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## *Management and Transdisciplinarity in the Digital Age*

*We live in a time when the pace of change outstrips our traditional capacity to adapt. The digital age is no longer a distant horizon toward which we are heading—it is the very space in which we operate daily, with all its challenges and opportunities.*

*In this context, classical management—compartmentalized, linear, and reliant on fixed procedures—becomes insufficient and ineffective. Organizations need a new paradigm: transdisciplinarity, an approach that integrates diverse perspectives to generate innovative, flexible solutions deeply attuned to the complexity of reality.*

*Transdisciplinarity is not simply about interdepartmental collaboration or the accumulation of multiple competencies. It represents the ability to transcend disciplinary boundaries—to reinterpret organizational challenges through multiple lenses, be they technological, humanistic, economic, or social—and to generate ideas that could never emerge within a single field of specialization. The transdisciplinary manager is more than a leader; they are an orchestrator of diverse knowledge.*

*In the digital era, this perspective becomes essential. Emerging technologies—artificial intelligence, big data, automation, blockchain—are no longer exclusively technical domains. They are strategic factors shaping organizational culture, decision-making processes, and even business ethics. Ignoring their social or psychological implications means missing the most critical dimension of transformation. Thus, today's managers must merge analytical thinking with empathy, strategic vision with deep understanding of human behavior, technological knowledge with sensitivity to cultural trends.*

*Transdisciplinarity thus becomes a competitive differentiator. Organizations that embrace it can innovate more rapidly, attract diverse talent, and anticipate market shifts more effectively. Instead of isolated teams, dynamic ecosystems of collaboration emerge; instead of standardized solutions, creative and adaptable approaches develop; and rather than rigid hierarchies, fluid leadership rooted in continuous learning takes hold.*

*Yet this transformation begins with a shift in beliefs, attitudes, and ways of thinking. Managers must accept that they cannot know everything and that their true value increases when they create space for others' expertise. They must foster dialogue among professionals with varied backgrounds and invest in organizational cultures that reward curiosity over conformity. Most importantly, they must become architects of a future where technology does not replace humanity but empowers it.*

*The digital age demands not only new competencies but a new way of thinking—and transdisciplinarity is the common language of this future: a bridge between disciplines, between people, and between the present and what organizations can become. The manager who understands and applies this paradigm transforms change from a risk into a resource, and uncertainty into opportunity.*

*Now is the time to move beyond boundaries—the boundaries of disciplines, of traditional models, and of our own limitations. Only then can we truly lead in the digital age.*

*Prof. Ph.D. Paul Marinescu*

# Bank Digitalization And Challenges Of Implemented Central Bank Digital Currencies (Cbdc)

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**Abstract:** The introduction of Central Bank Digital Currencies (CBDCs) has been motivated by several factors, including the accelerating pace of digital transformation, the declining use of cash, the emergence of cryptocurrencies, and the imperative to modernize payment systems. The paper undertakes a thorough examination of the development and implementation of CBDCs, with a particular focus on initiatives in the Bahamas (Sand Dollar), Nigeria (eNaira), and Jamaica (JAM-DEX). Utilizing a range of research methods, including a literature review and synthesis, as well as a comparative analysis, the paper assesses the benefits, challenges, and status of CBDC implementation. Key indicators analysed include financial inclusion, transaction efficiency, cybersecurity, and the impact on monetary policies. The study underscores the role of central banks in fostering user confidence and navigating the risks associated with financial innovation. It further emphasizes the necessity of a symbiotic relationship between public and private sector entities to formulate bespoke solutions tailored to the needs of each economy. CBDCs are regarded as an opportunity to curtail reliance on cash, combat money laundering and terrorist financing, and improve transaction transparency. The findings underscore the contributions of CBDCs to financial inclusion and the modernization of payment systems, while concurrently highlighting the bothers related to privacy, security, and user acceptance. The paper's conclusion asserts that CBDCs possess the potential to transform global financial systems, yet they require innovative designs, international collaboration, and strong strategies to overcome the associated risks and maximize benefits. Proposals for the future emphasize global

standardization, the adaptation of policies for effective implementation, and the exploration of emerging technologies that could support their widespread adoption.

**Keywords:** Bank Digitalization, Central Bank Digital Currencies (CBDCs), Implementation challenges, Financial inclusion.

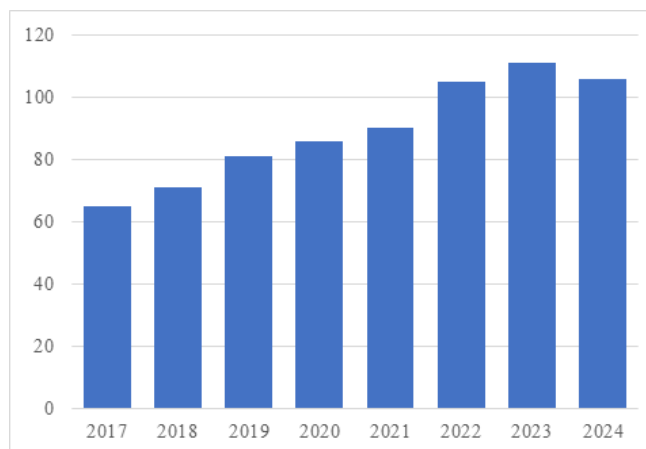
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## 1. Introduction

Central Bank Digital Currencies (CBDCs) represent a revolutionary innovation that marks a fundamental milestone in the evolution of global monetary and financial systems. These digital currencies offer new opportunities to streamline payments, promote financial inclusion, and increase transparency. However, they also address complex privacy, security, and regulatory provocations in an increasingly digitalized economy. CBDC, as a government-issued and regulated digital currency, signifies a paradigm shift in the nature of money, promising to improve financial systems by integrating the reliability of traditional fiat currency with the efficiency of digital payment technologies (Ozili, 2023). The conceptualization of CBDC has transitioned from theoretical frameworks to active investigation and experimentation, with central banks worldwide assessing its potential to modernize payment systems, increase financial inclusion, and fortify monetary policy (Kiff et al. , 2020).

According to Statista (2024), as of the end of 2023, more than 100 countries worldwide were engaged in the development of their own central bank digital currencies (CBDCs), although most of these initiatives remained in the research phase. Among the 105 countries engaged in the development of these digital currencies, only Nigeria, the Bahamas, Jamaica, and the Eastern Caribbean Currency Union (Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines) had an “operational” CBDC by the end of 2022, with the last project completed in January 2024. , as it can be seen in Figure 1.

Figure 1: Number of countries worldwide involved in developing a central bank digital currency 2017-2024



Source: Author's representation based on data obtained from Statista (2024)

According to the latest report by the Atlantic Council in September 2024, 134 countries, representing 98% of the global economy, are currently exploring the implementation of central bank digital currencies (CBDCs). This represents an important increase from the 35 countries that were considering the topic in 2020, and 66 countries have made major progress in their development efforts (Nagarajan, 2024). Meanwhile, the Bahamas, Jamaica, and Nigeria, countries that have already launched CBDCs, are working to expand the use of their retail versions within national economies. In addition, 44 countries, including Australia, Indonesia, Singapore, and Malaysia, are piloting CBDC programs, compared to 36 countries that were at this stage last year. This trend underscores the intensifying global interest in the adoption of digital currencies (Nagarajan, 2024). The relevance of CBDCs arises in a context where traditional cash usage is declining. Concurrently, cryptocurrencies are gaining traction, and there is an increasing demand for fast, secure, and inclusive payment solutions. In contrast to decentralized cryptocurrencies such as Bitcoin, which are not supported by any government, CBDCs are issued by central banks and designed to function as a legal means of payment. This distinctive blend of digital efficiency and state backing positions of CBDCs as a potential solution to numerous problems in the modern financial ecosystem (Mancini-Griffoli et al., 2018). The advancement of the internet, combined with the extensive adoption of smartphones and mobile applications, has catalysed innovation across multiple industries, with the financial sector being no exception. (Oprea & Draghici, 2024).

The introduction of a digital currency issued by central banks is driven by two major factors: the evolution of technological processes and the increasing complexity of consumer demands. These developments highlight a broader need to modernize financial systems. The progression of digital banking has enabled customers to access financial services through voice commands and touch interfaces, thereby minimizing the reliance on in-person transactions. (Oprea, 2023).

The emergence of digital payment methods and the proliferation of private cryptocurrencies have profoundly transformed the financial landscape, presenting hurdles for central banks and governments worldwide (Kiff et al., 2020). Digital currencies such as Bitcoin, Ethereum, and Solana function outside the conventional banking system, providing decentralized and often unregulated alternatives to traditional currencies. While these innovations have promoted financial development, their volatility and vulnerability to misuse for illicit activities have highlighted the necessity for a more stable and regulated option (Sethapat & Innet, 2023).

To address this disparity, states are introducing digital currencies that offer the stability and trust associated with central bank-issued money, while also leveraging the advantages and efficiency of modern payment systems. These digital currencies aim to function as a secure medium of exchange, providing a state-backed alternative to cash in an increasingly digital landscape. Furthermore, the introduction of CBDCs has the potential to address inefficiencies in cross-border payments, reduce transaction costs, and promote greater financial inclusion (Mancini-Griffoli et al., 2018). The potential for CBDCs to promote financial inclusion is particularly meaningful in regions where access to traditional banking services is currently limited. It is estimated that

approximately 1.4 billion adults worldwide remain unbanked, lacking access to financial institutions or formal payment systems (Náñez et al., 2021). CBDCs, delivered through mobile technologies and digital wallets, have the potential to provide an accessible and cost-effective financial instrument for these populations, thereby enabling their participation in economic activities and access to financial services.

In the context of financial inclusion, CBDCs hold the potential to improve the efficiency of national and international payment systems. Within the domestic environment, CBDCs can streamline payments by reducing costs and accelerating transaction speeds. In the context of international payments, CBDCs have the potential to transform the process, as they can facilitate direct, almost instantaneous transactions, thereby reducing the prevalence of high local fees, correspondent bank fees, and long settlement times (Kiff et al., 2020). This can also offer increased transparency and accountability, which can contribute to the mitigation of fraudulent activities such as money laundering and tax evasion.

## 2. Literature review

CBDCs signify a progression in global monetary systems, propelled by technological advancements and the necessity to address the obsolescence of conventional payment mechanisms. These digital forms of fiat currency, issued directly by central banks, are intended to coexist with cash and bank deposits, thereby addressing the deficiencies observed in traditional financial systems. This innovation emerges in the context of declining cash use, increasing adoption of cryptocurrencies, and growing global digitization, positioning CBDCs as a cornerstone of modern monetary frameworks (Barrdear & Kumhof, 2022). By leveraging digital technologies, CBDCs promise to increase financial inclusion, improve transaction efficiency, and ensure system stability in an era characterized by rapid economic change (Nieborak, 2024).

CBDCs have been designed to meet several strategic objectives, from modernizing payment systems to strengthening monetary sovereignty. In contrast to cryptocurrencies, which are decentralized and privately managed, CBDCs are backed by the state, ensuring greater stability and trust. This state-backed nature allows CBDCs to reduce the risks associated with financial disintermediation and private digital currencies, thereby strengthening monetary sovereignty (Attarde et al., 2024).

Another purpose of CBDCs, as analysed by Agur (2022), is their ability to provide a safe alternative to traditional financial assets, especially in times of economic and financial instability. As such, CBDCs can play a key role in building confidence in financial systems, providing a stable safe haven in times of crisis and helping to reduce systemic risks. These characteristics make CBDCs indispensable for promoting confidence in financial systems while fostering economic resilience (Agur et al., 2022).

Furthermore, CBDCs are imperative for enhancing the efficiency of cross-border payments, a domain often characterized by high costs, delays, and a paucity of transparency in existing international transaction systems. By facilitating faster, more economical, and more transparent cross-border transactions, CBDCs contribute to the promotion of global financial

integration (Xiao et al. , 2024). In this manner, CBDCs optimize national and international payment ecosystems.

One of the most important advantages of CBDCs is their potential to elevate financial inclusion, particularly in underdeveloped regions. Initiatives such as Nigeria's eNaira underscore CBDCs' capacity to extend financial services to unbanked populations, thereby reducing reliance on conventional intermediaries. But on the other hand, the analysis of Nițoi & Pochea (2024) indicates that trust in the central bank exhibits a negative correlation with financial inclusion while demonstrating a positive association with wealth (Nițoi & Pochea, 2024).

By leveraging mobile and internet technologies, CBDCs facilitate pathways for economic participation among marginalized groups, democratizing access to financial systems (Conlon et al. , 2024).

In addition to promoting inclusivity, CBDCs offer secure alternatives to private cryptocurrencies, which often encounter issues of volatility and a lack of regulation. As government-backed instruments, CBDCs in still greater trust among users, facilitating the seamless adoption of digital payment systems, particularly in rural and remote regions (Lee et al. , 2021). Conversely, the Sand Dollar initiative in the Bahamas underscores the role of CBDCs in promoting financial inclusion in remote areas. By providing a digital alternative to cash, Sand Dollar has augmented access to financial services for remote communities, thereby demonstrating the potential of CBDCs to address regional disparities in affordability (Bofinger, 2024).

Despite the numerous advantages offered by CBDCs, tests must be addressed to ensure their effective implementation. Privacy concerns represent a salient issue, as the traceability of digital transactions conflicts with the anonymity associated with cash. Concerns about surveillance and potential misuse of personal data necessitate the development of strong privacy-enhancing technologies (Wang et al. , 2022). Another provocation is the risk of financial disruption. The implementation of CBDCs could potentially result in a shift of deposits from commercial banks to central bank accounts, thereby causing a destabilization of the conventional banking system. Such a deposit transfer could diminish the capacity of commercial banks to provide credit, which might lead to an escalation in the risk of banking panics during periods of economic downturns (Bitter, 2024). This disruption poses an important threat to financial stability and underscores the importance of designing CBDCs in a way that preserves the role of commercial banks in credit creation (Bindseil, 2019). The implementation of CBDCs varies across countries, reflecting different economic contexts and policy objectives. China's DCEP system is a pioneering example, using a multi-tiered registry design that balances centralization with privacy concerns. This system exemplifies the potential of CBDCs to improve domestic payment systems while preserving state control (Boar & Wehrli, 2021).

### 3. Research methods

To explore the status of representative CBDCs, a combination of documentary analysis and the comparative method was employed. A comprehensive array of academic databases, including Google Scholar and Web of Science, as well as industry reports issued by institutions such

as the Bank of England, the Bank for International Settlements (BIS), the European Central Bank (ECB), and the Central Bank of Japan, were selected for data collection. These sources were selected to ensure a comprehensive assessment that combines theoretical academic research with practical observations from the financial sector. The desk review involved the collection of data from secondary sources, including official central bank reports (European Central Bank, US Federal Reserve), academic studies, global databases (Atlantic Council's CBDC tracker), and published material from international financial institutions, such as the International Monetary Fund (IMF) and the Bank for International Settlements (BIS). Indicators analysed included the stage of implementation (full launch, pilot, research), key objectives (financial inclusion, payment efficiency), identified challenges (privacy, infrastructure, regulation), and anticipated benefits (cost reduction, transparency, economic resilience). In the comparative approach, selected CBDC features were analysed to identify similarities and differences between CBDCs, with a focus on the stage of implementation, difficulties encountered, and anticipated benefits. This methodological approach facilitated a comprehensive understanding of how diverse central banks and financial institutions oversee the development and implementation of digital currencies.

The incorporation of industry reports (gray literature) from reputable financial institutions confers a substantial advantage by offering information about the practical implementation of CBDCs. These reports provide privacy considerations from a regulatory perspective and underscore the experiences of central banks and regulatory organizations in addressing privacy concerns. A study by Adam R. J. (2017) demonstrated that integrating gray literature into systematic reviews contributes meaningfully to research credibility.

This methodological combination and diversity of sources provide a solid foundation for in-depth analysis of the current state of CBDC and for identifying future issues and opportunities in the field.

## 4. Results and discussion

### 4.1. Sand Dollar

The Sand Dollar, initiated by the Central Bank of The Bahamas (CBOB) in October 2020, is the world's first fully operational central bank digital currency.

This initiative was developed to increase financial inclusion, given that a major portion of the Bahamian population does not have access to traditional banking services, particularly in remote islands. The initiative aims to provide a secure and accessible payment method for all citizens (Haans et al. , 2023). It also seeks to modernize payment systems to improve the efficiency and security of transactions while reducing the reliance on cash, which is often subject to problems such as counterfeiting and money laundering (Digital Euro Association, 2023), and strengthen economic resilience across the Bahamian archipelago (Central Bank of The Bahamas, 2020).

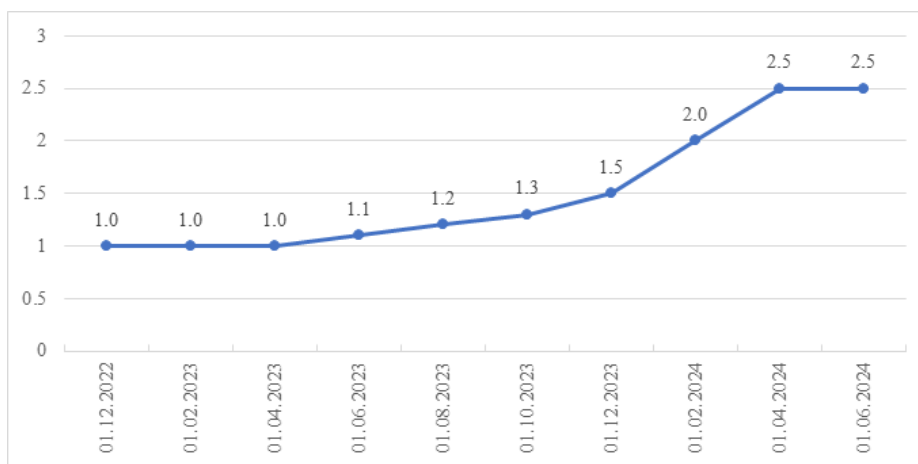
Sand Dollar operates as an account based CBDC, requiring user identification for transactions. The system incorporates three tiers of wallets with varying limits: the first tier comprises a basic wallet, with no KYC (Know Your Customer) requirements, limited to 500 Sand Dollars and

monthly transactions of up to 1,500; the second tier contains a premium wallet, which requires identity verification and allows up to 8,000 Sand Dollars and monthly transactions of 10. 000; the third tier includes a merchant account with no transaction limits but requires a business license and link to a bank account (Barzyk & Macek, 2022).

Although the Sand Dollar targets are ambitious, adoption has been slow, given that by mid-2022, only about 7. 9% of the population had used CBDCs (Digital Euro Association, 2023).

According to Figure 2, the CBOB data show a steady increase in Sand Dollar circulation, from about 1 million units in December 2022 to over 2. 5 million units in June 2024.

Figure 2: Sand Dollar in circulation (Amounts are in millions)



Source: Author’s representation based on data obtained Atlantic Council (2024)

Sand Dollar caters to a diverse range of constituents, including individuals, businesses, and government entities. Notably, for residents of remote islands with underdeveloped banking infrastructure, it facilitates access to digital financial services through mobile wallets, thereby transcending geographical limitations (Alliance for Financial Inclusion, 2024). Businesses stand to benefit from reduced transaction costs and increased operational efficiency, while government agencies leverage the Sand Dollar to disburse social welfare and optimize tax collection processes. This digital currency fosters increased engagement in the digital economy, thereby promoting economic growth and development (Digital Euro Association, 2023). The Sand Dollar aims to promote financial inclusion by integrating unbanked and underbanked populations into the formal financial system, thereby addressing long-standing disparities in financial access. Transactions are executed instantaneously, reducing reliance on physical cash, and enhancing the efficiency of payments. Furthermore, the Sand Dollar supports cross-border trade and fund transfers, enabling more expeditious and economical international payments. Furthermore, the Sand Dollar facilitates the real-time transmission of transaction data, thereby improving the transmission of monetary policy and strengthening economic governance (Wenker, 2022). Its role in promoting economic resilience during crises underscores its value as a tool for financial stability.

However, the CBDC faces considerable problems. The pandemic has reduced the CBDC’s outreach efforts, further slowing adoption rates during critical initial phases (Barzyk & Macek,

2022). Many citizens are not fully aware of the differences between public digital money and private bank money, which affects their willingness to adopt new payment methods (Haans et al. , 2023). Initial implementation has encountered uncertainties regarding the adoption of account-based or token-based systems, and the absence of a definitive framework for CBDC implementation has complicated early decisions (Digital Euro Association, 2023). The Sand Dollar implementation necessitated substantial investments in technology, infrastructure, and public education. Key expenditures included the implementation of strong cybersecurity measures, the development of a stable digital framework, and awareness campaigns to promote user adoption. Despite these costs, Sand Dollar remains a cost-effective solution for achieving The Bahamas' long-term financial goals (Central Bank of The Bahamas, 2022).

The Sand Dollar is pegged at a 1:1 ratio to the Bahamian dollar, thereby ensuring its stability and usefulness as a medium of exchange. This currency does not accrue interest, thus preserving its functionality as a payment instrument rather than an investment vehicle (Intereconomics, 2023). Relying on blockchain technology provides transparency, traceability, and increased security for transactions. The utilization of distributed ledger technology (DLT) in the Sand Dollar reduces potential risks, such as fraud and double spending, thereby enhancing public trust (CBOB, 2020). The Sand Dollar facilitates a wide range of financial activities, including person-to-person transfers, commercial transactions, and savings functions, contributing to its status as a versatile instrument within the Bahamian financial ecosystem (Digital Euro Association, 2023). The introduction of the Sand Dollar has implications for the Bahamian banking sector. The Sand Dollar's emergence has the potential to impact the revenue streams of commercial banks, which may see a decline in transaction and deposit fees as users increasingly opt for direct Sand Dollar transactions. To maintain competitiveness, banks must invest in digital infrastructure and develop complementary services. Concurrently, the Sand Dollar encourages banks to explore underserved markets, promoting growth and competition in the financial sector (Wenker, 2022). Moreover, central banks must judiciously balance the promotion of CBDCs with the need to avoid destabilizing commercial banks.

