of adopting AI technologies.

### 5. Conclusion

The purpose of this research is to provide readers with insights and information about consulting in general and to examine how AI is applied in the industry, based on four interviews conducted with experts in the field. The findings indicate that the extensive theoretical research aligns with the interviewees' views, suggesting that both the theoretical and practical perspectives mutually validate the conclusions drawn.

This research will be valuable for anyone interested in understanding business consulting in general, its operational mechanisms, how AI is currently implemented in consulting, and what role AI may play in the industry's future. It also benefits individuals who wish to learn more about the diverse areas one can work in as a consultant.

The information obtained from the interviews was not surprising and further supported our initial assumptions. However, there were intriguing points regarding how AI is not always the primary solution and that it is simply one tool among many others that consultants use to address clients' issues.

The aim of this research was to assess the extent to which AI solutions and tools are offered as consulting solutions, identify specific solutions provided, and gain a clearer picture of the current capabilities of consulting companies regarding AI implementation.

Unfortunately, the study did not provide an in-depth understanding of how AI is implemented within the consulting industry, as there were no case studies from which to draw such information. From the theoretical analysis and the interviews, it was also evident that AI does not yet play a central role in selecting the appropriate solution for clients. Consultants evaluate clients' needs and choose the most suitable approach, irrespective of the technology involved.

Clients' needs vary greatly, so the required solutions differ as well. Many companies are uncertain about how to implement AI or how it could benefit them. At this point, consultants play a crucial role, suggesting simpler applications like automation, RPA, or chatbot



functionalities to introduce AI to the company. As the company becomes more familiar with the benefits and operations of AI, they can then implement more complex and advanced solutions.

Currently, there are numerous smaller consulting firms that specialize solely in AI solutions. They help companies embark on AI by providing straightforward analyses on areas of focus or developing simple algorithms for specific tasks. The AI consulting sector is still relatively new, with no dominant players controlling it.

The findings support several assumptions, as seen in the Harvard Business Review article *AI May Soon Replace Even the Most Elite Consultants*, which discusses the substantial changes the consulting industry will likely face in the coming years. Although the interviews suggested that AI would enhance efficiency and productivity in the industry in the long term, AI represents an inevitable threat.

However, these findings cannot be considered definitively valid, as they are based on only four interviews, leaving the data insufficient to be scientifically robust. There is also the possibility of bias, as the subject was explored from only a limited number of perspectives. Nonetheless, the alignment between the theoretical work and interview findings suggests that there is truth in the conclusions presented in this paper.

The credibility of this paper would be improved by conducting interviews with more experts to confirm the findings and reduce the impact of bias.

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## MEMBER ENGAGEMENT IN THE ONLINE COMMUNITY 'CESTUJEME BEZ CESTOVKY' AND THEIR SEGMENTATION

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### ABSTRACT

#### Purpose:

Online communities constitute a dynamic and interactive environment in which members engage not only with one another but also with the administrator, who frequently assumes a pivotal role in their operation. These interactions can exert a significant influence on consumer behaviour and decision-making processes across various stages of the purchasing journey pre-purchase, during consumption, and post-purchase as reflected in electronic word-of-mouth (eWOM) feedback (Wahyuni, 2023). Consequently, recent scholarly inquiries (e.g., Zhou et al., 2021; Marx et al., 2021; Peng et al., 2022; Zaborek & Kurzak-Mabrouk, 2024) have expanded their focus beyond the impact of online communities on consumer behaviour in tourism to examine the ways in which member-administrator interactions shape the perceived credibility and overall reception of these platforms. The primary objective of this study is to assess consumer behaviour within the context of interactions among members in a selected online community that serves as an information source on tourism offerings.

#### Design/methodology:

To achieve the principal aim, this study relies on primary data collected through a questionnaire survey administered to members of the selected online community *Cestujeme bez cestovky*. A total of 113 responses were obtained, forming the basis of the sample. The collected data are analysed using appropriate statistical methods, including non-hierarchical cluster analysis (K-means) and correlation analysis, which facilitate the profiling of the identified clusters. For data visualization, biplots and line charts are employed to enhance interpretability and provide insights into the relationships within the dataset.