Sand Dollar is a landmark case study in CBDC implementation. While it has made progress toward increasing financial inclusion and the resilience of the Bahamian financial system, the slow pace of adoption highlights key struggles that future CBDCs must address.

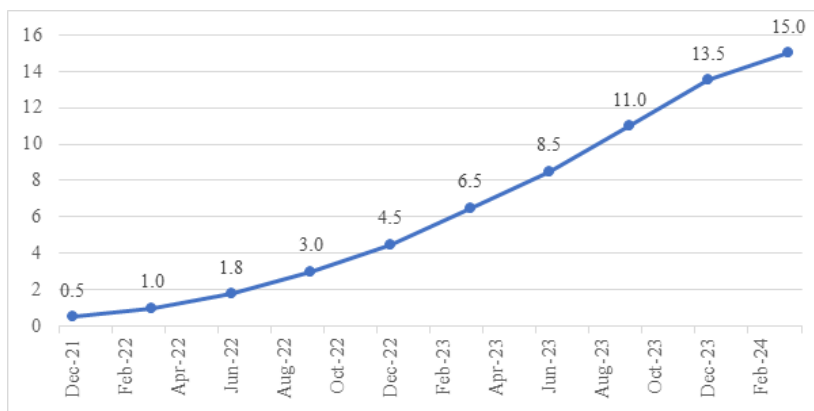
#### 4. 2. eNaira

The eNaira, a Central Bank of Nigeria (CBN) initiative launched in October 2021, signifies Nigeria's pioneering role in the realm of Central Bank Digital Currencies (CBDCs) on the African continent. The eNaira's genesis was driven by the dual objectives of enhancing financial inclusion, reducing transaction costs, and optimizing the efficacy of monetary policy. As digital currencies gain global prominence, eNaira positions Nigeria as a leader in financial innovation on the African continent (Central Bank of Nigeria, 2021). The eNaira is designed for individuals, businesses, and government entities. For individuals, particularly those in rural areas, it facilitates access to digital financial services through mobile wallets, thereby overcoming the

constraints imposed by limited banking infrastructure. Businesses benefit from reduced transaction costs and increased efficiency, while government agencies use eNaira to distribute social handouts and improve tax collection (Okoye et al. , 2023). By providing a platform for efficient transactions, eNaira fosters greater participation in the digital economy (Adeleye et al. , 2024). This Central Bank Digital Currency (CBDC) promotes the financial inclusion of over 38 million unbanked Nigerians by addressing disparities in financial access. The instantaneous nature of transactions reduces cash dependency and improves payment efficiency, while also supporting cross-border trade and fund transfers, facilitating more expeditious and economical international payments. The capacity of eNaira to improve monetary policy transmission by furnishing real-time transaction data strengthens Nigeria’s economic management (Ozili, 2023). Furthermore, its function in promoting economic resilience during crises renders it an indispensable instrument for financial stability (Okoye et al. , 2023).

Despite its initial underutilization, the eNaira’s primary objective of promoting financial inclusion and digitizing payments in Nigeria has been met with notable progress. In its inaugural year, the adoption rate was less than 0. 5%, a figure that can be attributed to the government’s efforts to incentivize its utilization (Nairametrics, 2024). According to data made available by the CBN (Figure 3), the value of eNaira in circulation had increased by 302% in nine months to over ten billion naira by March 2024, reflecting an increase in digital currency adoption of over 300%.

Figure 3: eNaira currency in circulation (Amounts are in billions)



Source: Author’s representation based on data obtained Atlantic Council (2024)

However, the eNaira faces difficulties, primarily due to concerns regarding cyber security. Digital platforms are susceptible to hacking and fraud, which underscores the need for security measures to ensure the safety of financial transactions. Additionally, digital exclusion remains a salient issue, particularly in rural regions, where smartphone ownership and digital literacy are low. The proliferation of eNaira could potentially disrupt the banking system, thereby reducing the role of traditional banks and potentially destabilizing the financial sector (Ozili, 2023).

The implementation of eNaira necessitated substantial financial and infrastructural investments, including public education campaigns, cybersecurity measures, and the development

of a digital framework to ensure its stability and functionality. Despite these costs, eNaira is poised to be a cost-effective solution for Nigeria's financial ecosystem in the long term (Akanbi, 2023). The eNaira currency is pegged at a 1:1 ratio to the physical Naira currency, ensuring stability and usability. It does not generate interest, thus maintaining its role as a trading instrument. The eNaira's reliance on blockchain technology ensures transparency, traceability, and security of transactions (Adeleye et al. , 2024). By utilizing distributed ledger technology, eNaira reduces the risks associated with fraud and double spending, while increasing user confidence (Akanbi, 2023).

The eNaira operates on a two-tier model. The Central Bank of Nigeria (CBN) issues and regulates the currency, while financial institutions distribute it through mobile wallets. This model ensures integration with existing banking infrastructure while maintaining accessibility for users. The eNaira currency supports peer-to-peer transfers, commercial transactions, and saving functionalities, making it a versatile tool in the Nigerian financial ecosystem (Okoye et al. , 2023).

The eNaira has major implications for the banking sector in Nigeria. Okoye et al. (2023) posit that traditional banks may experience a decline in revenues from transaction fees and deposits as users transition to direct transactions in eNaira. To maintain competitiveness, banks must invest in digital infrastructure and develop innovative services to complement eNaira. Concurrently, the currency incentivizes banks to explore underserved markets and expand their digital offerings, thereby encouraging growth and competition in the financial sector (Adeleye et al. , 2024).

#### 4. 3. JAM-DEX

The Central Bank of Jamaica (BOJ) launched JAM-DEX, its digital currency, in 2022 with the objective of fostering financial inclusion and increase the efficiency of the payments system. This initiative aims to provide unbanked populations and individuals residing in remote areas with limited banking infrastructure with access to digital financial services via mobile wallets (Noll, 2024). This digital currency reflects Jamaica's strategic approach to leveraging digital technologies to increase economic participation and address challenges in its financial system (Bank of Jamaica, 2022). JAM-DEX is designed for the unbanked and underbanked populations, addressing financial inclusion troubles by providing a digital payment option accessible through smartphones. It also supports small and medium enterprises by enabling secure and traceable digital payments. The JAM-DEX initiative seeks to empower marginalized communities and intensify their economic engagement by reducing barriers to entry into the financial system. Notably, the currency operates on a centralized ledger system, a departure from the decentralized nature of blockchain technology. This approach enables the use of "bearer digital instrument" tokens that can be transferred seamlessly through existing payment systems without requiring extensive identity verification or interaction with the central bank's ledger.

The Central Bank initiated the JAM-DEX program with an initial incentive program offering J\$2,500 to the first 100,000 users, which resulted in a substantial but transient increase in circulation (Jamaica Observer, 2024). By the beginning of 2024, approximately 260,000 individuals

had initiated accounts, constituting approximately 9% of Jamaica's population (Human Rights Foundation, 2024). The integration of digital currency can facilitate streamlined payment processes and mitigate transaction costs for both consumers and businesses. This better efficiency is particularly salient in a cash-dominated economy where managing cash can incur substantial costs and present reliability concerns (Jamaica Observer, 2024). The existing financial infrastructure in Jamaica has posed obstacles to the easy integration of JAM-DEX into everyday transactions, and many merchants have been reluctant to adopt JAM-DEX because of the need to upgrade point-of-sale (PoS) equipment capable of processing digital currency transactions. The Central Bank has recognized this problem and is working to fund upgrades for existing PoS equipment (Ledger Insights, 2024). Merchants have indicated a predilection for maintaining their existing systems rather than adopting new systems specifically for JAM-DEX (Human Rights Foundation, 2024). The Jamaican government stands to benefit from JAM-DEX in terms of increased efficiency in the disbursement of social benefits and the collection of taxes. This capacity to leverage JAM-DEX fosters greater engagement in the formal economic sector and contributes to tax transparency (Noll, 2024).

The potential benefits of JAM-DEX include its capacity to improve financial inclusion by extending digital payment services to the underserved population. Furthermore, this Central Bank Digital Currency (CBDC) has the potential to facilitate more efficient and secure government payments, such as the distribution of social benefits, and to promote faster and more transparent transactions. These improvements are expected to encourage economic participation and to reduce transaction costs for businesses and consumers.

However, the implementation of JAM-DEX is not without risk. A notable concern is the potential for financial disruption, as the preference of users for CBDCs over traditional bank deposits could diminish the role of commercial banks in financial intermediation and credit creation. In addition, the lack of public education on the benefits and functionality of JAM-DEX has led to consumer apathy towards the adoption of this digital currency. Despite initiatives by the BOJ to raise awareness, the challenge of altering public perception persists as a barrier (Noll, 2024).

The implementation of JAM-DEX (Jamaican Digital Exchange) has profound ramifications for the Jamaican banking system. While complementing conventional banking services, JAM-DEX also prompts commercial banks to innovate. Consequently, banks must integrate JAM-DEX into their existing product offerings and develop complementary services to maintain their competitiveness in the financial market. The Central Bank is obligated to achieve a balance between the promotion of CBDC (Cryptocurrency-Based Digital Currency) adoption and the mitigation of other potential financial stability risks.

#### **4. 4. Short comparative analysis**

The digital currencies launched or in the process of being launched/developed reflect diverse approaches and objectives, adapted to the specific economic and social contexts of each country. To increase financial inclusion in regions with limited access to banking services, Sand

Dollar (Bahamas) and JAM-DEX (Jamaica) have been designed. Sand Dollar allows users to hold up to 500 units without identity verification (KYC), thereby facilitating access for financially underserved populations (Ozili & Alonso, 2023). Similarly, JAM-DEX (2022) offers a secure solution that is interoperable with existing payment systems and user-friendly (Coincub, 2023). In Africa, eNaira aims to supplant cash and appeal to cryptocurrency users, but it faces difficulties related to infrastructure and public acceptance (Ozili & Alonso, 2023). In developed economies, digital currencies are designed to improve payment efficiency while preserving privacy and integrating with existing systems.

The implementation of CBDCs exhibits considerable variation across nations. The Sand Dollar (Bahamas) has been fully implemented, yet its adoption remains limited due to inadequate public awareness and technological impediments (Ozili & Alonso, 2023). Conversely, the eNaira (Nigeria) experiences low adoption rates, with authorities undertaking initiatives to increase awareness and utilization (Ozili & Alonso, 2023).

Jamaica's JAM-DEX, despite its launch, is grappling with hurdles related to public perception and technological integration with existing systems (Coincub, 2023).

Table 1: Current status of the analysed digital currencies

CBDC	Country/Region	Issuance date (year)	Status
Sand Dollar	Bahamas	2020	Fully implemented, slow adoption
eNaira	Nigeria	2021	Launched, low adoption
JAM-DEX	Jamaica	2022	Launched, low adoption

Source: Author's representation based on data obtained from the analysis.

In conclusion, each CBDC faces specific provocations, but a well-developed financial sector with a high level of competition can offer more affordable options (Public trust and acceptance is a major hurdle, with many digital currencies viewed with scepticism due to privacy and government control fears. For example, negative media sentiment has contributed to low adoption rates for eNaira and Sand Dollar (Ozili & Alonso, 2023). The implementation of these digital currencies is further complicated by inadequate technological infrastructure, as evidenced by Nigeria's experience, where the absence of reliable infrastructure has hindered progress. Additionally, the regulatory framework constitutes a global challenge, necessitating a balance between innovation and consumer protection. A key objective of the banking sector is to mitigate financial and social disparities. (Duta & Oprea, 2024).

## 5. Conclusions

The study examined the evolution of central bank digital currencies (CBDCs), with a particular focus on those that have been implemented. The primary objective was to evaluate the success of these implementations, the extent of their acceptance by the public, and the challenges that have been encountered. While CBDCs hold considerable potential to improve and increase

financial inclusion, streamline payments, and reduce transaction costs, they are also confronted with problems. In particular, rural, and disadvantaged regions often have limited access to the internet and digital technologies, and the lack of digital literacy among the population hinders uptake. Complex regulations also complicate the balance between transparency, privacy, and security, especially in developed economies. The prevailing sentiment of public distrust, compounded by apprehensions regarding government oversight and data protection, acts as a deterrent to the widespread adoption of CBDCs. The success of CBDCs is contingent upon substantial investments in infrastructure, financial education, balanced regulation, and the cultivation of public trust. The implementation of these initiatives, in alignment with the needs of the population and the unique struggles faced by each region, holds the potential to elevate the banking system to the subsequent level of financial digitization.

It is imperative for central banks to recognize that the adoption and utilization of a digital currency, even one issued by them, is not a foregone conclusion. The experience of countries that have implemented CBDCs or are conducting large-scale pilots indicates that the adoption rate remains, on the whole, low, and limited. The study examined the evolution of central bank digital currencies (CBDCs), with a particular focus on those that have been implemented. The primary objective was to evaluate the success of these implementations, the extent of their acceptance by the public, and the issues that have been encountered. While CBDCs hold considerable potential to improve financial inclusion, streamline payments, and reduce transaction costs, they are also confronted with important difficulties. In particular, rural and disadvantaged regions often have limited access to the internet and digital technologies, and the lack of digital literacy among the population hinders uptake. Complex regulations also complicate the balance between transparency, privacy, and security, especially in developed economies. The prevailing sentiment of public distrust, compounded by apprehensions regarding government oversight and data protection, acts as a restraint to the widespread adoption of CBDCs. The success of CBDCs is contingent upon substantial investments in infrastructure, financial education, balanced regulation, and the cultivation of public trust. The implementation of these initiatives, in alignment with the needs of the population and the unique problems faced by each region, holds the potential to elevate the banking system to the subsequent level of financial digitization.

It is imperative for central banks to recognize that the adoption and utilization of a digital currency, even one issued by them, is not a foregone conclusion. The experience of countries that have implemented CBDCs or are conducting large-scale pilots indicates that the adoption rate remains, on the whole, low and limited.

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# Cultural effects over turnover intentions

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**Abstract:** *TEmployee turnover remains a critical concern for organizations, particularly in post-pandemic contexts marked by increased stress and blurred work-life boundaries. This study explores the psychological and cultural determinants of turnover intentions among Romanian employees, with a focus on job satisfaction, stress, organizational commitment, and perceived organizational cultural tightness-looseness (CTL). Using a quantitative approach, data were collected via an online survey from 197 participants employed in organizations with at least three staff members. Structural equation modeling (PLS-SEM), robust regression, and exploratory factor analysis were employed to test both direct and mediating effects. Findings confirmed that job satisfaction and organizational commitment significantly and negatively predict turnover intentions, while stress has a significant positive effect. However, contrary to expectations, CTL did not significantly predict turnover intentions, nor did it mediate the effects of stress or satisfaction. These results suggest that CTL may shape employee attitudes but not necessarily behavioral intentions. Cluster analysis further identified vulnerable profiles, such as early-career employees with low satisfaction and high stress. The study contributes to behavioral research by applying CTL in an under-explored regional context and offers practical insights for designing retention interventions. Implications, limitations, and recommendations for future research are also discussed.*

**Key words:** Cultural Tightness-Looseness, Organizational Culture, Turnover Intentions, Job Satisfaction, Stress, Organizational Commitment

JEL: J63, M14, Z19

## 1. Introduction

In an increasingly competitive global economy, work has become a central part of human identity and social life. Working hours have increased post-pandemic, and hybrid work has blurred the lines between professional and personal life, increasing expectations of constant availability (Clockify, 2025).

Within this context, it is no surprise that the World Health Organization defined stress as the health epidemic of the century (Alight, n.d.). In Romania, MedLife (2013) reports that 63.8% of Romanians consider themselves stressed, and Digi24 (2019) found that 98% suffer from chronic stress, with work being the main factor for 78% of them.

Voluntary turnover becomes a symptom of the imbalance between workplace demands and employee well-being. Turnover has both direct (recruitment, training) and indirect (productivity, morale) costs (Cockett, 2024; Reeves, 2024). Given the global and local urgency of the topic, understanding the organizational and psychological factors influencing turnover is of strategic importance.

## 2. Literature review

Although actual turnover behavior is difficult to track, turnover intentions are a widely accepted proxy (Limbocker & Richardson, 2023), particularly useful in cross-sectional designs.

Job satisfaction has a consistent negative relationship with turnover intentions. Meta-analyses (e.g., Ozkan et al., 2020) report effect sizes around  $r = -0.52$ , indicating that more satisfied employees are less likely to consider leaving.

*H1: Job Satisfaction significantly and negatively affects turnover intentions.*

Stress is another robust predictor. Kim & Kim (2021) found an average effect size of  $r = 0.39$  across multiple studies, suggesting that higher stress is associated with stronger turnover intentions.

*H2: Stress significantly and positively affects turnover intentions.*

Organizational commitment reflects employees' psychological attachment to their workplace. Studies show it has one of the strongest negative correlations with turnover intentions (Kim & Kao, 2014;  $r = -0.54$ ).

*H3: Organizational commitment significantly and negatively affects turnover intentions.*

While job satisfaction, stress, and commitment have been well studied, organizational culture remains a less explored predictor - particularly its tightness-looseness dimension. Cultural tightness-looseness (CTL) refers to the degree to which social norms are clearly defined and strongly enforced (Gelfand et al., 2011). Tighter cultures promote uniform behavior, while looser ones allow greater individual autonomy (Triandis, 1989).

In organizational settings, CTL has been linked to job satisfaction, commitment, and even turnover (Di Santo et al., 2021). This study adopts CTL as a perception-based cultural factor within organizations.

**H4:** Perceived organizational cultural tightness significantly and negatively affects turnover intentions.

Beyond direct effects, CTL may mediate the relationship between attitudinal predictors and turnover. A tight organizational culture may buffer the effects of low satisfaction or high stress by providing structure and clarity - or the other way around, it could amplify these effects if it becomes too rigid.

**H5:** CTL mediates the relationship between job satisfaction and turnover intentions.

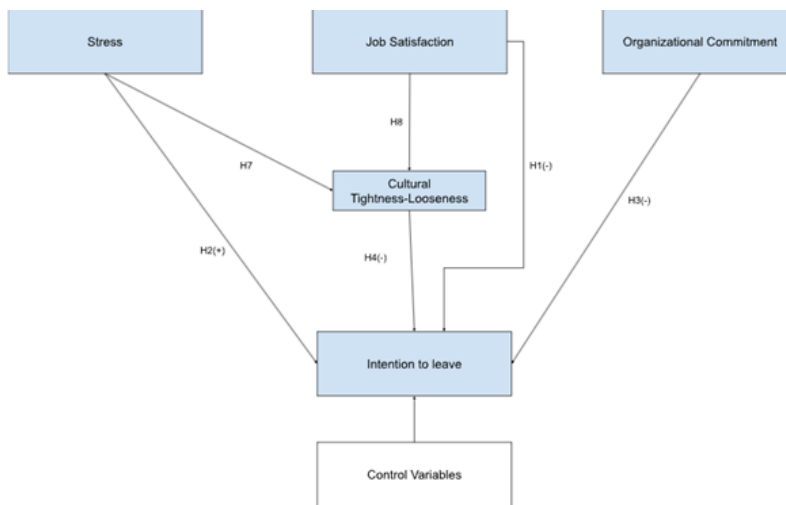
**H6:** CTL mediates the relationship between stress and turnover intentions.

**H7:** Job satisfaction significantly affects perceived CTL.

**H8:** Stress significantly affects perceived CTL.

To account for individual differences, control variables such as age, gender, tenure, and salary were also included based on prior literature (Ono, 2023; De Meulenaere et al., 2022; Febriani et al., 2024; Kamau et al., 2021; Soeprapto et al., 2024; Siregar & Maryati, 2020; Mihajlov & Mihajlov, 2016; Bangi & Mgeni, 2022) though their effects are expected to be minimal once stronger predictors are accounted for (Hur & Abner, 2023). And so, the proposed conceptual model is the following:

Figure 1: Conceptual model



Source: Author's own research

### 3. Research methodology

In order to test the proposed hypotheses, an online survey was distributed using social media (Facebook, Instagram, WhatsApp, LinkedIn, Reddit) during January and February of 2025. Respondents were notified beforehand of the voluntary and anonymous nature of the study, as well as the academic purpose of the data collection. In order to proceed to the questions, they had to explicitly agree to the stated terms. Participants did not receive any form of compensation for completing the survey.

The dissemination followed a convenience and snowball sampling strategy (Nikolopoulou, 2022; Oregon State University, 2010), resulting in 210 responses, out of which 197 were valid—meaning the respondents worked in organizations with at least three employees, since organizational culture is understood as a phenomenon that requires a group context (Ritzer, 2010). This sample size is consistent with a 95% confidence level and 7% margin of error as calculated using Calculator.net.

The survey included translated and adapted questions based on Di Santo et al. (2021) for perceived organizational tightness, Mobley (1977) for turnover intentions, Brayfield & Rothe (1951) for job satisfaction, Meyer et al. (1993) for organizational commitment and Cohen et al. (1983) for stress. Additionally, a short-form social desirability scale was included for answer cross-validation, alongside demographic questions covering gender, age, education, job tenure, income, and sector.

Constructs for the variables of interest used 6-point scale Likert-type items, while the social desirability scale had a True/False response pattern. The reliability of all scales was assessed and confirmed via Composite Reliability, Cronbach's Alpha, and AVE, all above acceptable thresholds, further discussed in Chapter 4.

### 4. Results and discussions

This study set out to examine how organizational factors—including job satisfaction, stress, organizational commitment, and perceived cultural tightness—interact to influence turnover intentions in a Romanian context. The findings confirmed several well-established relationships, while offering unexpected results regarding cultural tightness-looseness (CTL).

Turnover intentions were generally low in the sample, with all three items averaging below 3 on a 6-point scale. Job satisfaction and organizational commitment levels were moderate, while stress scores were slightly lower overall, though standard deviations suggest considerable variability. Perceived cultural tightness showed some polarization: items referencing formal rules and procedures scored higher, while reversed items describing flexibility scored lower.

Correlation analysis revealed that turnover intentions were negatively associated with job satisfaction ( $r = -0.78$ ) and organizational commitment ( $r = -0.70$ ), while positively associated with stress ( $r = 0.58$ ). The correlation between turnover intentions and CTL was weak and negative ( $r = -0.12$ ). CTL showed small positive correlations with job satisfaction and organizational commitment but no meaningful relationship with stress.

Table 1: Correlation Matrix between variables of interest

	CTL	TO	OC	JS
TO	-0.12			
OC	0.21	-0.7		
JS	0.22	-0.78	0.71	
S	-0.03	0.58	-0.4	-0.59

Source: Author’s own research

As hypothesized, job satisfaction and organizational commitment significantly and negatively predicted turnover intentions, while stress showed a significant positive effect. These results are in line with existing literature and strengthen the evidence base for these variables as strong behavioral predictors in the workplace.

The exploratory factor analysis (EFA) confirmed the unidimensionality of the CTL scale. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.741, and Bartlett’s test of sphericity was significant ( $\chi^2 = 183.17, p < .001$ ). Although the Scree Plot hinted at a two-factor structure, the factor loadings did not support this, and parallel analysis retained only one factor.

The robust regression models confirmed several hypotheses. Job satisfaction significantly and negatively predicted turnover intentions ( $\beta = -0.44, p < .001$ ), as did organizational commitment ( $\beta = -0.29, p < .001$ ). Stress was found to significantly and positively predict turnover intentions ( $\beta = 0.24, p < .001$ ). In contrast, CTL did not significantly affect turnover intentions ( $\beta = 0.01, p = .43$ ). The included control variables showed no significant influence.

Table 2: The coefficients of robust linear regressions

	Turnover Intentions	Organizational Commitment	Stress	Job Satisfaction
Const	3.46*** (0.000)	2.35*** (0.001)	2.98*** (0.000)	2.82*** (0.000)
CTL	-0.14 (0.344)	0.27* (0.043)	-0.01 (0.923)	0.38** (0.001)
Age	-0.27* (0.047)	0.24 (0.059)	-0.3** (0.006)	0.17 (0.129)
Education	0.15 (0.202)	-0.06 (0.546)	0.08 (0.385)	-0.1 (0.282)
Tenure	-0.03 (0.713)	0.19* (0.017)	0.02 (0.782)	0.04 (0.609)
Salary	-0.1 (0.239)	-0.04 (0.554)	-0.1 (0.152)	0.06 (0.406)
Gender	0.02 (0.948)	0.21 (0.326)	0.45** (0.015)	-0.31 (0.095)

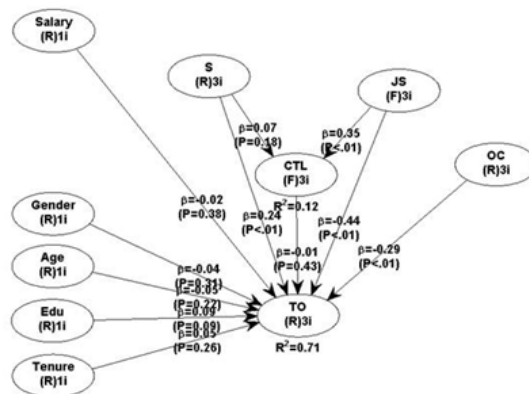
\*\*\* p-value < 0.001; \*\* p-value < 0.01; \* p-value < 0.05

Source: Author’s own research

Contrary to expectations, perceived organizational cultural tightness did not significantly affect turnover intentions and did not mediate the relationships between either job satisfaction or stress and turnover intentions. So, the findings of MacIntosh & Doherty (2010), Faeq & Ismael (2022) and Misoles et al. (2023) about the significant role of mediation of organizational culture do not hold with the tightness-looseness facet considered. This may be explained by the Romanian organizational setting or by the generational aspect of the sample. The findings also differ from Di Santo et al.'s (2021): while CTL was positively related to job satisfaction and commitment, it had no meaningful impact on stress or on whether employees planned to leave their organizations.

The structural equation model (PLS-SEM) explained 71% of the variance in turnover intentions ( $R^2 = 0.71$ ). In this model, CTL was significantly predicted by job satisfaction ( $\beta = 0.35$ ,  $p < .01$ ), but not by stress ( $\beta = 0.07$ ,  $p = .18$ ). Additionally, CTL did not significantly mediate the relationship between either stress or job satisfaction and turnover intentions.

Figure 2: Conceptual Model with results



Source: Author's own research

These findings suggest that CTL may be more relevant to attitudes (like satisfaction and commitment) than behaviors (like turnover intentions). Moreover, in high-stress environments, strict organizational norms may be perceived differently—either as support structures or as sources of additional pressure—potentially explaining the non-significant results.

Table 3 shows three different measures for reliability of the scales and latent variables in this research. Composite reliability over 0.7 indicates internally consistent measurements. In this case, all values are over 0.85, showing a high reliability. Cronbach's alpha over 0.8 for established scales and 0.7 otherwise summarize the correlation of the items within a construct. Once again, the latent variables in this study pass these thresholds, with all but CTL being established scales. Finally, the limit for Average Variance Extracted (0.5) is once again surpassed by far for all constructs suggesting that a large proportion of variance is captured by the construct itself rather than by error.

Table 4 shows the discriminant validity of the measurements which is confirmed if the diagonal values are higher than their corresponding non-diagonals. For example, CTL has correlations of -0.191 (TO), 0.3 (JS), -0.062 (S), and 0.304 (OC) which are lower than the square root of AVE = 0.824. This is the case for all variables of interest, so it can be concluded that the validity of our constructs holds.

Table 3: Measures of reliability

Variables	Composite Reliability	Cronbach's alpha	Average Variance Extracted
Perceived organizational cultural tightness	0.863	0.762	0.678
Intention to turnover	0.912	0.855	0.775
Stress	0.914	0.859	0.781
Organizational Commitment	0.923	0.875	0.801
Job Satisfaction	0.901	0.833	0.752

Source: Author's own research

Table 4: Discriminant validity: correlations among latent variables with square roots of AVEs

Variable	CTL	TO	JS	S	OC
<b>CTL</b>	<b>0.824</b>	-0.191	0.3	-0.062	0.304
<b>TO</b>	-0.191	<b>0.88</b>	-0.776	0.579	-0.693
<b>JS</b>	0.3	-0.776	<b>0.867</b>	-0.556	0.725
<b>S</b>	-0.062	0.579	-0.556	<b>0.884</b>	-0.37
<b>OC</b>	0.304	-0.693	0.725	-0.37	<b>0.895</b>

Source: Author's own research

Moreover, in Table 5 there are the combined loadings and cross-loadings, with which we can further confirm this validity if combined loadings are over 0.7, while cross-loadings are more than 0.1 lower, which can be seen as the case for all constructs.

Table 5: Combined Loadings and Cross-loadings

	CTL	TO	JS	S	OC		CTL	TO	JS	S	OC
CTL1	0.788	-0.206	-0.25	0.034	0.217	JS3	-0.009	-0.109	0.894	-0.018	0.314
CTL4	0.852	0.179	0.127	-0.1	-0.102	S1	-0.009	-0.099	0.01	0.871	-0.117
CTL6	0.829	0.012	0.108	0.071	-0.101	S2	-0.048	-0.017	-0.092	0.897	0.037
TO1	-0.098	0.887	0.012	0.254	-0.07	S3	0.058	0.115	0.085	0.882	0.078
TO2	0.039	0.877	0.24	-0.067	0.161	OC1	0.11	-0.041	-0.046	0.011	0.931
TO3	0.061	0.877	-0.252	-0.189	-0.09	OC2	-0.033	-0.108	0.09	-0.004	0.859
JS1	0.026	-0.213	0.925	-0.076	0.112	OC3	-0.083	0.147	-0.038	-0.008	0.894
JS2	-0.021	0.379	0.776	0.111	-0.494						

Source: Author's own research

Table 6: The coefficients of the structural model

Variable	Direct Effects		Indirect Effects	Total Effects
	CTL	TO	TO	TO
CTL	-	-0.01 (0.432)	-	-0.01 (0.432)
JS	0.354*** (<0.001)	-0.44*** (<0.001)	-0.004 (0.466)	-0.443*** (<0.001)
S	0.065 (0.177)	0.239*** (<0.001)	-0.001 (0.494)	0.238*** (<0.001)
OC	-	-0.293*** (<0.001)	-	-0.293*** (<0.001)
Age	-	-0.05 (0.222)	-	-0.05 (0.222)
Gender				
Male	-	Reference	-	Reference
Female	-	-0.035 (0.309)	-	-0.035 (0.309)
Education	-	0.092 (0.093)	-	0.092 (0.093)
Tenure	-	0.046 (0.256)	-	0.046 (0.256)
Salary	-	-0.02 (0.381)	-	-0.02 (0.381)
R <sup>2</sup> /Adj R <sup>2</sup>	12% / 11%	71% / 69%	-	-

Source: Author's own research

Moving on to the resulting coefficients, only a few paths are actually significant, namely Job Satisfaction’s direct effects on Perceived Organizational Cultural Tightness and Turnover Intention, plus the direct effects of Stress and Organizational Commitment on Turnover intentions. None of the control variables proved to be significant under the assumption of a linear relationship. Once again, it can be seen that the overall explanatory power of this model is, however, very high, with over 70% of the variation in turnover intentions being explained by it.

The strongest effects showcased in this sample are the effect of Job Satisfaction over Turnover Intentions, the moderate effect of Organizational Commitment over Turnover Intention, and with pretty similar values: Job Satisfaction over Perceived Organizational Cultural Tightness and Stress over Turnover Intention.

Table 7: Effect sizes of direct effects

Variable	Effect Sizes of Direct Effects	
	CTL	TO
CTL	-	0.003
JS	0.136	0.347
S	0.014	0.139
OC	-	0.205
Age	-	0.013
Gender	-	0.001
Education	-	0.014
Tenure	-	0.013
Salary	-	0.003

Source: Author’s own research

A k-means cluster analysis (k = 2) revealed two distinct employee profiles. The first group, labeled “Veterans,” was characterized by high satisfaction, low stress, and low turnover intentions. The second group, labeled “Newcomers,” reported high stress, low satisfaction, and moderate to high turnover intentions. ANOVA confirmed statistically significant group differences across all key variables (p < .001). The practical implications of this research are particularly relevant for early-career employee retention. Using the Behaviour Change Wheel (BCW) and COM-B model, practical interventions could target these employees through stress management training (capability), mentorship or buddy programs (opportunity), and incentives for tenure and performance (motivation).

Theoretically, the study contributes by integrating CTL into a behavioral economic and organizational framework in a national context that is underrepresented in the literature. It also highlights the role of social desirability bias as a potential underlying factor in self-reported satisfaction and stress, aligning with perspectives from behavioral science on bounded rationality and norm-adherence.

However, several limitations must be acknowledged. The use of convenience and snowball sampling limits generalizability, and the sample was heavily skewed toward younger, early-career employees. Additionally, although the CTL scale showed acceptable reliability overall, some reverse-coded items presented weaker factor loadings, potentially affecting construct validity.

Future research should refine the measurement of CTL, possibly adapting it better to non-Western cultural contexts. Varied approaches, including interviews, could offer deeper insights into how employees perceive cultural norms and how those perceptions shape behavior. Further exploration of actual turnover rather than intentions could also yield valuable insights. Finally, exploring CTL as a moderator—rather than only a mediator—may unlock new understanding of how culture shapes workplace behavior.

## 5. Conclusions

This study explored how psychological and cultural organizational factors influence turnover intentions among Romanian employees, with a focus on job satisfaction, stress, organizational commitment, and perceived cultural tightness-looseness (CTL). The results confirmed that job satisfaction and organizational commitment significantly reduce turnover intentions, while stress increases them—reinforcing well-established findings in the literature.

Unexpectedly, perceived organizational CTL did not have a direct or mediating effect on turnover intentions. While it was positively associated with job satisfaction and commitment, its role appears to be more attitudinal than behavioral in this context. These findings suggest that in high-stress environments, rigid norms may not necessarily discourage turnover but may instead be perceived as burdensome or irrelevant to coping mechanisms.

The study provides both theoretical and practical value by applying CTL in an underrepresented national setting and identifying vulnerable employee profiles through cluster analysis. These insights offer a basis for targeted interventions to reduce early-career turnover. Future research could explore CTL in longitudinal designs or consider it as a moderating factor, while refining its measurement across cultural contexts.

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# Review of Informality and Housing using Science Mapping Review Methodology: A Bibliometric Analysis.

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**Abstract:** *Approximately 25% of the world's urban population, comprising over 1.6 billion people, resides in underprivileged neighbourhoods or informal housing called slums. The United Nations' Sustainable Development Goal 11 places a strong emphasis on developing urban areas in a manner that is inclusive, safe, resilient, and sustainable. Informal housing is a key area of focus in achieving this goal. Despite many global declarations intended to address informality and housing challenges, these declarations have often lacked concrete guidelines, regulations, or evidence-based instructions. The primary objective of this bibliometric paper review is to facilitate the bridge between knowledge and policy. Therefore, this investigation employed a bibliometric analysis using science mapping and followed a quantitative methodological approach. We gathered and examined several publications using Scopus databases for bibliometric analysis. The results were visualised using the bibliometric R package tool biblioshiny. This study employed co-citation analysis to delineate the body of knowledge and analyse the distribution of co-citations to assess the intellectual structure. Additionally, it investigated collaborative connections at the levels of nations and institutions to review the distribution and dissemination of existing knowledge. Furthermore, this study utilised cluster analysis to identify the dynamic evolution of research topics and significant research themes, as well as to highlight emerging trends that provide potential avenues for future research. The findings suggest a specific focus on the factors that contribute to informality and housing, particularly in push and pull factors and less on institutional change processes. Moreover, the implications imply that research*

*in this field is becoming less novel, prompting scholars to explore new areas by integrating insights from various disciplines.*

**Key words:** Informality; Housing; Urban; Planning; Development; Bibliometric; Biblioshiny  
**JEL: R21 Urban, Regional, Real Estate, and Transportation Economics: Housing Demand**

## 1. Introduction

Approximately 25% of the world's urban population, which is over 1.6 billion people, reside in underprivileged neighbourhoods or informal housing commonly referred to as slums. (Quesada-Román, 2022). The United Nations' Sustainable Development Goal 11 (SDG 11) places a strong emphasis on developing urban areas in a manner that is inclusive, safe, resilient, and sustainable. Informal housing is a key area of focus in achieving this goal (Habitat, 2019). Informal housing areas are places where multiple residences are illegally occupied and lack basic services. These areas are often built on land that the occupants do not legally own. Tendencies that are disregarded or omitted from mainstream or contemporary theories, such as social, economic, and political factors, are increasingly being used to label anything informal as a recognised term of informality (Polese, 2023). The building regulations impose standards to which most households can only aspire and so they are forced to build outside the formal permissions system (UN-Habitat, 2012). Several states and international organisations have recognised that the increasing prevalence of informality will pose a significant challenge in the 21st century and numerous policy statements have been made addressing this issue. Despite these international-scale policy statements aimed at combating informality, they have rarely been backed by evidence-based instructions and guidelines. Therefore, the goal of this bibliometric paper review is to close this knowledge and policy gap in the context of informal housing sector. Housing, as per (Clapham, 2018) is a distinct and complex good that holds essential value and serves as a significant expression of a person's identity. The UN-Habitat (2020) report revealed that most of Africa's urban growth has occurred in informal settlements, leading to a significant dominance of the informal sector in the current housing stock. Bibliometric methodologies have been attempted by (Demir et al., 2020), (Nazir et al., 2020) and (Woo and Jun, 2020) to review housing literature and issues from diverse perspectives. However, very few studies have been conducted to review research particularly on informality and housing using the bibliometric mapping method. According to (Zhang et al., 2020) scientific mapping is a method used to study the intellectual structure of a field. The driving force behind bibliometric analysis is to categorize, comprehend, and integrate the body of knowledge as a guiding principle for further research.

This study employs co-citation analysis to define the body of knowledge in the field of informality and housing. It then examines the dissemination of co-citations to measure the intellectual structure of this field. Additionally, this study employs collaboration network analysis to examine the collaborative connections between authors, countries, and affiliations, aiming to understand the flow and distribution of existing knowledge. To analyse the evolution of research in this field, cluster analysis was employed to identify significant research topics and themes, as well as to highlight emerging trends that provide potential possibilities for future research undertakings. This paper conducted an extensive bibliometric analysis to review informality and

housing using science mapping review methodology. It addressed four key research questions (RQ): Which journals have published the most cited articles on informality and housing? What is the intellectual structure of informality and housing? What are the key concepts that have been studied on informality and housing? What is the landscape of collaboration evident in publications on informality and housing?

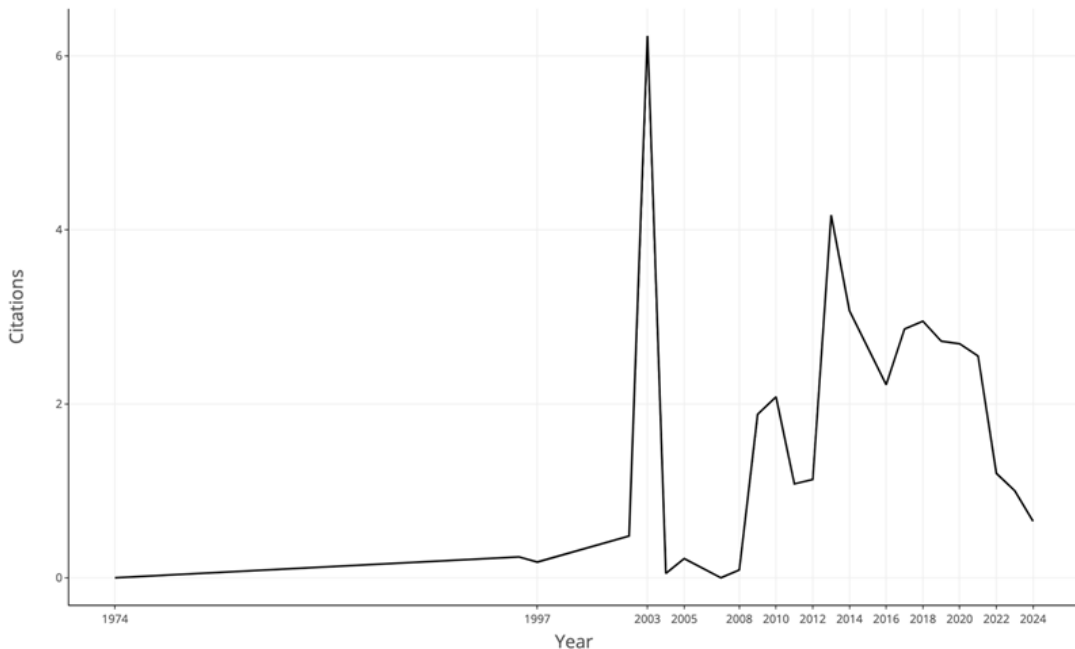
## 2. Research methodology

### 2.1 Research design and data collection

This paper employed a bibliometric analysis and followed a quantitative methodological approach. A bibliometric analysis is a quantitative study of academic papers that generates indicators of research performance and scientific progress through numerical and mathematical simulations (Zyoud et al., 2015). Several scientific publications were collected and scanned for bibliometric analysis using only Scopus databases. This study systematically collected all academic research on informality and housing that was discovered in Elsevier Scopus, one of the most meticulously curated and extensive scientific databases in the world. This database was chosen over others like Web of Science (WoS), PubMed, and Google Scholar because of its comprehensive coverage and academic rigour in the social sciences, in particular (Mongeon and Paul-Hus, 2016). Recent studies reveal that a overwhelming 99% of publications indexed in Web of Science (WoS) are also included in Scopus (Singh et al., 2021). The search was guided within the article, title, keywords, and Boolean operators like 'AND' to combine the search and focus on the most useful and valuable results. Consequently, in September 2024, a literature search was conducted with the following search limitations inquiry string: (TITLE-ABS-KEY (informality) AND TITLE-ABS-KEY (housing)). The Elsevier Scopus database inquiry yielded a total of 560 documents between 1974 and 2024. Subsequently, a data cleaning procedure was employed to verify any missing or erroneously entered information using the Zotero reference manager tool. The 550 cleaned documents were exported into a bibTeX file for data analysis using biblioshiny, a data analysis software. The final cleaned documents from 284 sources were acknowledged for data analysis. Of these, 459 were scientific articles, 62 were book chapters, 12 were books, 11 were review articles, and 8 were conference papers.

The annual average citation per year output on informality and housing-related publications is presented in plot 1 from 1974 to 2024. The first impactful publication on informality and housing was published in 1974 with the title "Full-timers: Who are these older people who are living in their RVs?" (Hartwigsen and Null, 2014) with (9) overall citations. However, in 2022, a total of (79) articles have been published, which is the highest production year on this topic of informality and housing so far. In 2003, the single paper by (Roy, 2003) "Paradigms of propertied citizenship transnational techniques of analysis" received 137 citations, setting a record-breaking average citation per year score of 6.2. Additionally, in the year 2013, we had 12 publications, and the average citation per year was a score of 4.2, which made it the second-highest average. Publications about informality and housing have declined since 2022, possibly due to the COVID-19 pandemic.

Plot 1: Annual average citation per year (1974-2024)



Source: Scopus database

## 2.2 Data analysis

Bibliometric data analysis has gradually advanced to the point where it is widely used in research management compared to other methods such as VOSviewer (Eck and Waltman, 2009), SciMAT (Cobo et al., 2012), CiteSpace (Chen, 2006), CitNetExplorer (van Eck and Waltman, 2014) and Bibexcel (Persson, Danell and Schneider, 2009). This study employed bibliometric data extracted from the Scopus database to analyse and visualise the data using the Biblioshiny R package tool. Biblioshiny, an online user interface for Bibliometric, analyses data during various stages of data analysis, including importing, filtering, conversion, analytics, and plotting documents. Co-citation, theme mapping, coupling mapping, co-occurrence, and co-authorship are data analysis methods included in this online scientific mapping. Co-word analysis, a scientific mapping technique, analyses the co-occurrence of concepts in scientific literature. This approach allows for the systematic reconstruction and visualisation of the formality and intellectual structure of scientific concepts as a weighted network of interconnected concepts. At the outset of the coding process, codes corresponding to the chosen research areas were employed. Additionally, the codes associated with the primary sections of each clustering group were correlated with each group code, aligning with existing literature and policies.