#### Findings:

The cluster analysis identified three user segments in the online community *Cestujeme bez cestovky*: (1) active members engaging with peers, (2) active members engaging with the administrator, and (3) passive members. The first group interacts mainly through likes, private messages, and recommendations, while the second engages via administrator polls, comments, and reactions. Passive members show minimal interaction. Correlation analysis revealed that cluster assignment is linked to comment reactions: the first group reacts with likes, the second



to expert inquiries (e.g., visas), and the third only reads comments. All clusters exhibited similar vacation preferences, indicating independence in responses to administrator posts.

### **Research/practical implications:**

Given the increasing scholarly interest in member engagement within online communities in the tourism domain, this study was undertaken as an initial exploratory investigation. The findings serve as a foundation for a more extensive survey, which will incorporate multiple sample sets through several questionnaires targeting members of different online communities. The primary limitation of this study is the relatively small sample size of 113 respondents, which precludes the determination of its representativeness. Consequently, the results cannot be generalized to the broader population, highlighting the need for further research with a larger and more diverse sample.

### **Originality/value:**

The originality of this study lies in its focus on member engagement within Facebook communities, specifically analysing their interactions with posts and comments an area that has received limited scholarly attention. This study aims to bridge this research gap by providing a foundational analysis that informs future, more extensive investigations. Beyond examining member interactions, the research also seeks to explore consumer behaviour within online communities that serve as sources of tourism-related information on Facebook. By addressing this unexplored dimension, the study contributes to a deeper understanding of digital consumer engagement in tourism-focused social media environments.

**Keywords:** Online communities, Member engagement

**JEL Classification:** M31, Z33

### **1. Introduction**

Numerous communities specifically related to tourism can be found on social media and within the broader online environment. Within these communities, valuable information regarding travel, tourist destinations, tourism services, and activities undertaken in both domestic and international tourism is shared. The primary objective of such communities is to fulfill the needs of their members while providing a platform for the meaningful exchange of opinions, advice, experiences, and recommendations.

In the dynamic and interactive environment of these communities, communication occurs not only among members but also between members and administrators, who are responsible for organizing and moderating discussions (Zaborek & Kurzak-Mabrouk, 2024). These interactions have the potential to significantly influence consumer behavior and decision-making processes at various stages of the purchasing cycle - prior to purchase, during consumption, and post-purchase - as opinions, experiences, and recommendations are exchanged, potentially shaping consumer choices.



## 2. Theoretical background

Online communities are recognized as digital spaces where individuals communicate and share a common interest (El-Manstrly et al., 2020). Moreover, membership in these communities is associated with the sharing of a particular identity, which, however, undergoes reterritorialization - indicating that it is not confined to a specific place or time but can manifest in diverse contexts (Beutler & Teixeira, 2015). This flexibility differentiates online communities from traditional ones, as their functioning is not constrained by physical distance between members or a fixed time for interaction (Muryanto et al., 2023).

However, the existence of such communities is determined not only by the ability to communicate without geographical restrictions but, more importantly, by the level of member participation. Online communities serve as platforms for the exchange of opinions, advice, and experiences, with their sustainability being closely linked to the active engagement and willingness of individuals to contribute content (Kunz & Seshadri, 2015). Consequently, research has focused on various aspects of participation, with one approach involving a multidimensional scale designed to assess member engagement in tourism-related communities (Kamboj & Rahman, 2017). While increasing attention has been directed toward identifying stimuli that enhance interaction among members (Chen et al., 2021; Zaborek & Kurzak-Mabrouk, 2024), less emphasis has been placed on examining consumer behaviour within these communities - particularly concerning the differences between those who interact exclusively with other members, those who communicate with administrators, and those who do not engage at all.