### 3. Results and discussions

#### 3.1 Top cited journals

Based on the analysed findings and Scopus data spanning from 1974 to 2024, the top journals that have published the most cited articles on informality and housing are as follows: ‘Urban Studies’, which holds the distinction of being the most frequently referenced source for journal article referrals, with a total of 32 publications (TC=1423). The International Journal of Urban and Regional Research, which published 21 articles (TC=1253), also endorsed the list. Habitat International, with 17 publications (TC=394), secured the third position. According to a leading academic journal score, recent metrics illustrating the annual average number of citations for newly published articles included ‘Cities’ (CiteScore = 11.2), ‘Journal of Urban Studies’ (CiteScore = 10.5), and ‘Habitat International’ (CiteScore = 10.5). These figures demonstrate the growing recognition of the field of informality and housing in prestigious journals.

Table 1 : Most relevant sources with local impact

Source	h_index	g_index	m_index	TC	NP	PY_start
URBAN STUDIES	18	32	1.286	1051	32	2011
INTERNATIONAL JOURNAL OF URBAN AND REGIONAL RESEARCH	14	20	1.167	556	20	2013
HABITAT INTERNATIONAL	11	17	0.688	387	17	2009
CITIES	8	16	0.286	287	16	1997
LAND USE POLICY	8	11	0.533	367	11	2010
INTERNATIONAL JOURNAL OF HOUSING POLICY	7	11	1.750	127	12	2021
INTERNATIONAL DEVELOPMENT PLANNING REVIEW	6	11	0.261	127	12	2002
URBAN FORUM	6	10	0.400	112	12	2010
GEOFORUM	5	7	0.455	160	7	2014
ENVIRONMENT AND URBANIZATION	4	7	0.286	140	7	2011
EURE	4	5	0.667	38	5	2019
HOUSING STUDIES	4	9	0.444	171	9	2016
REVISTA INVI	4	4	0.571	57	4	2018
ANTIPODE	3	3	0.600	77	3	2020
CITY	3	4	0.333	26	4	2016
INTERNATIONAL SOCIOLOGY	3	3	0.375	81	3	2017
JOURNAL OF HOUSING AND THE BUILT ENVIRONMENT	3	3	0.231	51	3	2012
PLAN JOURNAL	3	3	0.333	10	3	2016
PROGRESS IN PLANNING	3	3	0.273	239	3	2014
SUSTAINABILITY (SWITZERLAND)	3	5	0.500	45	5	2019
WORLD DEVELOPMENT	3	3	0.200	111	3	2010
ANNALS OF THE AMERICAN ASSOCIATION OF GEOGRAPHERS	2	2	0.250	60	2	2017
EUROPEAN JOURNAL OF URBAN RESEARCH	2	2	0.250	18	2	2017
CESKY LID	2	2	0.167	15	2	2013
CITY, CULTURE AND SOCIETY	2	2	0.286	35	2	2018

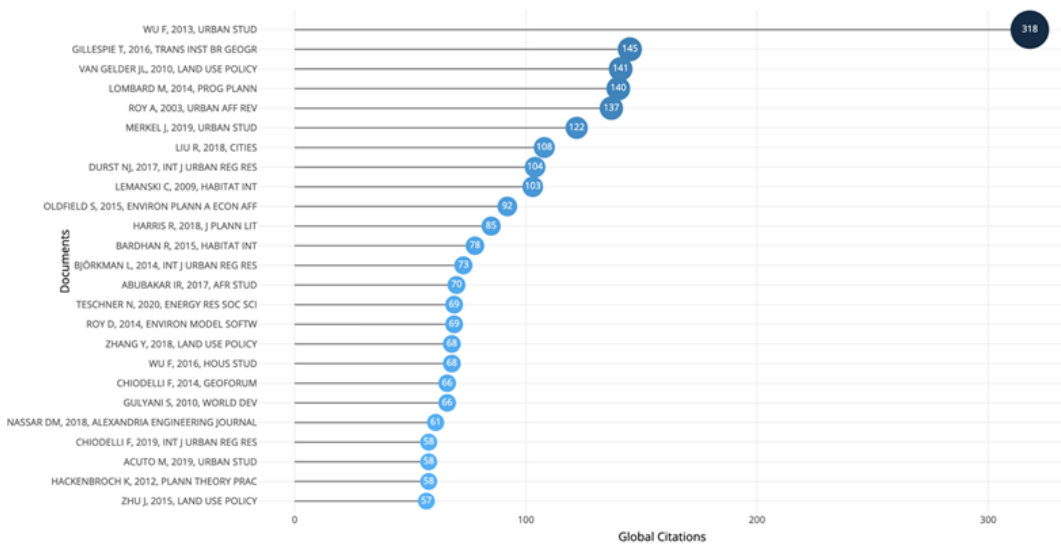
(Image source: AI generated image)

Note: TC=total citation, NP=number of publications, PY\_start = first published year, h\_index= measures both the productivity and citation impact, g\_index= emphasizes the sources of top-cited papers, m\_index=accounts for the academic lifespan of sources

Source: Scopus database

Several other well-known and highly respected journals, such as *Land Use Policy*, *International Journal of Housing Policy*, *International Development Planning Review*, and *Urban Forum*, are significant sources of knowledge base regarding informality and housing. The findings are published in multiple publications focused on urban studies, an interdisciplinary field that explores the interactions between urban planning, infrastructure, housing, and the cultural identity of communities. This field delves into understanding the challenges and opportunities that arise during urban development. The increasing acceptance of informality and housing is evident from the high citation count of general journals. Additionally, the most widely cited document is a paper titled “Informality and the Development and Demolition of Urban Villages in the Chinese Peri-Urban Area,” published in the journal ‘*Urban Studies*.’ (Wu, Zhang and Webster, 2013). This paper stands out as the most prolific publication on informality and housing, with an impressive 318 global citations. It’s not surprising that scholars prefer this source because of its visibility within the urban studies field, as evidenced by plot 2.

Plot 2: Most global cited documents



Source: Scopus database

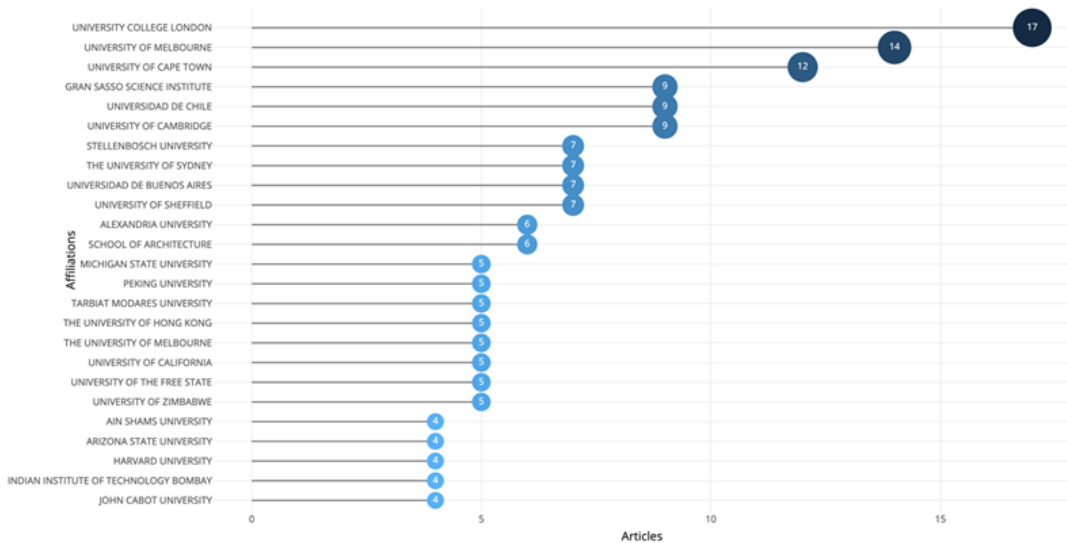
## 3.2 Intellectual structure

### 3.2.1 Relevant affiliations

The top three affiliations in terms of informality and housing research are University College London (17 articles), the University of Melbourne (14 articles), and the University of Cape Town (12 articles), as illustrated in plot 3. Other relevant affiliations include Gran Sasso Science Institute, Universidad de Chile, and the University of Cambridge, each with nine publications.

These findings highlight the diverse range of intellectual perspectives represented by top universities (UK, Australia), including contributions from developing countries (Chile, South Africa). Additionally, this study also examined the collaborative networks among the relevant affiliations previously discussed. The collaboration network analysis examined the connections between scholars in the production of knowledge. It was used to identify significant research institutions and to comprehend the process of academic knowledge dissemination. The betweenness-centrality index in the collaboration network is represented by the size of the nodes, which indicates the level of connectivity between nodes.

Plot 3: Most relevant affiliations



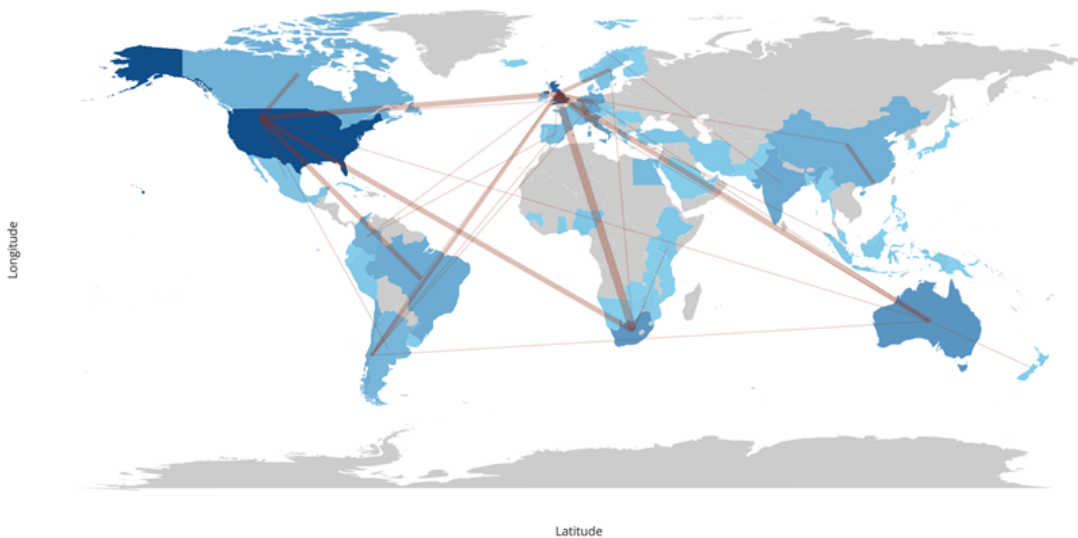
Source: Scopus database

### 3.2.2 Contributing countries

The intellectual structure, as indicated by Map 1, highlighting the most prolific and productive countries or nations based on the citation performance gained between 1974 and 2024 on articles related to informality and housing. The map illustrates that the darker the blue colour, the more significant the country's contribution to publications. The record includes well-known structures from the most relevant affiliations, such as those from the UK, Australia, and South Africa. Surprisingly, writers from the USA contribute the most publications (134), followed by academics from the UK (101), South Africa (59), and Australia (49). The findings also highlighted the dissimilarity between research among English-speaking academics (Beritelli et al., 2016) which incorporates examples such as South Africa and Chile, among the top-cited countries. The United States and the United Kingdom as expected are home to numerous prominent journals in the areas of urban studies, planning, and housing, such as 'Urban Studies,' 'Housing Policy Debate,'

and 'Cities.' The high volume of research published in these journals results in frequent citations, further setting their position as leading authorities in the field. The United States and the United Kingdom hold a dominant position primarily due to substantial funding, significant academic influence, linguistic advantages, and the potential impact of their policies. Despite its dominance, this influence occasionally hinders the conduct of context-specific research in the Global South. For instance, South Africa holds a prominent position in research within the African context, while the United States and the United Kingdom dominate global theoretical and policy discussions. The long-term legacy of apartheid-era land policies and the persistent housing inequality make informal housing a persuasive subject for study in South Africa (Turok and Borel-Saladin, 2016).

Map 1: Countries collaboration world map



Source: Scopus database

The findings also indicate that the United Kingdom and South Africa have the most robust overall collaboration, particularly in their relationship regarding informality and housing. Both countries share similar legal frameworks, which makes comparative research in housing rights, informality, and urban land management more relevant and applicable. The United Kingdom collaborates also with other countries, notably Chile, and has significant ties with Australia. As the world's largest publisher, the United States maintains close working relationships with Brazil and South Africa, which underscores the prevailing trend, and the pressing need that researchers currently face to enhance their collaboration success with developing nations. Collaborations with Pacific Asian nations, such as China and India, are notably absent. China and India adopt state-led approaches that prioritise centralised planning, eviction, and relocation policies over

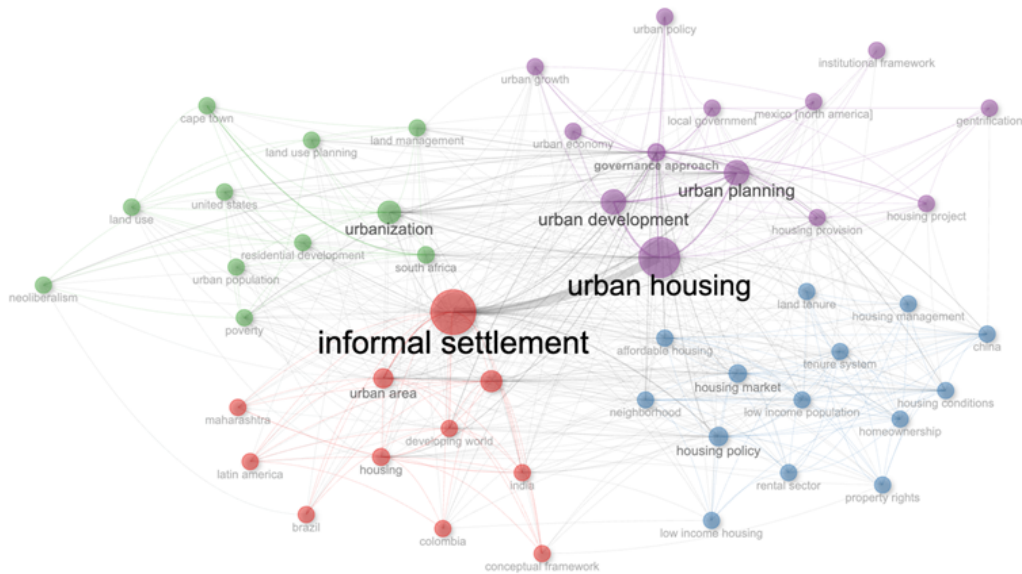
legalising informal settlements (Ren, 2018) .They also have strong domestic research networks and journals that prioritise local scholars over Western collaborations. The actual inconsistencies between policy targets and policy imports regarding participation depends on the status of the institutions and involvement of the right citizen participation (Kabaghe, 2017). This success can be attributed to the consistent pursuit and development of international partnerships.

### 3.3 Key concepts

#### 3.3.1 Mapping the keywords

The report also examined the key concepts that have been studied regarding informality and housing, and how these concepts are interconnected. This was accomplished by analysing the co-occurrence of words based on abstracts, keywords and keywords plus. The findings in the analysis of the articles have been categorised into four groups or school of thought using the colours (clusters) as displayed in network 2.

Network 2: Co-occurrence network of keywords



Source: Scopus database

The size of the nodes in the cooperation network represents the betweenness centrality index, indicating connectivity between nodes. The decentralised cluster features exhibited by the major idea nodes suggest that research groups have been organised around these concepts collaboratively. ‘Informal settlements’ and ‘urban housing’ concepts are the two most important key concepts, with the strongest connections based on node size. These concepts are further tied

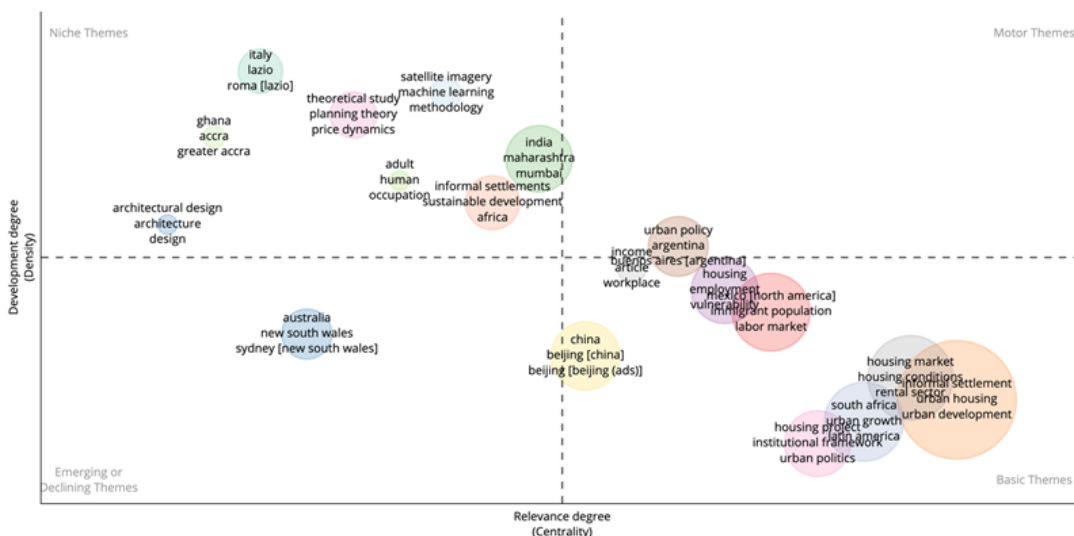
to other important concepts namely, 'urbanisation', 'urban planning', and 'urban development.' The blues cluster is most likely focussed on the push factors (formal institutions) in the context of government laws and policies, as evidenced by the key concept's 'urbanisation', 'land use planning', 'residential development', and 'land management'. Another cluster purple which is also closely related to the push factors is represented by key concepts 'urban planning', 'urban development', 'governance approach', 'local government', and 'institutional framework'. The red cluster another associated with push factors in the context of property rights incorporates keywords such as 'housing market', 'housing policy', 'property rights' and 'land tenure.'. Contrarywise, the green cluster which is associated with pull factors (informal institutions) in the context of norms and customs includes 'informal settlements', 'neighbourhood', 'informal sector', 'employment', and 'housing.' It's worth noting that the green cluster has highlighted numerous cases studies of interest, including those from Latin America (Colombia, Mexico), India, and other regions.

However, in comparison to the other clusters, the urban housing, urban planning, and urban development within the purple cluster stand out due to the nature of field of urban studies, which is highly ranked to informality and housing. Furthermore, the terms 'urbanisation,' 'informal settlement,' and 'urban housing' suggest a strong correlation, indicating that population expansion in urban housing settings is a key driver of the complex issue surrounding informality and housing. The visualising network places the 'urban housing' and 'informal settlements' close to one another but also far apart from the other clusters like 'housing markets and policy', as seen in network 3. Therefore, there is a greater tendency to experience urban poverty, especially in emerging nations such as Latin America and sub-Saharan Africa. The keyword "informal settlement," which dominates the entire network, is the most significant keyword, indicating a different school of expertise because they often favour informal inferences that are prevalent in cities. The findings also indicate the necessity for further research or gaps in the field of institutional processes, particularly in comprehending institutional change and path dependencies, which are crucial solutions for attaining sustainability, resilience, and adaptability. The results suggest only the particular focus on the push and pull factors of informality and housing.

### 3.3.2 Thematic mapping

The thematic mapping is created using co-word analysis, which involves analyzing the co-occurrence themes of keywords from the dataset. These themes assist in identifying clusters of related research topics. The thematic mappings are essentially divided into four quadrants based on two dimensions: centrality (relevance degree) and density (development degree) as shown in map 2.

Map 2: Thematic map



Source: Scopus database

The findings indicate that this field of informality and housing lacks a well-developed and significant relevance theme, as indicated by the upper-right quadrant (motor theme). This suggests that the field is still in its developmental stage and has limited impact. Equally, the results also indicate that there are no emerging or declining themes (lower-left) suggesting that the research is settled and lacks innovation. There is a lack of interdisciplinary influence, which prevents the introduction of fresh perspectives in this field. Contrarywise, the basic theme (lower-right) generated and underscores fundamental topics that demand further investigation, such as ‘informal settlements’, ‘land market’, ‘urban policy’, ‘urban growth’, ‘housing’, and ‘employment.’ Additionally, the niche themes (upper-left) generated specialized and niche topics with significant development but having limited connections to other themes, such as ‘satellite imagery’, ‘machine learning’, ‘theoretical study’, ‘planning theory’, ‘sustainable development’, and ‘architectural design’. The World Bank (2020) report also revealed a shortage of intermediate and more advanced ICT skills necessary to address sustainable solutions in the context of digital transformation and innovation.

### 5. Conclusions

There are a few limitations to the current bibliometric analysis study. First and foremost, this study was conducted using only one database for the literature review. Although we acknowledge the validity of other databases such as Web of Science (WoS), Dimensions, and Google Scholar, the results from the SCOPUS database would suffice due to its extensive coverage especially in

the social sciences field. This review acknowledges that if the data were extracted from a different database, or even a combination of databases, the results might be slightly different. The bibliometric dataset might not have included all the influential studies. This review assessed informality and housing research using bibliometric research approaches and a total number of 560 publications were accessible from 284 different sources between 1974 and 2024. On average, the number of documents released in various sources per year has grown by almost 8.34%. Studies on informality and housing have become more numerous and diverse, particularly after 2008. The United States, the United Kingdom, and South Africa are the countries with the highest number of publications focused on informality and housing. The University College of London in the United Kingdom is the most productive research institution, followed by the University of Melbourne in Australia and the University of Cape Town in South Africa. The most widely cited sources in the field of informality and housing research include *Urban Studies*, *International Journal of Urban and Regional Studies*, *Habitat International* and *Cities*. The most frequently occurring keywords in informality and housing studies are 'Informal settlements,' 'Urban housing,' 'urban development,' 'urban planning,' and 'urbanisation.' The findings generally demonstrate the growing influence and contribution, particularly over the past decade, in terms of the volume, quality, and citations of published papers. Since informality and housing are widely discussed in the USA, UK, and South Africa, academics affiliated with universities in these regions have gained early recognition in publications.

In conclusion, the bibliometric analysis has identified promising areas of strength and weakness. The results of the key concepts suggest a particular focus on the push and pull factors of informality and housing. Further research and knowledge in the area of institutional processes are necessary, particularly in understanding how institutions change and how these changes are influenced by past events. This knowledge is crucial for developing effective urban solutions that can lead to sustainability, resilience, and adaptability. Additionally, the implications suggest that research in this field is becoming less novel, prompting scholars to explore new areas by integrating ideas from different disciplines. Considering the significance of the findings, they offer valuable new knowledge that will assist the editorial board and the academic community in developing research agendas, collaboration areas, and strategies to significantly advance the field of informality and housing. Furthermore, the study's findings have provided appropriate insights that will assist policymakers and public administrators in shaping effective integrated policy solutions to reduce informal housing practices. It has also enabled a thorough analysis of the complex interplay between formal and informal institutions. Future research on informality and housing could benefit from understanding the diverse approaches of thought expressed in the corpus of this study supported by evidence-based instructions and guidelines.

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# Ethical Marketing In The Ai Era – A Strategic Necessity For Modern Companies

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**Abstract:** In a context where artificial intelligence (AI) is radically redefining marketing strategies, the ethical approach is becoming a strategic necessity for modern companies. Decision automation, hyper-targeted personalization and predictive analytics bring significant benefits, but also major ethical risks such as behavioural manipulation, lack of transparency or invasion of privacy. This article explores the intersection of AI and ethical marketing, emphasizing the responsibility of brands to integrate moral principles into the use of emerging technologies. The paper is based on a conceptual analysis and relevant case studies, proposing a strategic framework that supports the development of authentic and sustainable relationships with consumers, in an ever-changing digital ecosystem. The original contribution consists in formulating a balanced perspective between technological efficiency and ethical integrity, with direct applicability in contemporary marketing practices.

**Keywords:** ethical marketing, artificial intelligence (AI), corporate responsibility, transparency in marketing, brand-consumer relations, sustainable marketing strategy

**JEL Classification:** M31, L86, D63, D83, O33

## Introduction

Over the past two decades, digital technologies have profoundly transformed the way companies communicate, interact, and create value for consumers. At the heart of this transformation is artificial intelligence (AI), which offers the possibility of complex predictive analytics, unprecedented content personalization, and automation of strategic marketing decisions. While these technological advances bring undeniable benefits in terms of efficiency and competitiveness, they also raise significant ethical issues related to transparency, privacy, fairness, and social responsibility.

As consumers become increasingly aware of how their data is being used, and data protection regulations become stricter, ethical marketing is no longer an option, but an essential strategic component. In this context, a crucial question emerges for modern companies: How can the benefits of artificial intelligence be harnessed without compromising the brand's core ethical values?

This article aims to explore this intersection between technology and morality, through a critical analysis of current AI-assisted marketing practices, identifying emerging ethical risks, and formulating a strategic framework that allows companies to responsibly integrate AI into marketing activities. Both international guidelines on the ethical use of AI and examples from the global corporate environment are considered, with the aim of providing applicable recommendations for developing a sustainable relationship between brand and consumer.

The adoption of artificial intelligence (AI) in marketing strategies fundamentally transforms the way companies in Romania interact with consumers and make their business decisions. This evolution is reflected in the significant increase in investments in digital technologies and the increasing use of automation, machine learning and real-time personalization tools. According to the 2023 ANIS (Employers' Association of the Software and Services Industry in Romania) report, more than 55% of local companies active online have started exploring or implementing AI solutions in their digital marketing strategies.

At the same time, Romania, as a member of the European Union, complies with strict regulations on the protection of personal data, such as GDPR, and adheres to legislative initiatives such as the AI Act and the Digital Services Act, which establish essential ethical principles for the responsible use of emerging technologies. Thus, the integration of ethical conduct becomes an indispensable condition for companies that manage consumer data for commercial purposes, ensuring a balance between innovation and social responsibility. At the same time, the local market is facing significant challenges: low levels of digital literacy among consumers, the lack of clear organizational ethics policies in small and medium-sized companies, as well as a marketing culture still focused on performance rather than sustainability. Thus, the ethical approach of AI in marketing not only meets legal and reputational requirements, but also offers a competitive advantage in building transparent and trustworthy brands in a fragile digital environment.

The relevance of the topic is supported by the urgent need to substantiate, including in Romania, responsible marketing practices, anchored in moral principles, to avoid the risks of manipulation, algorithmic discrimination, and loss of consumer trust. This article aims to contribute to this debate by providing a rigorous and applicable analysis of how ethics can be integrated into AI-based marketing strategies.

Specialists in the field of digital marketing and artificial intelligence are increasingly drawing attention to the need to rethink commercial strategies through an ethical lens. According to a review by Su, Wang, and Berthon (2023), ethics in AI-assisted marketing is no longer an optional element, but a necessary strategic component to maintain consumer trust and brand legitimacy in the digital age.

Khan et al. (2021) argue that the transparency of algorithmic decisions, the protection of privacy and the avoidance of automated discrimination are central aspects in the development of ethical marketing practices. The literature also highlights the growing risks related to behavioural manipulation, invasive hyper-personalization, and the opacity of AI models used in commercial campaigns.

In the Romanian context, researchers such as Zaharia and Simion (2024) indicate that, although companies are showing a growing interest in AI solutions, in practice there is a lack of clear ethical governance policies, and consumers are poorly informed about how their data is collected and used.

From a personal perspective, I believe that ethical marketing in the age of artificial intelligence is not only a strategic necessity, but a fundamental duty of companies to society. AI-powered technologies have the potential to profoundly transform the relationship between brands and consumers, but this transformation should not come at the expense of moral values. The power of algorithms to influence decisions, shape preferences, and predict behaviours imposes increased accountability in how business strategies are designed and implemented. In the absence of solid ethical benchmarks, artificial intelligence risks becoming a tool for manipulation, not progress. That's why I strongly believe that organizations that manage to integrate ethics not only into discourse, but also into action – through transparency, respect for privacy, and algorithmic fairness – will build more lasting, authentic, and valuable relationships with their audiences.

### **1. The evolution of marketing in the context of artificial intelligence**

Marketing has evolved from a product-centric model and one-way communication, to one deeply influenced by data, interactivity, and personalization. In the pre-digital era, campaigns were built on intuition, traditional surveys, and generalist messaging. Subsequently, the advent of the internet and social networks allowed the transition to digital marketing, based on real-time feedback and analysis of online behaviour. Today, with the integration of artificial intelligence, we are witnessing a new stage: automated and predictive marketing. Algorithms can anticipate consumer needs, adjust messages based on context, and influence purchasing decisions almost imperceptibly. This evolution brings huge potential for efficiency and scalability, but at the same time raises major questions related to fairness, transparency, and the protection of individual autonomy. Thus, the evolutionary direction of marketing requires not only technological adaptation, but also the consolidation of an ethical compass to guide brand-consumer interactions in the digital age.

To understand the growing importance of ethics in contemporary marketing, it is essential to analyse the evolution of this field in correlation with the development of technologies.

From traditional strategies, based on one-way communication and generalist messages, to the complex use of artificial intelligence, marketing has radically transformed. This technological shift has brought not only major opportunities for personalization and efficiency, but also significant challenges in terms of transparency, accountability, and respect for consumer rights. The following table summarizes these key stages of the evolution of marketing, highlighting in parallel the main tools used and the associated ethical dilemmas.

Table 1. The evolution of marketing – from traditional to ethical AI

Period/Stage	Main features	Tools and methods	Ethical challenges
Traditional marketing (until the 90s)	Generalist messages, one-way communication	TV, radio, print commercials	Lack of transparency, generalization, lack of personalization
Digital marketing (2000–2010)	Interactivity, real-time feedback, digital segmentation	Websites, email marketing, social media	Privacy, manipulation through personalized content
Marketing with AI (from 2010 to today)	Automation, hyper-targeted personalization, behavioural prediction	ML algorithms, big data analysis, chatbots	Decision-making opacity, algorithmic bias, intense surveillance
AI-Assisted Ethical Marketing (Future)	Transparency, accountability, informed consent	AI Ethical Principles, GDPR Regulations, Explainable AI	Ensuring fairness, protecting consumer rights, preventing manipulation

Source: Table made by the author based on the works of Kotler et al. (2021), Su et al. (2023) and Khan et al. (2021)

As marketing has evolved from traditional communication to the advanced use of artificial intelligence, the complexity of processes and the potential to influence consumers have increased exponentially. This technological advancement brings obvious benefits, such as efficiency and personalization, but it also raises significant ethical challenges that cannot be ignored. Integrating a sound ethical framework into the use of AI in marketing thus becomes an essential condition for protecting consumer rights and maintaining public trust. Only by balancing innovation with moral responsibility will companies be able to build authentic and sustainable relationships in the ever-changing digital landscape.

Accelerated digital transformations over the past decade have transformed artificial intelligence (AI) from an emerging technology into a fundamental pillar of modern marketing strategies. From recommendation algorithms and conversational chatbots, to predictive analytics and real-time personalization, AI is redefining the way brands interact with consumers. Global platforms such as Amazon, Netflix or Spotify are already illustrating the effectiveness of these technologies in anticipating individual needs and increasing conversions. However, the enthusiasm for performance and automation is accompanied by several essential ethical questions regarding the transparency of algorithmic decisions, the use of personal data and the risks of psychological manipulation. In this context, the need for responsible marketing, guided by clear ethical principles, becomes not only a moral option, but a strategic necessity for companies that want

to maintain their credibility and public trust in an increasingly complex and regulated digital ecosystem.

## 2. Artificial Intelligence in Marketing: Opportunities and Challenges

Artificial Intelligence (AI) is profoundly redefining marketing strategies, providing companies with tools capable of anticipating consumer behaviours, personalizing communication, and optimizing decisions in real time. Through technologies such as machine learning, behavioural analysis or intelligent chatbots, brands can build increasingly effective campaigns, based on accurate and up-to-date data.

AI applications are already being implemented extensively in digital marketing: streaming platforms recommend personalized content, online retailers improve the shopping experience, and beauty brands use algorithms to suggest products tailored to each customer's profile. These solutions contribute not only to increasing sales, but also to consumer loyalty through relevant experiences.

However, this efficiency comes with important ethical challenges. Decision automation and hyper-targeting can lead to psychological manipulation, and the lack of algorithmic transparency raises questions about accountability. Some systems may perpetuate inequalities or violate the principle of informed consent, especially when users are unaware of how their personal data is collected and processed. In an influential analysis, Mittelstadt et al. (2016) draw attention to the risk of opaque automated decisions that can escape human control.

On the Romanian market, the use of AI in marketing is increasing, but specialists point out that the integration of ethics often remains at the declarative level. Recent studies highlight the need for clearer regulation, but also for a stronger internal commitment on the part of companies to protect consumers' interests.

For a better understanding of the balance between the benefits and risks of AI in marketing, the table below summarizes the main ethical opportunities and challenges that may arise in the context of the use of automated technologies.

Table 2. Ethical Opportunities and Challenges of Using AI in Marketing

Opportunities	Ethical challenges
Advanced personalization of content and offers	Risk of behavioural manipulation and unconscious influence
Real-time marketing campaign optimization	Lack of transparency of algorithmic decisions
Automation of repetitive processes (e.g., customer service)	Potential for algorithmic bias and unintentional discrimination
Precise market segmentation and effective targeting	Excessive collection of personal data without clear consent
Increase efficiency and reduce operational costs	Lack of human liability for errors or harm caused by AI
Creating interactive experiences (e.g. chatbots, AR, VR)	Exploiting emotional or psychological vulnerabilities

Source: Adapted from Khan, Paschen & Kietzmann (2021); Mittelstadt et al. (2016); own analysis.

The Romanian context adds important nuances to the debate about ethics in automated marketing. The following table summarizes the main opportunities and vulnerabilities identified in the use of AI in the local market.

Table 3. The situation of using AI in marketing in Romania – ethical opportunities and vulnerabilities

Aspect	Observations specific to the Romanian market
The level of implementation of AI in marketing	Growing, especially in retail and e-commerce. Large companies are more active than SMEs.
Level of ethical education in companies	Reduced; most employees do not have specific training in digital ethics or responsible AI.
Regulation and compliance	Minimum compliance with international standards; The local legislation in the field is fragmented.
Types of applications used	Chatbots, smart CRMs, social media targeting, predictive analytics tools.
Challenges identified by specialists	Lack of transparency towards consumers, excessive data collection, lack of algorithmic auditing.
Consumer attitude	Low level of awareness of the use of AI; relatively fragile trust in automated decision-making.
Positive initiatives	Isolated examples of good practices in retail, political marketing, and banking, especially through external partnerships.

Source: Own processing based on data from Simion & Popescu (2023); Su, Wang & Berthon (2023); contextual analysis.

### 3. Ethical marketing in the age of artificial intelligence: challenges and essential dimensions

In the current context, artificial intelligence is fundamentally transforming the way brands interact with consumers, automating processes that were previously exclusively human and generating unprecedented opportunities for personalization and efficiency. However, this technological revolution brings with its complex ethical challenges that cannot be ignored by companies if they want to maintain customer trust and loyalty (Martin & Murphy, 2017).

One of the main challenges is the transparency of algorithmic processes. Many consumers are not aware that marketing decisions, from recommendations to personalized offers, are automatically generated, and the opacity of these systems can lead to a loss of trust (Mittelstadt et al., 2016). In addition, behavioural manipulation through hyper-targeting techniques raises questions about the autonomy and free choice of the consumer, an aspect highlighted by scholars such as Zuboff (2019), who speaks of “surveillance capitalism”.

Fairness in the treatment of consumers is also endangered by algorithmic biases, which can reproduce or amplify existing stereotypes and discriminations (Noble, 2018). An illustrative example is the use of AI in pricing, where certain customer segments may receive different offers

based on sociodemographic characteristics, which raises ethical dilemmas related to distributive justice (Pasquale, 2015).

In terms of personal data protection, AI-based marketing involves collecting and analysing a huge volume of sensitive information. Compliance with informed consent becomes essential, but often insufficiently implemented in practice, as investigations into the Cambridge Analytica scandal have shown (Cadwalladr & Graham-Harrison, 2018).

Consequently, ethical marketing in the age of AI must integrate a set of clear principles, including accountability, transparency, fairness, and respect for the consumer, all supported by robust oversight and audit mechanisms (Floridi et al., 2018). Only in this way can companies build authentic and sustainable relationships with their customers, avoiding the reputational and legal risks associated with unethical practices.

To highlight the complexity of the ethical challenges generated by the integration of artificial intelligence in marketing, the table below summarizes the main dilemmas, their description, and the impact they have on both brands and consumers. This structuring facilitates a clear understanding of the key issues that need to be managed to ensure responsible and sustainable marketing in the digital age.

Table 4. The main ethical dilemmas of marketing in the age of artificial intelligence and their impact

Ethical dilemma	Description	Impact on brands and consumers
Algorithmic transparency	Opacity of automated decisions, lack of clarity on how AI makes decisions	Decreased trust, reputational risks, difficulties in assessing the correctness of offers
Behavioural manipulation	Using hyper-targeting techniques to influence consumer decisions	Loss of consumer autonomy, negative public reactions, potential legal sanctions
Algorithmic bias	Reproduction or amplification of social biases in automated decisions	Discrimination, inequity, ethical and social conflicts, damage to brand image
Data privacy	Improper collection and use of personal data, lack of informed consent	Violation of consumer rights, GDPR sanctions, loss of customer loyalty

Source: Own elaboration, based on the analysis of the literature (Floridi et al., 2018; Mittelstadt et al., 2016; Zuboff, 2019; Noble, 2018).

The table highlights the fact that ethical marketing in the age of artificial intelligence is not just a matter of legal compliance, but a strategic challenge that involves taking an active role in the prevention and management of ethical risks. Companies must implement measures that ensure the transparency of algorithmic processes, prevent behavioural manipulation through hyper-targeting and combat algorithmic biases that can generate inequities and discrimination.

Moreover, the protection of personal data and the respect of informed consent are the foundations in building an honest and sustainable dialogue with consumers. In the absence of

such an integrated approach, brands risk not only legal sanctions, but also loss of credibility and market loyalty.

In conclusion, an ethical marketing strategy in the age of AI must be comprehensive and proactive, oriented towards creating a fair and transparent digital ecosystem that harmonizes technological innovation with social responsibility.

#### 4. Strategies for companies: how to integrate ethics into the use of AI

In a context where artificial intelligence is becoming increasingly present in business decisions, ethical strategies are no longer an optional element, but an essential component of organizational governance. The responsible integration of AI in marketing involves a systemic, multidisciplinary, and proactive approach, where technology is governed by clear principles and transparent control mechanisms.

##### a. Guiding principles for the ethical use of AI

Three fundamental concepts underpin an ethical use of artificial intelligence in marketing:

- **Fairness:** avoiding algorithmic discrimination, ensuring equal treatment for all users, regardless of gender, ethnicity, socio-economic status, or other sensitive variables.
- **Accountability:** Taking responsibility for automated decisions and clarifying the answers to the question “Who is responsible when the algorithm is wrong?”.
- **Transparency:** clear communication of how data is collected, processed, and used, as well as the logic behind algorithmic decisions (Floridi et al., 2018; Mittelstadt et al., 2016).

These principles can be incorporated into strategies through the development of clear internal policies, regular audits of AI systems, and stakeholder engagement in the design of automated solutions.

##### b. Applicable regulatory frameworks and international standards

Several international bodies have developed guidelines that can serve as reference points for companies:

- The AI Principles developed by the OECD (2019) promote a balance between innovation and responsibility, highlighting the need for human-centric AI.
- ISO/IEC TR 24028:2020 provides a technical framework for managing the risks associated with AI, with a focus on reliability, security, and traceability.
- IEEE Ethically Aligned Design recommends integrating human values into algorithmic architecture, based on the idea that technology must serve the common good.

Companies that adopt these standards not only reduce exposure to legal and reputational risks, but also strengthen their position as leaders in digital responsibility.

##### c. Examples of good corporate practices

Several global companies offer concrete models for applying these principles:

- Microsoft has developed its “Responsible AI” framework, based on six principles

(including inclusion, safety, and responsibility), which are reflected in all product lines and services.

- IBM has implemented an internal AI ethics committee, with an advisory and decision-making role, which ensures consistency between technological development and the company’s values.

- Unilever applies ethical impact assessments in its digital marketing processes to prevent the risks associated with over-personalisation and automated stereotypes.

These examples illustrate how integrating ethics into AI can become a sustainable competitive advantage, strengthening the relationship with consumers, and creating a brand identity based on trust.

d. Ethics by design – from intention to implementation

A central concept in ethical strategy is “ethics by design”, which assumes that moral values are directly integrated into the technological architecture from the design stage. This approach reduces emerging risks by:

- the use of diverse and well-balanced datasets to train algorithms.
- the introduction of human checkpoints in the decision-making process.
- the development of explainable AI systems that can justify the decisions made.

In this way, companies can prevent problems from occurring, instead of reacting post-factum to controversies or errors.

The integration of ethics in the use of artificial intelligence cannot be achieved through punctual solutions or reactive improvisations, but through a coherent, structured and institutionally supported strategy. In an era where marketing decisions are increasingly automated, and predictive models are becoming the norm, companies must adopt practices that focus not only on commercial performance, but also on social responsibility.

The ethical approach to AI therefore involves both a technical component (such as algorithm design and auditing) and an organizational component (internal education, ethical governance, transparency in the relationship with users). The table below summarizes the main applicable strategies, along with implementation examples and associated benefits.

Table 5. Strategies for integrating ethics in the use of AI in marketing

Ethical strategy	Description	Example of implementation	Potential benefits
Ethics by Design	Integrating moral values from the design phase of AI systems	Using Explainable AI in Marketing Campaigns (e.g., IBM Watson)	Risk reduction, prevention of ethical errors
AI Audit & Ethics Assessment	Periodic checks on the bias, accuracy, and impact of algorithms	Microsoft – AI internal audit and systematic review	Transparency, increased trust from stakeholders

Training employees in AI ethics	Training programs for marketing and IT teams	Unilever – in-house training on digital ethics	Responsible organizational culture
Data collection with consent	Compliance with GDPR principles and informed consent	Facebook campaigns reconfigured post-Cambridge Analytica	Regulatory compliance, consumer loyalty
Creating AI Ethics Committees	Multidisciplinary groups that validate automated projects and decisions	IBM – AI Ethics Board	Strong internal governance and prevention of ethical conflicts
Implementation of international frameworks	Adherence to global principles (OECD, ISO, IEEE)	Adoption of ISO/IEC TR 24028:2020 by European companies	Strengthened reputation, sustainable competitive advantage

Source: Own elaboration, inspired by Jobin et al. (2019), Floridi et al. (2018), and examples of good practices from Microsoft, IBM and Unilever reports.

The table highlights the fact that the application of ethical principles is not reduced to a simple declaration of intent, but requires concrete tools, formal processes, and the active involvement of all levels of the organization. Companies that invest in AI audits, ethics committees, specialized training, and transparency in public relations demonstrate not only compliance, but also long-term vision.

Also, the adoption of international standards and the development of “ethics by design” policies contribute to consolidating a competitive advantage based on trust, sustainability, and positive differentiation. In a digital landscape where consumers are becoming increasingly aware of their rights, ethics becomes a strategic investment, not a compliance cost.

## 5. The role of regulation and ethical education in business

In the context of a technology that evolves faster than the ability of legislative systems to regulate it, ethics becomes a key element in maintaining a balance between innovation and responsibility. Whether it’s the use of personal data, automated decision-making, or influencing consumer behaviour, artificial intelligence poses challenges that require both regulatory intervention and sustained professional training.