## 3. Methods

The primary objective of this study is to analyse consumer behaviour in the context of interactions among members of a selected online community that serves as an information source on tourism offerings.

To achieve this objective, a sample of 113 respondents, all members of the online community *Cestujeme bez cestovky* on the social network Facebook, has been examined. This community has existed since 2016 and currently has over 68,000 members. It is a public, non-commercial group with one administrator who manages the entire community, without any intervention from members in the content. The community serves as a platform for providing travel tips and



recommendations. Data were collected through a questionnaire survey conducted in January 2025.

To identify members with the highest level of interaction within the community, a non-hierarchical cluster analysis is employed. This analysis is based on data regarding the frequency of various forms of interaction and communication - both among community members and between members and the community administrator. The results of the cluster analysis are visualized using a biplot, which not only illustrates the distribution of respondents into different clusters based on their interactions within the community but also provides insights into how the reasons for joining the community are associated with these clusters. Through this visualization, dominant motivations across different segments are identified, offering an understanding of why individual members joined the community.

To construct a consumer profile for each cluster, correlation analysis is conducted. Specifically, the relationship between cluster membership and members' reactions to content shared by the community administrator is examined, with particular attention given to posts featuring vacation inspirations, weekend trips, or travel experiences. Additionally, the extent to which segment assignment depends on members' responses to comments under the administrator's posts - containing questions and requests for travel-related advice (e.g., recommendations for restaurants, accommodations, lesser-known beaches, safety aspects of destinations, visa requirements, or vaccinations) - is investigated. If statistical significance is confirmed, a line chart is utilized to illustrate the most frequent reactions among members in different segments. Given that the analysed responses are nominal, Cramér's V is applied in the correlation analysis to determine the strength of the relationship between variables.

#### 4. Results and discussion

Cluster analysis using the K-means method, based on input variables reflecting the frequency of various forms of interaction and communication - both among community members and between members and the community administrator - was conducted. As a result, the 113 members of the online community *Cestujeme bez cestovky* were classified into three clusters according to their similarities. The number of clusters was determined based on the graphical output of the Elbow plot (Figure 1), which indicated the optimal cluster count.

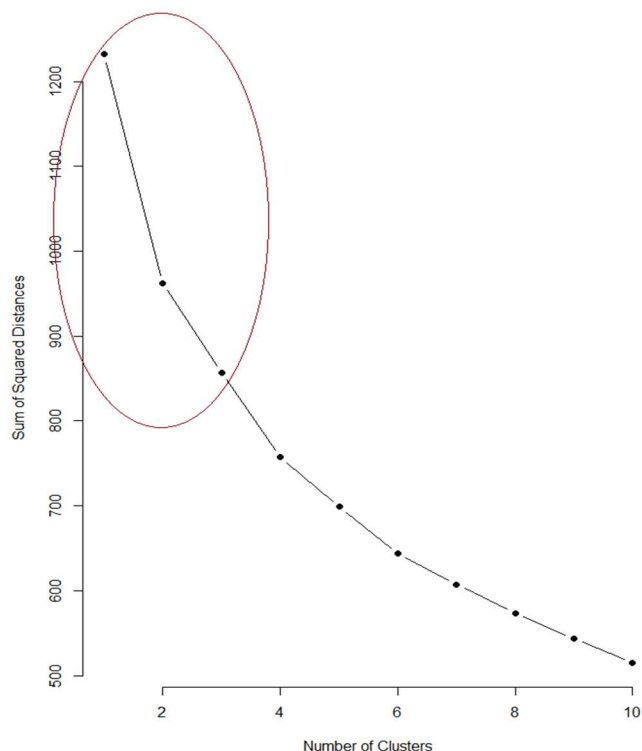


Figure 1 Elbow Method for Optimal Number of Clusters  
Source: own, 2025.

The first cluster represents the smallest group, comprising 8.85% of respondents, who primarily engage in interactions with other community members. Their participation is predominantly observed through "Like" reactions (Mean = 3.40), private messages (Mean = 3.30), and recommendations of the community to acquaintances, including the invitation of new members (Mean = 3.20).