### a. Regulation as a form of preventive control

Regulation acts as an external mechanism to limit potential abuses in the use of AI. Legislative initiatives, such as the General Data Protection Regulation (GDPR) in the European Union or the new Digital Services Act, provide the legal framework to protect users against non-transparent decisions and excessive data collection. These tools oblige companies to implement informed consent mechanisms, algorithmic transparency, and fundamental rights impact assessment (European Commission, 2021).

Also, the AI Act – currently being adopted at the European Union level – proposes a

classification of AI applications according to the degree of risk, setting strict requirements for high-impact systems, including those used in personalized digital marketing. In parallel, some companies are developing their own internal ethical compliance policies, inspired by these frameworks, anticipating the demands of future regulations (HLEG on AI, 2019).

b. Ethical education – the internal component of corporate responsibility

External regulation, although necessary, is not enough. Ethical behaviour must also be cultivated within the organization, through a culture of responsibility and critical reflection. Ethical education in business involves not only informing employees about regulations, but also training applied ethical thinking, by:

- Ethics courses in AI and data science for marketing teams, developers and decision-makers.
- development of code of conduct adapted to the digital context.
- the inclusion of ethical assessment in decision-making processes through methods such as ethics canvas or AI impact assessment.
- promoting an organizational culture based on values and not exclusively on quantitative objectives (Morley et al., 2020).

Organizations that invest in constant ethical training are proving to be more agile in managing reputational crises, more prepared in the face of external controls and more valued by consumers for transparency and accountability.

Table 6. Differences between regulation and ethical education in the use of AI in marketing

Criterion	Regulatory	Ethical education
Definition	Set of rules and obligations imposed by authorities to control the use of AI	Internal training process aimed at developing a responsible organizational culture
Character	External, coercive	Internal, formative
Main objective	Preventing abuse and protecting users' rights	Formation of moral discernment and support for ethical decisions
Tools	Laws, directives, standards (e.g. GDPR, AI Act, ISO/IEC)	Trainings, codes of conduct, ethical assessments, case studies
Responsibility	Public institutions, regulators	The company – through management, HR and compliance departments
Reaction vs prevention	React to systemic risks or abuse	Prevents ethical dilemmas through awareness and training
Examples	GDPR, Digital Services Act, AI Act, national legislations	Internal courses at Microsoft, AI Ethics Board at IBM, digital ethics at Unilever

Source: Own elaboration based on the analyses proposed by Floridi et al. (2018), Jobin et al. (2019), European Commission (2021) and examples from multinational companies.

Regulation and ethics education should not be alternative options, but as two complementary components of a mature approach to the use of AI in business. While the legislative framework imposes limits and defines responsibilities, education creates the conditions for moral ownership of actions, even in the absence of external constraint.

Companies that combine these dimensions – compliance and awareness – are best prepared to manage digital transformations without compromising core human values.

Ethical marketing in the age of artificial intelligence is more than a trend; It is a fundamental strategic necessity for modern companies that want to build authentic and lasting relationships with consumers.

In a digital context marked by automation, personalization and algorithmic decisions, brands must take responsibility for integrating moral principles and transparency into all stages of the marketing process.

The ethical challenges posed by AI – such as behavioural manipulation, lack of transparency, privacy violations, or algorithmic biases – cannot be ignored, and companies that choose to actively manage them will benefit from a long-term competitive advantage.

This article highlighted the need for a clear strategic framework, including principles of fairness, accountability, and transparency, recognized international guidelines and concrete best practices implemented by leaders in the field.

Moreover, the role of regulations and ethical education in business is essential for creating a responsible digital ecosystem, in which every actor – from brands and marketing professionals, to consumers and legislators – contributes to a fair and sustainable market.

In the end, ethical marketing is not a fixed destination, but a continuous journey, which requires commitment, courage, and integrity from everyone. Conscious choice, responsibility and education are the pillars that will transform marketing from a simple sales tool into a positive force capable of shaping a fairer and more humane future.

## Conclusions and perspectives

### a. Ethics – a continuous journey, not a destination

In the digital age accelerated by artificial intelligence, marketing can no longer be thought of exclusively as a promotional or sales tool but must be rethought as a practice with profound ethical implications. Ethical marketing in the age of AI is becoming more than a moral goal; It becomes an essential element of sustainability and corporate responsibility.

Ethics is not a completed stage or a procedural checkmark, but a transversal dimension, which must permanently accompany every decision, every algorithm, and every brand-consumer interaction. In a context where personal data, decision automation and behavioural influence raise new moral dilemmas, companies have a responsibility to place values at the centre of the decision-making process.

Thus, ethical marketing turns into a long-term commitment: to consumers, to society and to the economic and digital future. It is a path that requires transparency, honesty, inclusion and, above all, respect for human dignity.

### b. Perspectives and directions for action

Promoting ethical marketing in the age of AI involves concrete commitments from all market players – not only from companies, but also from consumers, marketers, regulators, and communities.

What companies can do:

- Integrate ethical principles into algorithm design (ethics by design).
- There must be transparency in the processes of data collection and use.
- Adopt internal codes of digital ethics.
- To train employees in ethics applied to technology.

What consumers can do:

- Conscious choice of brands that comply with ESG principles.
- Practicing critical thinking towards manipulative campaigns (greenwashing, social washing);
- Supporting local, ethical, and sustainable products.
- Active feedback in relation to brands and asking for clarity.

What marketers can do:

- Rethinking campaigns from a responsible and human-centered perspective.
- Promoting authentic storytelling, not artificial.
- Using AI in a way that does not amplify existing social inequalities or biases.

What the company can do:

- Stimulating education in the field of technological ethics.
- Clearer regulations on the use of AI in advertising.
- Encouraging partnerships between the public, private and academic sectors to build a common ethical framework.

So, every decision counts. Every responsibly designed campaign, every value-driven consumer choice, every ethically calibrated algorithm – all contribute to building a marketing ecosystem where trust, transparency, and accountability are not optional, but foundations of sustainable success.

c. Ethical marketing starts with each of us

To summarize and structure the main aspects discussed in this article, the following table highlights the key elements of ethical marketing in the age of artificial intelligence. It provides a clear insight into the current context, challenges, and essential strategies for modern companies that want to integrate moral responsibility into their marketing practices. Relevant examples and references are also included to support each point, facilitating a quick and applicable understanding of the topic.

Table 7. Key Elements of Ethical Marketing in the Age of Artificial Intelligence

Aspect	Description	Examples / References
Current context	AI transforms marketing through automation, personalization, and predictive analytics, but it also raises major ethical issues.	Mittelstadt et al. (2016); PwC Romania (2022)
Ethical challenges	Behavioral manipulation, algorithmic bias, lack of transparency, violation of privacy.	Scandal Cambridge Analytica

Ethical Marketing in the Age of AI	Integrating moral principles into all stages of marketing, ensuring informed consent, transparency, and respect for the consumer.	OECD AI Principles; IBM Responsible AI
Strategies for companies	Principles of fairness, accountability, transparency; implementing ethics through AI design; internal education; global best practices.	ISO/IEC TR 24028:2020; Microsoft Responsible AI
The role of regulation	GDPR, Digital Services Act, and other initiatives that regulate the use of AI in marketing and consumer data protection.	European Commission (2021); GDPR
Ethical education in business	Professional training, awareness of the impact of AI, promotion of ethical values in organizational culture.	Internal training programs; Accountability campaigns
Competitive advantages	Ethical brands gain consumer trust and loyalty, and responsible marketing becomes a differentiator in the market.	IBM, Microsoft case studies; Ransbotham et al. (2017)
The role of consumers	Conscious choice, active feedback, refusal of manipulative marketing and support for ethical products and brands.	Consumer education, civic activism
Conclusion	Ethical marketing is an ongoing commitment, essential for sustainability and long-term success, involving all actors in the commercial ecosystem.	-

Source: Own elaboration based on the literature and the following sources: Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). *The ethics of algorithms: Mapping the debate*. *Big Data & Society*, 3(2), 1-21; OECD (2019). *OECD Principles on Artificial Intelligence*; PwC Romania (2022). *The impact of AI on marketing in Romania*; European Commission (2021). *Proposal for a Regulation on AI (Artificial Intelligence Act)*.

The table above summarizes the fundamental aspects of ethical marketing in the context of AI, highlighting both the opportunities and challenges faced by modern businesses. Integrating ethical principles into marketing strategies is not only a moral obligation, but also an essential competitive advantage in the digital age. The adoption of responsible practices, supported by clear regulations and continuous education, is the path to building authentic and lasting relationships with consumers. Thus, ethical marketing becomes an indispensable pillar in the architecture of a sustainable and transparent economy.

Ethical marketing in the age of artificial intelligence is a necessary commitment for any brand aiming for long-term success. Through responsibility, transparency and respect for the consumer, companies can turn technological challenges into opportunities for an authentic and sustainable relationship with the market.

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# Fiscal Challenges in Public Debt Management – a Romanian Perspective

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**Abstract:** *The economic shocks triggered by the outbreak and spread of the COVID – 19 pandemic prompted national governments to implement a series of large – scale expansionary fiscal measures to counteract the negative effects recorded globally on economic activity. This article aims to analyse the dynamics of fiscal and budgetary policies at the national level in Romania, as well as at the European and global levels, with a particular focus on the evolution of public debt and budget deficits, in the context of economic policies adopted in response to the health crisis. Accordingly, the study seeks to assess the effectiveness and sustainability of fiscal and budgetary measures adopted by national governments, through the lens of relevant macroeconomic indicators and the institutional constraints imposed by both national and European frameworks. In the case of Romania, the results of the analysis highlight a significant deterioration in fiscal balances, reflected in a sharp increase in public debt, both in absolute and relative terms, accompanied by a persistent high level of the budget deficit and current account deficit. In this context, the article examines the risks associated with Romania's current fiscal trajectory, as well as the implications for financial stability and fiscal discipline in the medium and long term. The article concludes with a series of policy recommendations aimed at fiscal consolidation and the alignment of Romania with the objectives of the European Union's Stability and Growth Pact.*

**Keywords:** public budget, public debt management, fiscal deficit, fiscal consolidation.

**JEL Classification:** H30, H61, H62, H63.

## Introduction

In the post – pandemic period, public debt and budget deficits have emerged as central themes in international economic discourse, as the exceptional fiscal measures adopted to mitigate the impact of the COVID – 19 crisis have profoundly altered the trajectory of public finances. Fiscal stimulus policies – alongside increased spending on healthcare and social protection – were predominantly financed through public borrowing, leading to a notable rise in sovereign debt levels and national fiscal deficits.

Although these interventions were justified by the unprecedented socio – economic circumstances, they have heightened concerns about fiscal sustainability in the aftermath of the crisis, especially in economies that already exhibited elevated public debt burdens. This study examines these developments through a multi – level lens: the global context, the European fiscal framework, and Romania’s particular case.

Globally, stimulus efforts have driven public debt to record highs. The International Monetary Fund (IMF) estimated that global public debt reached approximately 100% of GDP in 2020 – an unparalleled level in the absence of a major military conflict. While fiscal responses proved critical in preventing a deep recession, current attention has shifted to the long – term implications of sustained high debt levels, including reduced fiscal space, mounting pressure on interest rates, and concerns over intergenerational equity.

Notable disparities persist between countries. Advanced economies have experienced rapid increases in public debt, reigniting debates over fiscal sustainability. In contrast, emerging markets have faced more acute fiscal constraints, higher financing costs, and heightened exposure to external volatility.

Within the European Union, the pandemic exposed the limitations of the Stability and Growth Pact, which was suspended via the activation of the general escape clause. In parallel, the EU introduced the Recovery and Resilience Facility (RRF), a €750 billion mechanism designed to support economic recovery through grants and loans tied to structural reforms. While the RRF played a pivotal role in post – crisis recovery efforts, it also contributed to rising public debt at the EU level, underscoring the need to reassess the long – term coherence of the fiscal governance framework. Persistent disparities between Northern and Southern member states have complicated discussions on reform, and the temporary nature of the NextGenerationEU instrument highlights the imperative for permanent structural solutions.

In Romania, the pandemic triggered a rapid deterioration of the fiscal stance. Structural vulnerabilities – such as a narrow tax base, inefficient public spending, and the procyclical orientation of fiscal policy – were exacerbated by the health crisis. The budget deficit exceeded 9% of GDP in 2020 and remained above the European reference threshold in subsequent years, resulting in the activation of the Excessive Deficit Procedure. Although Romania’s public debt, as a share of GDP, remains below the EU average, its upward trajectory and persistent imbalances raise significant concerns regarding long – term fiscal sustainability.

This article aims to provide an integrated analysis of debt and deficit trends in the post – pandemic period, with an emphasis on comparative dimensions at the global, European, and national levels. The study seeks to identify the implications of adopted fiscal measures, the costs

of delayed consolidation, and the prospects for a sustainable fiscal path, in the context of growing uncertainty, budgetary pressures, and accelerated structural transformations.

### 1. Literature review

As previously emphasized, the COVID – 19 pandemic has had a profound impact on fiscal and budgetary policies worldwide, prompting significant shifts in public debt management strategies. Within the European Union, calls for structural reform of the fiscal framework have gained momentum. Arnold (2022) argues that this crisis exposed deep – seated weaknesses in the EU's fiscal rules, particularly their limited flexibility and inconsistent enforcement. He advocates for a more integrated institutional approach at the European level, linking national oversight institutions with supranational bodies, to strengthen both fiscal discipline and the capacity to respond to crises.

From a broader theoretical standpoint, Blanchard (2022) reexamines conventional assumptions underpinning fiscal sustainability in the context of persistently low interest rates. His findings suggest that when the interest rate remains below the growth rate, higher deficits may be sustainable over time. Nonetheless, he cautions against complacency, highlighting the risks posed by abrupt shifts in market sentiment.

Focusing on the Romanian context, Daianu, Dumitru, and Uzum (2025) investigate the persistence of the “twin deficits” syndrome – marked by high fiscal and current account deficits – and its implications for macroeconomic stability. They underscore structural inefficiencies within Romania's public finance system and propose a gradual process of fiscal consolidation.

In terms of debt accumulation dynamics, Patel and Peralta – Alva (2024) provide empirical evidence from both emerging and advanced economies, demonstrating that the effectiveness of fiscal interventions depends significantly on initial debt levels and domestic fiscal contexts. Their study highlights the long – term costs associated with delaying fiscal consolidation in countries where public debt accounts for a large share of GDP.

Razinkova (2024) offer an additional perspective by identifying a shift in academic focus from debt sustainability to institutional capacity and governance quality. Their research emphasizes the importance of an adaptive fiscal framework for debt management, particularly in low – and middle – income countries.

Likewise, Weise (2023) assesses the adjustments made to national fiscal frameworks during the economic crisis triggered by the COVID – 19 pandemic. While temporary suspensions of fiscal rules allowed governments to increase public spending to support critical emergency services, she notes that most national systems failed to undertake meaningful post – crisis fiscal consolidation, leaving them vulnerable to future fiscal slippages.

Taken together, these studies highlight the need to rethink the architecture of fiscal governance to ensure resilience, especially in the face of recurrent economic shocks and the evolving dynamics of public debt.

## 2. Global trends in public debt and fiscal deficit

Public debt, alongside fiscal deficits, outlines a global economic landscape that remains far from reassuring. According to recent estimates by the International Monetary Fund (IMF), by the end of 2024, global public debt was expected to surpass the symbolic threshold of 100 trillion U.S. dollars.

As illustrated in Table 1, the trajectory of public debt has followed a persistent upward trend since the 1970s, culminating in an unprecedented peak of 100% of global GDP in 2020. A critical turning point occurred on March 11, 2020, when the World Health Organization (WHO) officially declared COVID – 19 a global pandemic – a decision that precipitated a surge in public spending, particularly in the areas of healthcare and social protection.

Noteworthy in this context are the exceptionally high levels of public debt recorded in 2020 by Japan (258.30% of GDP) and the United States (132.60% of GDP), highlighting the scale of fiscal interventions undertaken to mitigate the economic and social consequences of the pandemic.

Table 1. Historically evolution of global public debt, 1950–2023 (% of GDP)

	1950s	1960s	1968	1970s	1980s	1986	1990s	2000s	2004	2010s	2019	2020	2021	2022	2023
<b>World</b>	56.2	39.8	36.4	33.1	48.1	55.1	62.4	66.8	69.9	80.9	84.7	100.0	95.2	91.8	93.8
<b>Advanced Economies</b>	64.0	44.3	39.5	36.2	51.5	58.6	67.1	75.8	77.1	104.5	105.1	123.7	117.4	112.3	112.0
Euro Area	32.6	24.8	25.1	27.8	47.2	52.3	67.1	69.7	69.5	90.4	85.6	98.6	95.9	91.5	89.3
Japan	13.1	10.1	11.8	23.4	64.3	74.1	89.1	166.6	169.5	227.5	236.4	258.3	253.9	257.1	251.6
United Kingdom	134.0	81.6	71.0	56.4	41.3	42.9	39.0	42.7	39.8	84.9	85.7	105.8	105.2	100.4	101.1
United States	69.7	54.4	48.7	43.9	53.4	60.1	68.2	65.7	67.4	104.5	108.5	132.6	125.4	120.4	123.0
<b>Emerging Market Economies</b>	15.4	18.6	20.7	21.3	35.3	39.9	41.0	40.5	43.7	44.1	55.4	65.5	64.5	64.7	69.0
China 1/							21.2	26.9	26.4	44.3	60.4	70.1	71.8	77.1	84.3
Others	15.4	18.6	20.7	21.3	38.2	45.4	45.7	44.2	48.4	43.7	51.7	61.4	57.9	54.5	57.1
<b>Low-Income Developing Countries</b>				15.5	36.0	42.9	64.6	45.7	51.0	34.7	42.4	48.0	47.5	47.9	50.3

Source: IMF, Global Debt Database, 2024

Japan’s public debt represents a distinctive case among advanced economies, marked not only by its unparalleled magnitude but also by a surprising degree of financial stability. With a debt-to-GDP ratio exceeding 250% (see Table 1), Japan holds the highest public debt level globally. Nevertheless, despite this significant burden, the country has not experienced a sovereign debt crisis. A key explanatory factor lies in the composition of its debt: the overwhelming majority of Japanese Government Bonds (JGBs) are held domestically – by institutions such as the Bank of Japan (BoJ), commercial banks, pension funds, and insurance companies – thereby limiting the country’s vulnerability to fluctuations in foreign capital flows.

Moreover, Japan’s public debt is almost entirely denominated in its national currency, the yen, affording the government greater flexibility in managing its liabilities. This capacity is further supported by an accommodative monetary stance: the BoJ has maintained ultra – low

interest rates, including periods of negative rates, and has engaged in yield curve control. These policies have significantly lowered borrowing costs, despite the country's substantial nominal debt. However, the interplay between fiscal and monetary authorities has raised concerns over fiscal dominance, especially given that the BoJ now holds over 40% of outstanding JGBs.

Chronic fiscal deficits have also been a structural feature of the Japanese economy since the 1990s, driven by efforts to combat prolonged economic stagnation, respond to natural disasters, and provide stimulus during global downturns – including the COVID-19 crisis. These fiscal pressures have been compounded by Japan's demographic trajectory: an aging population and a shrinking labour force are pushing social spending upward while simultaneously eroding the tax base. Although short-term risks to debt sustainability remain contained, long-term prospects are increasingly challenged by demographic constraints and the potential rise in borrowing costs.

The United States likewise holds one of the world's largest public debt stocks, with its debt-to-GDP ratio surpassing 130% in 2020 (see Table 1). Unlike Japan, a substantial share of U.S. government debt is held by a mix of both domestic and foreign investors. Foreign holdings – particularly by countries such as China and Japan – account for approximately 25% of outstanding Treasury securities. The privileged status of the U.S. dollar as the world's primary reserve currency, coupled with the depth and liquidity of U.S. Treasury markets, ensures continued strong demand for U.S. sovereign debt, underpinning its sustainability despite widening fiscal imbalances.

These imbalances stem from persistent mismatches between revenues and expenditures, exacerbated by successive rounds of tax cuts, increased defense spending, and extensive fiscal packages introduced in response to the 2008 financial crisis and the COVID-19 pandemic. While historically low interest rates have helped keep debt servicing costs manageable, the recent tightening of monetary policy by the Federal Reserve – aimed at containing inflationary pressures – has led to a notable increase in interest payments.

Although the U.S. continues to benefit from monetary sovereignty and privileged access to global capital markets, concerns persist regarding the long-term viability of its fiscal trajectory. Rising entitlement spending, demographic aging, and ongoing political gridlock over structural fiscal reforms pose mounting risks – especially if market sentiment deteriorates or interest rates trend upward.

Globally, the pandemic has triggered a structural transformation in the trajectory of public debt relative to GDP. According to the IMF (2025), the global public debt-to-GDP ratio surged from 83.8% in 2019 to 98.9% in 2020 – an unprecedented increase in the absence of a major military conflict (see Table 2 and Figure 1). This dramatic escalation was driven by large-scale fiscal interventions aimed at mitigating the economic disruptions caused by COVID-19. Although a slight decline was observed in 2021 and 2022, the upward trend resumed in 2023 and is projected to continue throughout the decade, with estimates suggesting the global ratio will approach 99.6% by 2030 (see Table 2). These developments signal a potential departure from pre-pandemic fiscal norms, raising concerns regarding long-term debt sustainability.

In the euro area, public debt dynamics closely mirror global trends, although post-pandemic fiscal consolidation has taken place in a more controlled manner. The public debt-to-GDP ratio increased by 12.9 percentage points, from 83.6% in 2019 to 96.5% in 2020. In the subsequent

years, a gradual decline in the debt burden was observed, driven by the implementation of relatively prudent fiscal measures and coordinated policy efforts at the European level.

Table 2. Post – pandemic evolution of global public debt (% of GDP)

	2019	2020	2021	2022	2023	2024	IMF Projections					
							2025	2026	2027	2028	2029	2030
World	83,8	98,9	94,0	89,9	91,3	92,3	95,1	96,7	97,5	98,2	98,9	99,6
Euro Area	83,6	96,5	93,9	89,5	87,4	87,7	88,7	89,7	90,4	91,1	91,9	92,9
SUA	108,2	132,0	124,7	118,8	119,0	120,8	122,5	123,7	124,9	125,9	127,0	128,2
Japan	236,4	258,4	253,7	248,3	240,0	236,7	234,9	233,7	232,1	231,2	231,1	231,7

Source: IMF, 2025

Nevertheless, euro zone’s projections by the International Monetary Fund suggest a slow but steady increase in public debt levels, with estimates indicating that the ratio will reach 92.9% of GDP by 2030. Although the euro area has managed to contain the acceleration of public debt dynamics, unlike other parts of the global economy, public debt levels are not expected to return to their pre-pandemic values, pointing to a possible increase in fiscal obligations.

As previously noted, the United States is experiencing a significantly sharper and more sustained increase in public debt. The modest fiscal consolidation in the years following the COVID-19 pandemic led to a 23.8 percentage point rise in the public debt-to-GDP ratio, from 108.2% in 2019 to 132.0% in 2020, approximately double the proportional increase recorded in the euro area. According to IMF estimates, this upward trajectory is expected to continue, with the debt ratio projected to reach 128.2% by 2030. This persistent dynamic reflects deep structural imbalances, such as rising public expenditures on healthcare and social security, as well as political constraints that hinder revenue mobilization. Given the size of the U.S. economy, its fiscal position carries significant implications for international financial markets and global macroeconomic stability.

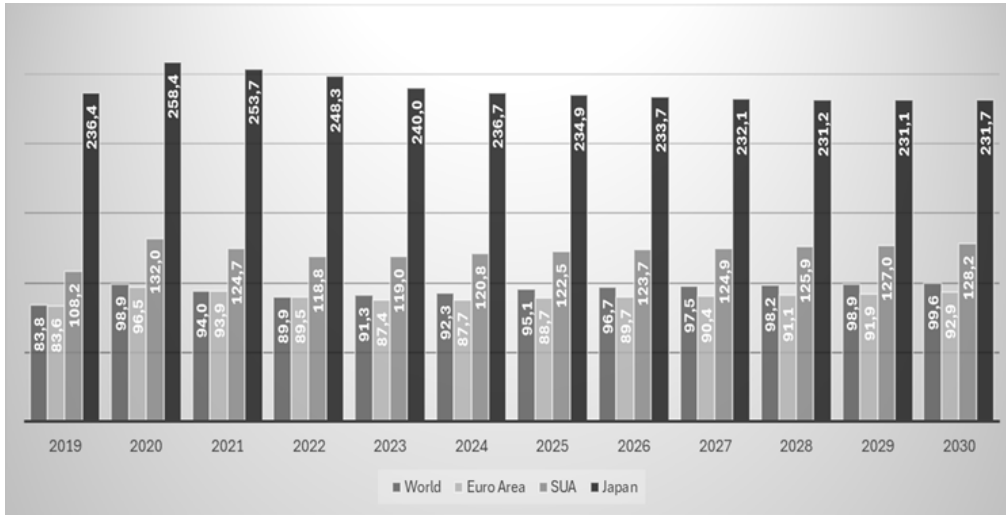
Japan, long known for its exceptionally high levels of public debt, experienced a 22-percentage point increase in its debt-to-GDP ratio, similar in magnitude to that of the United States, from 236.4% in 2019 to 258.4% in 2020. Unlike other advanced economies, however, Japan has entered a phase of gradual debt reduction, with projections indicating a decline to approximately 231.7% by 2030. Nonetheless, the scale of Japan’s public debt remains unparalleled globally.

Overall, these developments reflect a profound transformation of the international fiscal landscape. While the acute phase of the COVID-19 pandemic has passed, its effects continue to be felt in the form of elevated public debt levels and beyond. It is important to note that none of the major economies are projected to return to their pre-pandemic debt levels by 2030. In this context, the sustainability of public debt will remain a central concern for policymakers, particularly in an environment characterized by restrictive monetary policy and growing geopolitical uncertainty.

The fiscal landscape of global economies has been profoundly shaped by the COVID-19

crisis, as evidenced by the substantial deterioration in general government fiscal balances during and after the pandemic's onset. The data from Table 3 (IMF, 2025) shows a sharp and broad-based fiscal expansion in 2020, followed by gradual, though incomplete, adjustment efforts across regions.

Figure 1. Trends in Global Public Debt in the Post-Pandemic Period (% of GDP)



Source: IMF, 2025

At a global scale, the fiscal deficit increased considerably, rising from -3.5% of GDP in 2019 to -9.5% in 2020 (see Table 3). This sharp deterioration in the fiscal-budgetary context was largely driven by large-scale government interventions aimed at mitigating the economic repercussions of the COVID-19 public health emergency. Although efforts toward fiscal consolidation were observed shortly after the health crisis subsided, the high global deficit has persisted, fluctuating around -5.0% of GDP since 2024. Projections extending to 2030 point to a continued, albeit moderate, deficit ranging between -4.5% and -4.6% of GDP. These figures suggest that the fiscal imbalances that emerged during the pandemic have taken on a structural character, posing long-term challenges to the sustainability of public finances.

Table 3. Post – pandemic evolution of government fiscal balance (% of GDP)

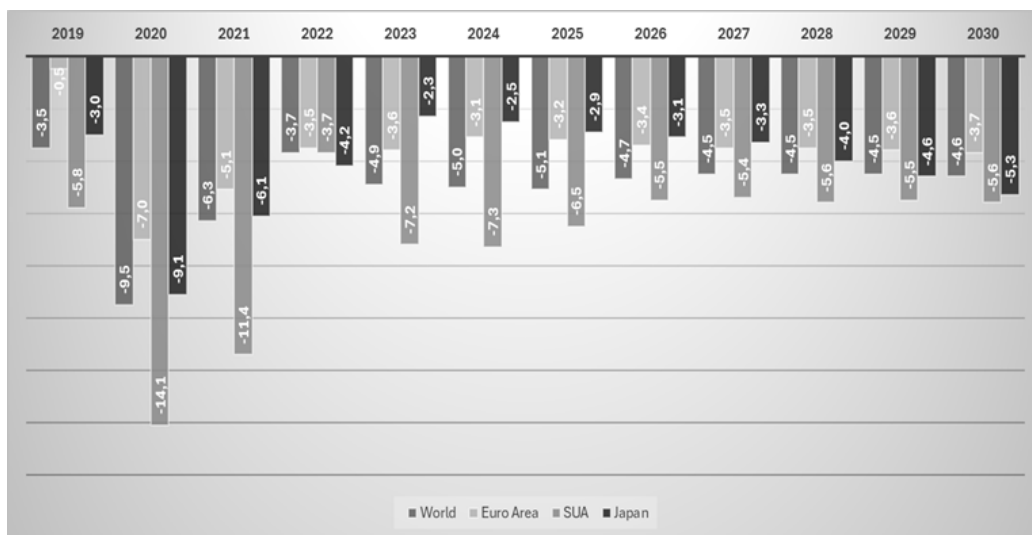
	2019	2020	2021	2022	2023	2024	IMF Projections					
							2025	2026	2027	2028	2029	2030
World	-3,5	-9,5	-6,3	-3,7	-4,9	-5,0	-5,1	-4,7	-4,5	-4,5	-4,5	-4,6
Euro Area	-0,5	-7,0	-5,1	-3,5	-3,6	-3,1	-3,2	-3,4	-3,5	-3,5	-3,6	-3,7
SUA	-5,8	-14,1	-11,4	-3,7	-7,2	-7,3	-6,5	-5,5	-5,4	-5,6	-5,5	-5,6
Japan	-3,0	-9,1	-6,1	-4,2	-2,3	-2,5	-2,9	-3,1	-3,3	-4,0	-4,6	-5,3

Source: IMF, 2025

As previously mentioned, within the Euro Area, the fiscal response to the pandemic was relatively moderate, with the budget deficit increasing from -0.5% of GDP in 2019 to -7.0% in 2020 (see Figure 2). Subsequently, a relatively steady path of fiscal consolidation was observed, with the deficit narrowing to -3.1% by 2024. Nevertheless, projections point to a gradual increase in the deficit, reaching -3.7% by 2030, likely driven by demographic pressures, the costs associated with the energy transition, and the fiscal burden of structural reforms undertaken by member states. While the Euro Area's fiscal position is expected to remain more sustainable than that of the global economy or the United States, a return to pre-crisis budgetary levels appears unlikely.

The United States is experiencing the most severe fiscal deterioration among the major economies (see Figure 2). The federal budget deficit surged from -5.8% of GDP in 2019 to a striking -14.1% in 2020 and has remained elevated in the following years, reaching -7.3% by 2024. Although a gradual decline to -5.6% is projected by 2030, the U.S. is expected to maintain one of the highest fiscal deficits among advanced economies throughout the decade. This trend reflects deeply rooted structural imbalances, particularly in relation to entitlement spending, the rigidity of tax policy, and the rising cost of servicing public debt. Such developments raise serious concerns about the long-term sustainability of U.S. public finances and the narrowing of available fiscal space.

Figure 2. Fiscal balance dynamics in the Post-Pandemic Period (% of GDP)



Source: IMF, 2025

In contrast, Japan – a country that has grappled for decades with exceptionally high levels of public debt – has adopted a relatively more moderate fiscal stance in the years following 2020. Starting from a budget deficit of -3.0% of GDP in 2019, the country recorded a deficit of

-9.1% of GDP in 2020. However, the pace of post-pandemic fiscal consolidation has been notably faster than that observed in other advanced economies, resulting in a reduction of the deficit to -2.3% of GDP by the 2023 fiscal year. Current IMF projections, however, suggest a reversal of this trend, with the deficit expected to widen again, reaching -5.3% by 2030. This development is most likely driven by mounting demographic pressures and increasing social expenditure, in a context where fiscal space for further adjustments is becoming increasingly constrained.

The data under review reveal a structural transformation of the global fiscal architecture in the post-pandemic period (see Figure 3). While short-term fiscal stimulus was essential in cushioning the economic shock caused by the COVID-19 pandemic, the continued prevalence of elevated deficits across most regions suggests that fiscal normalization will be both gradual and prolonged. The fiscal paths of the world's major economies, particularly those of the United States and Japan, will have a significant influence on global interest rates, capital flows, and overall macroeconomic stability. Against the backdrop of tightening monetary policy and rising public debt servicing costs, the need for credible medium-term fiscal frameworks that strike a balance between economic growth and financial sustainability is becoming increasingly urgent.

In the longer term, the trajectory of global fiscal policy will play a decisive role in shaping the international economic outlook. Reestablishing credible medium-term budgetary frameworks, alongside structural reforms aimed at fostering economic growth, will be crucial to mitigating systemic risks and ensuring lasting macroeconomic resilience.

### 3. Romania's fiscal performance and budgetary outlook

From a fiscal and budgetary perspective, Romania's economy is facing increasingly acute challenges within a deteriorating international environment, marked by heightened uncertainty and growing risks. The escalation of a trade conflict – initiated by the United States through the imposition of tariffs on all of its major trading partners – has triggered swift retaliatory measures from the affected countries, significantly worsening global economic prospects, particularly in financial markets. This already unfavourable international context is further aggravated by a major regional military conflict between the Russian Federation and Ukraine, which has been ongoing for more than three years.

Adding to these developments is the stagnation of disinflationary trends in many economies. Moreover, forecasts for national economic growth – which were already conservative – have undergone substantial downward revisions.

Considering the current global economic conditions, Romania's fiscal policy is under pressure to meet multiple, and at times conflicting, objectives. These include reducing public debt, which has reached a record high of 54.6% of GDP (see Table 4), while at the same time increasing public spending, particularly in defence. All of this must be accomplished in a context where the IMF projects GDP growth of only 1.6%, financing costs remain elevated, and macroeconomic risks continue to intensify.

Table 4. Trends in Romania’s public debt

	2018	2019	2020	2021	2022	2023	2024	EC Projections	
								2025	2026
<b>Public debt (Mil. RON)</b>	329.900	372.900	498.600	576.300	665.500	784.400	964.346	1.079.400	1.244.600
<b>Public Debt-to-GDP Ratio (%)</b>	34,38	34,96	46,61	48,34	47,90	48,89	54,60	56,08	59,70

Source: AMECO Database, Eurostat, MF, 2025

Over the past decade, Romania’s public debt has followed a markedly upward trajectory, driven both by persistent structural fiscal imbalances and by the macroeconomic shocks triggered by the COVID-19 pandemic, as well as the fiscal pressures of the post-pandemic period. According to projections by the European Commission, the nominal value of public debt is expected to rise from RON 329.9 billion in 2018 to over RON 1.24 trillion by 2026, amounting to an almost fourfold increase in less than ten years.

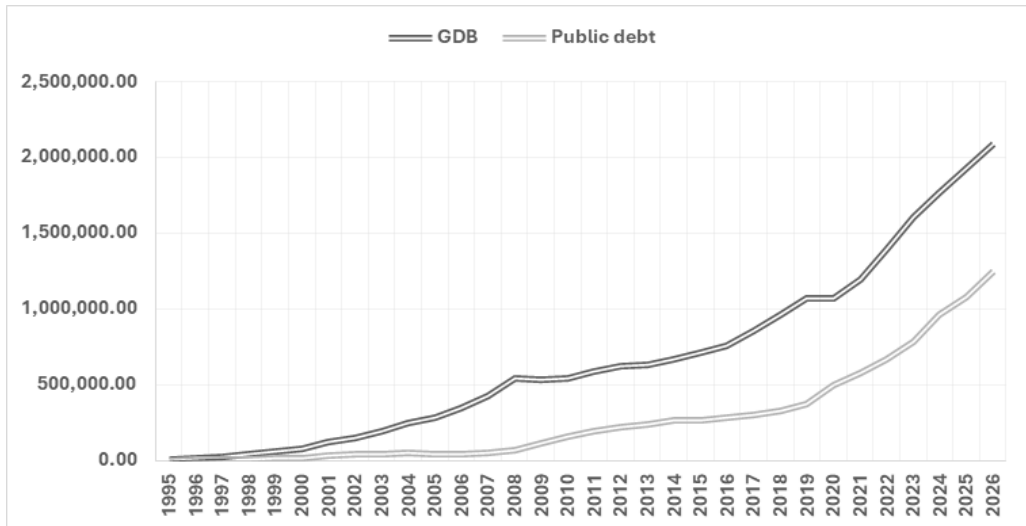
This dynamic is also reflected in the evolution of the public debt-to-GDP ratio, which has experienced a significant increase over the same period. From a relatively sustainable level of 34.4% of GDP in 2018, the ratio jumped to 46.6% in 2020, largely because of the expansionary fiscal policies implemented in response to the health crisis. Although the indicator appeared to stabilize around 48% during the 2021–2023 period, current forecasts point to a continued rise, reaching 59.7% of GDP by 2026.

This trend raises serious concerns about the long-term sustainability of Romania’s public finances, especially in a context marked by elevated interest rates, modest economic growth prospects, and heightened external vulnerabilities. Particularly noteworthy is the projected increase to 54.6% in 2024, which brings Romania dangerously close to the 60% threshold set by the Maastricht Treaty, signalling an increased exposure to fiscal risks in the event of adverse macroeconomic developments.

Moreover, the nominal increase in public debt, by nearly RON 700 billion between 2018 and 2026, highlights the structural nature of fiscal deficits and the ongoing accumulation of public liabilities. These pressures are further exacerbated by the growing need for public spending, particularly in the areas of defense, pensions, and healthcare, against the backdrop of a rigid and relatively inflexible revenue base.

As illustrated in Figure 3, Romania’s macroeconomic profile between 1995 and 2024 reveals a dual transformation, marked by the parallel growth of both GDP and public debt. While nominal GDP expanded more than 270-fold, from approximately RON 7.6 billion in 1995 to an estimated RON 2.08 trillion in 2026, this impressive economic growth has increasingly been accompanied, and at times even outpaced, by the accumulation of public debt.

Figure 3. Long-term dynamics of Romania's GDP and Public Debt (Mil. RON)



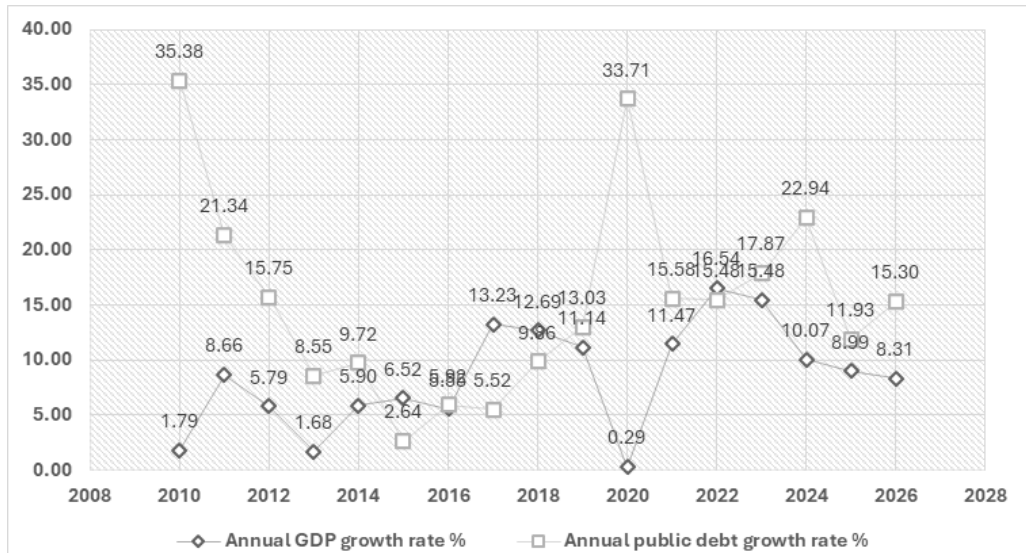
Source: AMECO Database, Eurostat, MF, 2025

In absolute terms, the public debt rises from a modest RON 500 million in 1995 to over RON 1.24 trillion projected for 2026, indicating a disproportionately sharp increase relative to GDP. Notably, while the public debt-to-GDP ratio remained contained in the early years, its sustained rise post – 2008 signals a structural decoupling between economic growth and fiscal prudence.

This divergence has become particularly evident in the period following 2020. Although Romania has continued to register consistent nominal GDP growth, the pace of public debt accumulation has intensified more sharply, pointing to an increasing reliance on borrowing not only for counter-cyclical measures but also for financing the structural components of the budget. This trend signals a weakening correlation between economic expansion and public debt stabilization, which may significantly constrain fiscal space in the event of future economic shocks.

Therefore, while Romania's GDP trajectory suggests a growing economy, the rising proportion of public debt within that growth highlights underlying vulnerabilities. The long-term sustainability of this dual path will ultimately depend on the capacity of fiscal policy to recalibrate debt dynamics in alignment with both the pace and the quality of economic output.

Figure 4. Comparative evolution of annual GDP and public debt growth (%)



Source: Author's calculations based on data from AMECO, Eurostat, MF, 2025

Between 2010 and 2026, Romania has experienced a period marked by considerable volatility in both GDP growth and the pace of public debt expansion (see Figure 4). Following modest economic growth in 2010 (+1.79%), the Romanian economy entered several cycles of accelerated expansion, with notable peaks recorded in 2011 (+8.66%), 2017 (+13.23%), and especially in 2022 (+16.54%). In parallel, the dynamics of public debt showed significant fluctuations, with two major increases: +35.38% of GDP in 2010 and +33.71% of GDP in 2020.

The year 2020, marked by the outbreak of the COVID-19 pandemic, represented a critical turning point. GDP growth contracted sharply, reaching just +0.29%, reflecting the negative effects of lockdown measures, global supply chain disruptions, and heightened economic uncertainty. At the same time, the public debt growth rate rose to +33.71% of GDP, most likely as a result of counter-cyclical fiscal policies, emergency spending, and increased budget allocations to the healthcare sector. This combination illustrates the immediate fiscal pressure experienced by the Romanian government in the face of an unprecedented global health crisis.

In the post-pandemic period (2021-2024), the data point to a strong economic recovery, with annual GDP growth rates exceeding 10% in several years, +11.47% in 2021, +16.54% in 2022, and +15.48% in 2023. This rebound can be attributed to the resurgence in consumer demand, the resumption of economic activity, and the application of supportive macroeconomic policies. However, this GDP expansion was accompanied by a continued increase in public debt, which remained in the double-digit range, suggesting that the recovery was, at least in part, financed through borrowing.

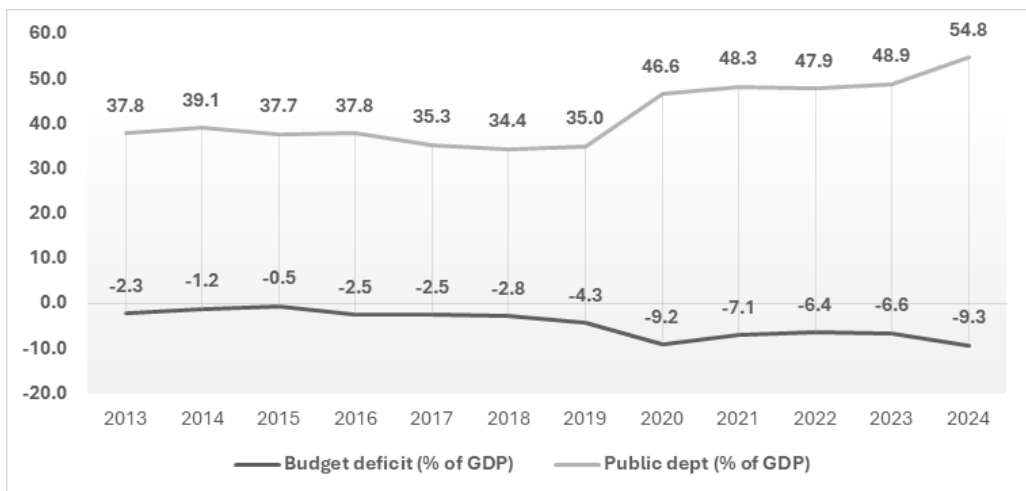
It is important to note that the data do not reveal a consistent inverse relationship between GDP growth and public debt accumulation. For instance, periods of strong economic expansion, such as the 2017–2019 interval, often coincided with moderate or even high levels of

debt accumulation. Similarly, in the post-COVID-19 recovery phase, both indicators increased in parallel, raising concerns about a potential structural dependence on public borrowing, even outside crisis contexts.