The second cluster, accounting for 34.51% of the sample, is characterized by a higher level of interaction with the community administrator. This engagement is most evident through "Like" reactions (Mean = 4.69), participation in polls or responses to questions posed by the administrator or moderator (Mean = 3.31), and, to a lesser extent, comments on the administrator's posts (Mean = 3.10).

The third cluster is the largest, comprising 56.63% of community members. It consists of passive users who demonstrate minimal engagement with either other members or the community administrator (Mean < 2.00).

To gain deeper insights into the consumer behaviour of individual clusters within the *Cestujeme bez cestovky* community, the results of the cluster analysis were visualized using a biplot. This biplot was further supplemented with a variable reflecting the reasons for which

current members decided to join the community. The visualization facilitates a better understanding of how members' motivations vary within the community and identifies key motivations for different member segments (Figure 2).

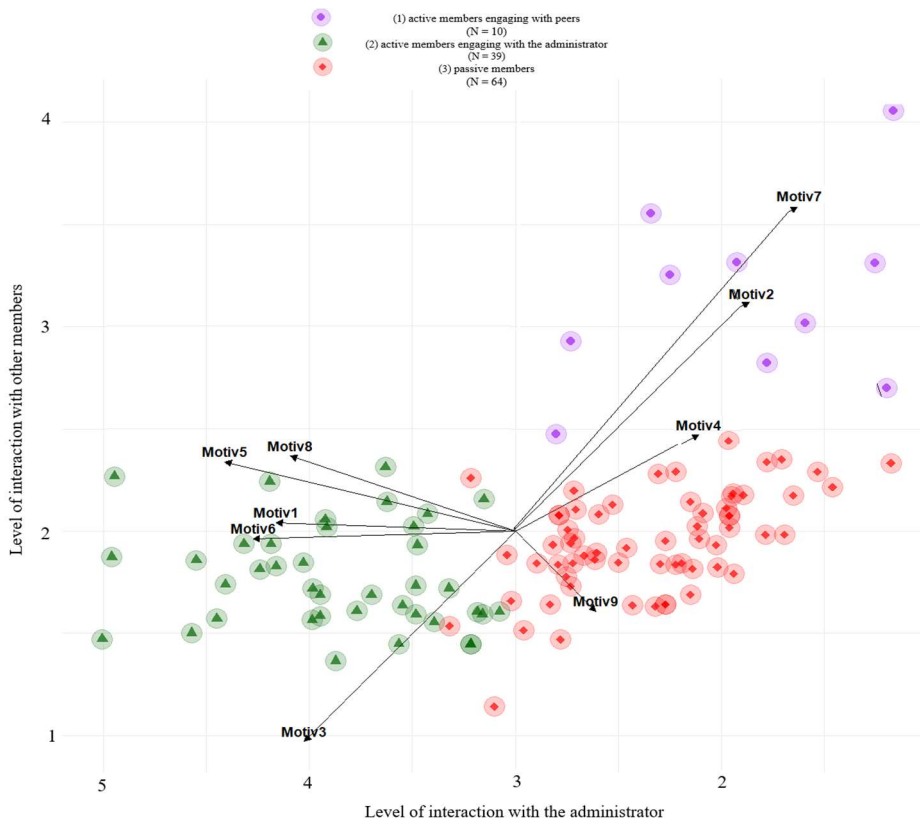


Figure 2 Biplot of Cluster Analysis: Clusters of Online Community Members and Their Entry Motives  
Note: The coded motives are defined in Table 1.  
Source: own, 2025.

Table 1 Coding of Membership Motives

Codes	Motives
Motiv 1	I joined to get inspiration for my planned vacation or trip.
Motiv 2	I joined to get up-to-date information on special offers (e.g., discounted flights, recommendations for affordable accommodation, etc.).
Motiv 3	I wanted to compare different options for securing accommodation/transportation and/or other services in the destination.
Motiv 4	I wanted to learn about lesser-known destinations that are not typically promoted by travel agencies
Motiv 5	I wanted to avoid the negative experiences of other visitors.
Motiv 6	I wanted to get tips and recommendations from experienced travelers.
Motiv 7	I wanted to follow the travel experiences of a specific person who is an inspiration to me
Motiv 8	I wanted to join discussions about destinations and travel experiences.
Motiv 9	I joined out of curiosity, without a specific reason.

Source: own elaboration, 2025.

The first cluster, which is primarily characterized by interactions with other members, appears to have joined the community mainly to follow the experiences of inspirational individuals (*Motiv 7*) or to obtain up-to-date information regarding advantageous offers, such as discounted flights or accommodation recommendations (*Motiv 2*).

The second cluster, which engages predominantly in communication with the administrator, exhibits more diverse motivations, with the most significant reason being the comparison of accommodation, transportation, and other travel-related services (*Motiv 3*).

The third and most passive cluster appears to have joined the community either out of curiosity (*Motiv 9*) or with the intention of acquiring information about lesser-known destinations that are not typically promoted by travel agencies (*Motiv 4*).

In the next phase of the research, attention was directed toward identifying factors influencing the assignment of members to different clusters. The relationship between cluster membership and socio-demographic variables (age, gender, region, education) was analysed using correlation analysis. However, the high  $p$ -values obtained from the Pearson chi-square test of independence ( $> 0.05$ ) indicated that none of these variables exhibited a statistically significant relationship with cluster membership. A likely explanation for this outcome is the



non-representativeness of the sample, as the current research sample (113 respondents) represents only the initial phase of data collection.

Subsequently, additional factors that could potentially influence the assignment of members to specific clusters were examined, with particular focus on their reactions to posts and comments. The analysis explored how members responded to appealing vacation inspirations, weekend getaways, and travel experiences, as well as to comments under posts in which the administrator sought travel-related advice (e.g., recommendations for restaurants, accommodations, lesser-known beaches, destination safety, required visas, and vaccinations). The correlation analysis did not indicate a statistically significant relationship between reactions to vacation posts and cluster assignment. However, a statistically significant association was identified between reactions to comments, with the strength of this relationship being of moderate magnitude, as evidenced by a Cramer's V value of 0.443 (Table 2).

Table 2 Results of the correlation analysis using correlation coefficients for nominal variables.

Independent variable	Correlation Characteristics for Nominal Variables	
	$\chi^2$ p-value	Cramer's V
Reaction to posts	0.087	-
Reaction to comment	0.000	0.443

Source: own elaboration, 2025.

The linear graph illustrates that the first group most frequently responds with a "Like" reaction (40.00%), while the second group engages only when personal experience with a specific destination is present (43.59%). The third group predominantly follows the comments passively without actively participating in discussions, which aligns with their overall lower level of interaction activity (35.93%) (Figure 3).

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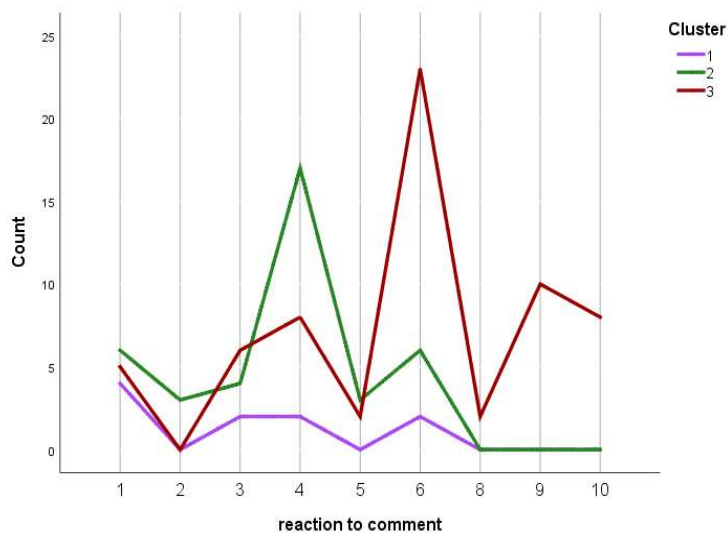


Figure 3 Absolute Values of Members Reactions to Comments under the Administrator's Posts  
 Note: Coded reactions to comments are defined in Table 3.  
 Source: own, 2025.

Table 3 Coding of Usual Reactions to Comments

	Reaction to comments
1.	I will give a 'like' or another positive rating to support the post.
2.	I immediately respond with my own advice or tip based on personal experience or provide relevant information that I know.
3.	I read the question but do not respond because I have no experience or information on the topic.
4.	I will only respond if the question is about a specific destination I have visited and have personal experience with
5.	I will only respond if the question pertains to a topic in which I have expert or specific knowledge (e.g., visas, vaccinations, local customs).
6.	I will read the comments because I'm interested in the answer to the question, but I won't participate in the discussion.
7.	I will start a discussion in the comments under the post and, together with other community members or the administrator, we will search for the best answer or information
8.	I ignore these questions because I am not interested in participating in the discussion and do not share my experiences or information.
9.	I will only read the post without reading any of the comments
10.	I do not comment because I expect the administrator to answer this question.

Source: own elaboration, 2025.



## 5. Conclusion

This study contributes to the growing body of research on online communities in the tourism domain by offering a structured analysis of member engagement within the Facebook group *Cestujeme bez cestovky*. Through an empirical investigation based on survey data and statistical analyses, the study identifies three distinct user segments: (1) active members engaging with peers, (2) active members engaging with the administrator, and (3) passive members. The segmentation highlights notable differences in interaction patterns, particularly in the way members respond to administrator-generated content versus peer-generated discussions. The findings suggest that while administrator-driven engagement fosters expert-driven discourse, peer-to-peer interaction is more informal and recommendation-based. Notably, passive members, despite demonstrating limited interaction, remain engaged through content consumption, underscoring the latent influence of social media communities on consumer decision-making.

Despite its valuable contributions, this study is subject to certain limitations. First, the relatively small sample size (N=113) limits the generalizability of the findings beyond the studied community. Future research should aim to validate the proposed segmentation framework across larger and more diverse samples, including online communities with varying thematic orientations and demographic compositions. Additionally, the cross-sectional nature of the data prevents an assessment of engagement dynamics over time. A longitudinal approach would provide deeper insights into how user behaviours evolve and whether engagement patterns remain stable or fluctuate in response to external stimuli (e.g., changing platform algorithms, seasonal tourism trends). Lastly, the current study relies on self-reported data, which may be susceptible to response biases. Triangulating survey findings with behavioural data (e.g., tracking actual interactions and content engagement) could enhance the robustness of the conclusions.

From a theoretical standpoint, this research extends the literature on online consumer behaviour by reinforcing the importance of engagement diversity in digital tourism communities. It supports the premise that engagement in such communities is not homogenous but rather stratified according to user motivations, platform affordances, and administrator influence.



From a managerial perspective, the study offers actionable insights for administrators of tourism-focused online communities. Given the demonstrated segmentation of user engagement, administrators can optimize content strategies by tailoring interactions to different audience segments. For instance, while active members benefit from curated discussions and administrator-led polls, passive members may require different engagement triggers, such as personalized content recommendations or targeted notifications.

In an era where online communities play an increasingly significant role in shaping travel decisions, understanding the mechanisms of digital engagement is crucial for both researchers and practitioners. This study serves as an initial step in deconstructing engagement typologies within tourism-oriented Facebook groups, offering a foundation for future research and practical applications. As digital interactions continue to evolve, ongoing empirical investigations will be necessary to capture emerging trends, further refining our understanding of consumer behaviour in the online tourism ecosystem.

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