For the years 2025 and 2026, economic growth is expected to moderate, with projected rates of +8.99% and +8.31%, respectively, while public debt is expected to continue rising at elevated rates of +11.93% and +15.30%. This divergence may reflect the waning of post-crisis momentum, combined with the persistence of underlying fiscal imbalances. It also highlights the importance of transitioning from emergency fiscal measures to sustainable, long-term public finance policies.

Recent fiscal developments in Romania point not only to a significant increase in public debt, but also to a budget deficit that has reached a highly unsustainable level of 9.4% of GDP (see Figure 5).

Figure 5. Dynamics of Romania's budget deficit and public debt (% of GDP)



Source: Eurostat, 2025

The crisis triggered by the COVID-19 pandemic marked a major turning point in Romania's fiscal trajectory, signalling the beginning of a structural shift in both the budget deficit and public debt accumulation. In 2020, the general government budget deficit sharply increased to -9.2% of GDP, reflecting an unprecedented fiscal imbalance in Romania's recent history outside the context of military conflict. This pronounced deterioration was primarily the result of expansive counter-cyclical fiscal measures implemented to mitigate the economic impact of the pandemic, compounded by substantial revenue losses due to the contraction in economic activity.

Romania's public debt responded immediately to this fiscal shock, rising from 35.0% of GDP in 2019 to 46.6% in 2020, an increase of more than 11 percentage points in a single year. Subsequent developments suggest that post-pandemic fiscal adjustment has remained incomplete and insufficiently rooted in a structural consolidation framework. Although the deficit narrowed slightly in 2021 and 2022 (-7.1% and -6.4% of GDP, respectively), it remained well above the 3% reference threshold established by the Maastricht Treaty, indicating a prolonged deviation

from fiscal discipline.

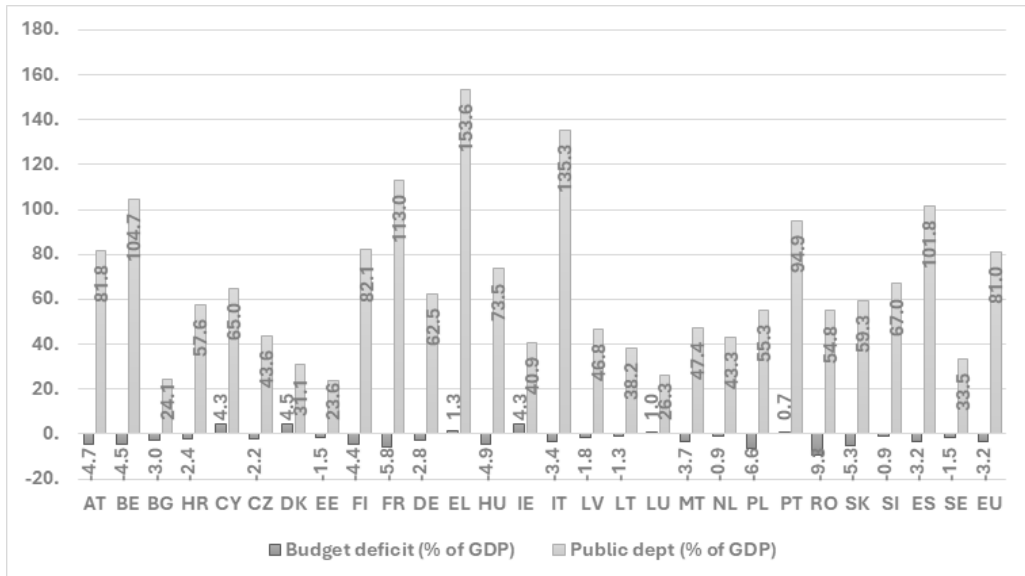
In parallel, public debt continued to grow, albeit at a slower pace, reaching 48.9% of GDP in 2023 and an estimated 54.8% in 2024. This persistent upward trend reflects the cumulative effect of elevated primary deficits, rising financing costs, and possibly weak nominal GDP growth. The fact that public debt has continued to accumulate even during years of relative deficit reduction points to increasing structural rigidity within Romania’s fiscal framework.

Furthermore, the projected renewed widening of the budget deficit in 2024, to -9.3% of GDP, suggests a reversal of earlier consolidation efforts and raises serious concerns about the medium-term sustainability of public debt. In an environment shaped by tighter global financial conditions and rising risk premia, this fiscal deterioration may increase Romania’s exposure to refinancing risks and external shocks.

In essence, the pandemic-induced fiscal expansion appears to have evolved into a post-crisis fiscal drift, where temporary emergency measures have gradually transformed into persistent structural imbalances. The current challenge lies not only in reducing the deficit, but also in restoring fiscal policy credibility and reanchoring public debt onto a sustainable trajectory through consolidation strategies compatible with long-term economic growth.

At the European Union level, fiscal outlooks for 2024 reveal significant heterogeneity in both budget deficit levels and the public debt-to-GDP ratio, reflecting differences in national policy responses, the structural characteristics of individual economies, and institutional capacity (see Figure 6). At EU level, the average budget deficit is estimated at -3.2% of GDP, while the average public debt ratio stands at 81.0% of GDP. Although many member states remain within the parameters of the Stability and Growth Pact, several continue to diverge significantly from its benchmarks.

Figure 6. Comparative overview of fiscal deficits and public debt in the European Union, 2024 (% of GDP)



Source: Eurostat, 2025

As can easily be observed, Romania represents a notable case among European Union member states, reporting the highest budget deficit at  $-9.3\%$  of GDP, nearly three times higher than the EU average and substantially exceeding the  $3\%$  threshold established by the Maastricht Treaty on nominal convergence. This considerable deficit not only reflects the persistence of expansionary fiscal policies but also highlights significant structural imbalances, indicating ongoing challenges related to revenue collection and the control of public expenditures. Romania's deficit surpasses even those of countries traditionally confronted with substantial fiscal imbalances, such as France ( $-5.8\%$ ), Poland ( $-6.6\%$ ), and Slovakia ( $-5.3\%$ ).

Regarding public debt, Romania exhibits a relatively moderate level, at  $54.8\%$  of GDP, below the EU average and considerably lower than highly indebted economies such as Greece ( $153.6\%$ ), Italy ( $135.3\%$ ), and France ( $113.0\%$ ). Nevertheless, this comparatively moderate debt level should not conceal the risks associated with its rapid accumulation, particularly given the context of elevated financing costs and adverse demographic trends.

The decoupling between Romania's public debt level and the magnitude of its deficit suggests that, although previous prudence in debt management provides a certain buffer, the sustainability of the current fiscal policy remains questionable without structural consolidation measures. Moreover, Romania's fiscal stance sharply contrasts with several member states that anticipate fiscal surpluses in 2024, such as Denmark ( $4.5\%$ ), Ireland ( $4.3\%$ ), and Cyprus ( $4.3\%$ ), further accentuating fiscal divergences within the Union.

Romania's case underscores the urgent need to recalibrate fiscal policy, aligning it both with internal macroeconomic fundamentals and European fiscal governance standards. Failure to undertake such recalibration risks undermining investor confidence, jeopardizing medium-term fiscal sustainability, and adversely affecting Romania's credibility within the European Union.

### 3. Conclusions

In conclusion, Romania's fiscal trajectory over the past decade underscores profound structural challenges and persistent macroeconomic vulnerabilities exacerbated by recent global shocks, notably the COVID-19 pandemic and ongoing geopolitical tensions. The sharp deterioration of fiscal balances and rapid accumulation of public debt observed since 2020 illustrate a critical juncture in Romanian public finance management, highlighting underlying weaknesses in revenue mobilization and expenditure control.

Navigating in EU fiscal governance imperatives, Romania's fiscal stance, marked by the EU's highest budget deficit at  $-9.3\%$  of GDP in 2024, positions it as a conspicuous outlier within the European Union. The activation of the Excessive Deficit Procedure and the impending reinstatement of the Stability and Growth Pact underscore the imperative for Romania to recalibrate its fiscal policies in alignment with EU norms. Failure to enact robust structural consolidation risks undermining investor confidence and eroding Romania's credibility within the Union.

In global contextualization, the global public debt surge to  $98.9\%$  of GDP in 2020 and the persistence of fiscal deficits delineate a broader post-pandemic fiscal paradigm, within which

Romania's experience is both reflective and distinctive. While mirroring global trends of heightened borrowing, Romania's rapid debt accumulation, relative to its economic capacity, contrasts with the fiscal resilience of economies like Japan and the United States, which benefit from greater monetary sovereignty and market depth. This comparative perspective accentuates the urgency of bespoke fiscal strategies tailored to Romania's unique constraints.

The analysis reveals that, although Romania's public debt remains comparatively moderate relative to heavily indebted EU economies, the alarming pace of debt accumulation combined with persistently high fiscal deficits significantly amplifies medium-term sustainability risks. The projected escalation of the budget deficit to levels substantially above the Maastricht Treaty threshold reflects not merely temporary counter-cyclical fiscal measures, but rather entrenched structural imbalances demanding immediate policy attention.

Romania's fiscal position also stands in stark contrast to the broader EU context, where several member states have managed to achieve fiscal surpluses and debt stabilization through prudent management and structural reforms. This divergence underscores the urgent need for Romania to realign its fiscal policies to European governance frameworks and domestic macro-economic fundamentals, emphasizing credible consolidation strategies that balance growth imperatives with fiscal discipline.

The path forward necessitates comprehensive fiscal reforms aimed at enhancing revenue efficiency, rationalizing public expenditures, and reinforcing institutional capacities to maintain debt sustainability. Without decisive and timely action, Romania risks undermining investor confidence, exacerbating vulnerabilities to external shocks, and impairing its credibility within the European Union framework.

Ultimately, addressing these fiscal challenges requires not only targeted policy measures but also robust political commitment and effective governance structures capable of navigating Romania toward a stable, sustainable, and resilient fiscal future.

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## VTdentalab

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**Abstract:** In today's world, competition between businesses is not only big and demanding, but also challenging. Continuous advances in many industries affect the corporate environment and strategies of a company. These factors affect each size of business in proportionate proportions. This report will focus on a small- local company located in Greece-Athens. The field of the business is dental, an industry that caters to all types of consumers and aims at good hygiene and aesthetics of the mouth, and by extension, the face of human being. The external factors of the country through Porter's analysis and the internal environment through Vrio's analysis and others, have yielded important results for the development of the company during the 30 years it has been in the market.

In this study, it will analyze a small local dental company in Greece-Athens that was started by two good friends and fellow students at university. The company has been in the market for 30 years and an analysis will be made on the strategic decisions they made along with their consequences. The evolution of technology, the challenges, the economic crises of the country and the investment risks they took or not took played a role in the development of their clientele and the partnerships with suppliers both domestically and abroad. It has been proven that through true belief in themselves, authenticity, boldness and the conscious value that knowledge is power, they have been able through a combination of all the above to gain added value in the market with a strong competitive advantage. The company's vision since its inception has been and continues to be innovation in tooth preparation materials and technologies developed so that the result is excellent and authentic. Combined with the value of knowledge and their personality, they have managed to stand out in the market.

Key words: **Competitive advantage, Strategic decisions, Technological evolution, Economic crises, Innovation, Knowledge value.**

JEL: L26, M10, L25, O32.

## 1. Introduction

The company VTdentalab started its operation in 1994 in the area of Ano Glyfada in Attica. The company is a general partnership, as it consists of two natural persons partners named Dimitrios Varvatakos and Nikolaos Tzanidakis. The partners are fully and equally liable for the company's obligations. The both two main persons studied at the Department of Dental Technology of the Technical University of Athens and they both happened to get to know each other before the admission to the university. During their studied they found that they liked the subject of the school and after seeing that they fit together as characters and generally shared the same values and philosophy in terms of their development, they decided to set their selves the goal of establishing their own company. Graduating from the school, they first worked in other companies, gaining experience and two years later they established their own business. Of course, there were several difficulties at the beginning, mainly due to but with mutual understanding and mutual help they managed to overcome it. At they realized quite early and specifically from 2008 that digital technology would have a significant impact on the nature of our profession, essentially changing the existing techniques (Tzanidakis & Varvatakos, 2022).

The year 2009 marked the company's entry into the digital sector. The evolution of technology and applications brought a completely different perspective to the operation of the laboratory. In this year, the systematic study on the adaptation of digital machines for the imprinting of teeth began.

Another important year was in 2015, as the managers, through their contacts, received an offer for cooperation abroad. A partner dentist went abroad and the cooperation with him continued. Added Mr. Varvatakos: "As we had developed it here with Greek dentists, we applied it with dentists abroad." (Tzanidakis & Varvatakos, 2022). They used it immediately because they felt they could fully meet the high demands as they had the necessary knowledge, expertise, capital and digital equipment. On this point Mr. Tzanidakis stressed: "We were able to cope and we saw that the same production product would offer us a higher profit." (Tzanidakis & Varvatakos, 2022)

In 2022-2023 they are in a state of bloom. They have taken on a lot of work but there is a phenomenon of rejecting incoming new work. This is because they cannot cope due to workload and lack of organization and planning. The results of the current situation create a pressurized and stressful working environment and the rejection of several new tasks results in a reduction in profit.

From the beginning of the business their main mission is to have a satisfactory customer base in which they can manage their workload and make the best possible result in terms of minimizing the delivery time. With good planning and time management they want to reach the highest level of quality in relation to the time required. (Tzanidakis & Varvatakos, 2022) Because every patient and oral case is different and distinctive, very individualized work is required. The above goals/objectives have not been met to the extent they want but they are at a very good level of work delivery with good value for money and delivery time.

## 2. Literature review

It is a fact that in recent years there has been a strong movement towards integration of intraoral scanners in dental practices. The company Milling machine\*, as a pioneer in development of intraoral scanners, as it was the first company to create the early intraoral scanner in 1985, inspired VTdentalab to invest in this technology and to integrate it into the company.

\*Pseudonym of the partner company because of the protection of rights in VT dentalab's partnerships

This resulted in a change in the production process and raw materials, as new materials were used (zirconium) and the production method from traditional casting (metal base) to the CAD CAM process, (Computer-Aided Design/ Computer-Aided Manufacturing). After 2009 they made business trips to international exhibitions of dental products in order to do market research and attend seminars for the acquisition of expertise.

CAD/CAM technology was first introduced in 1985 and has been an innovation in the field of dental technology. The name is an acronym from Computer- Aided Design / Computer- Aided Manufacturing, meaning computer aided design and production of the product. (Alexiou, 2015-2016) This technique is used to optimize the design, impression analysis and excellent manufacturing of the final product. This technique is used to manufacture facets, bridges, crowns, inserts etc. from zirconia wafer.

The CAD CAM system consists of:

- the digital scanning (scanning) stage for data collection Clarifying Mr. Varvatakos said: "It can be done either in the laboratory with a scanning machine or by the dentist with an intraoral scanner." (Tzanidakis & Varvatakos, 2022)

- The CAD stage for planning the restoration  
and

- the CAM stage for cutting and producing the final product.

After 2009 they made business trips to international exhibitions of dental and dental products in order to do market research and attend seminars for the acquisition of expertise.

Through these trips they met and worked with Milling Machine\* who offered them the following deal.

\*Pseudonym of the partner company because of the protection of rights in VT dentalab's partnerships.

By purchasing a cutting machine at a better price, they became a Pilot Lab of Dentsply in Greece. This means that those other Greek dental technicians who were buying the corresponding machine, contact the company (VT dentalab) and they offer them the necessary training (consulting).

The revenue from the work that went to dentists abroad was higher than that of domestic dentists. This is because the standard of living in each country is different, so the profit was correspondingly higher as the cost of production remains the same, but the price of the final product is more expensive.

One of the main advantages of digital imaging is the direct and immediate access to the improved communication between dentist and laboratory when taking a digital impression. The

dentist can check the quality of the impression, the recording of the impression, the quality of the impression and the occlusion and at the same time the control can be done by us. Any, if any, defects can be corrected on the spot, without wasting any time.

### 3. Research methodology

A PESTLE analysis studies the key external factors (Political, Economic, Sociological, Technological, Legal and Environmental) that influence each organization. It can be used in a range of different scenarios, and can guide people professionals and senior managers in strategic decision making.

#### Political-Legal Factors

Although the political situation of a country directly affects the business sector, companies such as VTdentalab are not so much a concern in the political arena. However, like all professionals, they are bound by a code of conduct, operate with respect for their partners and customers as well as the environment and in accordance with the legal framework that has been established.

Some of the laws concerning the dental technician profession are:

LAW 1666/1986, Government Gazette 200/A/15-12-1986 THE PRESIDENT OF THE HELLENIC REPUBLIC We issue the following law passed by Parliament:

#### Article 1 Exercise of the profession of dental technician

1. The profession of dental technician shall be exercised after obtaining a license from the Minister of Health, Welfare and Social Insurance.

2. A license to practice the profession of dental technician is granted to Greeks or to expatriates of foreign countries settled in Greece who speak and write the Greek language, provided that they have either a degree of a Technological Educational Institution (T.E.I.) or an equivalent degree from a school in Greece or abroad, specializing as a dental technician, (b) either a technical vocational high school diploma or an equivalent degree from a school in Greece or abroad, specializing as a dental technician. (Nomothesia, 2023)

### 4. Results and discussions

#### Economic Factors

Throughout the economic fluctuations in Greece, VT dentalab do not seem to have been negatively affected during the recession and crisis periods that affected Greek businesses. According to Mr. Tzanidakis, the coronavirus pandemic has favored their business. People during these periods went in the process of spending money on cosmetic purposes both at home and abroad (Belgium, Switzerland) from which their partners sent them extra business. Furthermore, the phenomenon of structural unemployment prevailing in this business sector also played an important role in the growth of the company's business. In particular, they had a large workload, but were short of employees, i.e., despite the fact that there is an increased demand, the staff with the necessary training and expertise for the profession of dental technician are few, so that they often fail to perform such a large volume of work (Eurostat, 2020).

### **Sociological Factors**

The mentality of Greek people as well as the latest fashion trends regarding “smiles” and the aesthetics of teeth, e.g., porcelain veneers, contribute to the success of this profession. For many people, their physical appearance and in particular their faces and smiles have a direct impact on their career. Especially in professions such as modeling, journalism, but now also youtuber is imperative since most of their work is done in front of cameras. It is also important to mention that in Greece the lack of prevention, information and awareness since childhood about proper dental hygiene and the necessity of regular cleanings has led to the premature decay of teeth, resulting in an increase in the number of cases. In addition, due to social media alongside beauty standards that implicitly impose a standardized flawless image, more and more young people are becoming insecure about their smile and thus resorting to solutions such as veneers.

### **Technological Factors**

The use of equipment brought about by technology such as computers and more specifically the CAD/CAM process greatly facilitated the profession as all processes were now easier, faster and more accurate. In the following years, however, the use of 3d dental printers is coming slowly but intensively. Along with the use of AI can completely change the form of the profession let alone make it disappear. (Alexiou, 2015-2016)

Porter’s five forces analysis is a strategic instrument that we use to evaluate the competitive position of an industry and the attractiveness of an option of entering or staying within the industry. Undefined as:

#### **Threat of New Entry**

Although there are several dental laboratories in our country, the creation of new laboratories is considered difficult. The amount of capital required is quite high for the facility and the expensive equipment needed. Combined with the above, the differentiation of some dental laboratories from others due to the acquisition of more technologically advanced equipment facilitates the selection decision on the part of the companies supplying the materials. There is a relationship of trust between suppliers and businessmen and, as Mr. Tzanidakis pointed out, the reputation that the dental technician has due to brand name, experience or consistency in payments plays a very important role. Based on the above, suppliers choose the customers they know and work with and not those who first enter the industry. (Tzanidakis & Varvatakos, 2022). In addition, there is a significant shortage of assistants and professionals in the sector, which is largely due to the lack of proper presentation of the profession to high school children through vocational guidance.

#### **Bargaining Supplier Power**

In this business sector, the number of companies supplying dental materials is quite large and they all know each other. The degree of product differentiation does not affect VT dentalab so much as the individual case is important so that the best material can be selected according to the situation. In such a case even though they have an agreement in place with one company for a

particular material they can enter into a new agreement in parallel with another company if that company does not have a material required for a patient, even if they have to confront the suppliers. (Kalaitzidou, 2012-2013). Despite this, they can work together again. In the future, the suppliers can go through the process of vertical integration forward, i.e. in addition to the part of the dental materials they produce and distribute, they can also produce sockets, dentures, etc., thus becoming competitors of the dental laboratories and further increasing their bargaining power.

#### Bargaining Buyer Power

In this profession, whether we refer to the direct buyers who are the dentists or the indirect buyers who are the patients, it is a fact that they have a special negotiating power as prices are not standard based on the materials and the case. There is a constant pressure for a better price and even though the products supplied by dentists are usually in the dimensions and measures that the dentist himself is asking for to increase his profit he presses for a friendly price. (Tzanidakis & Varvatakos, 2022). In addition, direct buyers are particularly price sensitive which means that when they use the product and process and place it on the patient, they have a large profit margin over and above the profit they gain through lobbying dental technicians. In addition, dentists can themselves produce dental materials (vertical forward integration) so they often have no need for dental technicians. Of course, it is important to mention that because most dental materials cannot be obtained from another dental technician, their bargaining power may be reduced.

#### Threat of Substitution

In terms of substitutes beyond a cheaper solution to the material there is nothing that can replace dental technicians at present. However, in the future it is thought that much of the profession will depend on artificial intelligence. More specifically, there will be software that, with the right algorithms, will be able to suggest the best solution based on the patient's problem and suggest what the result will look like after application in the patient's mouth and produce the product directly and accurately. As Mr. Tzanidakis told us, this particular job tends to be modified and the teeth are homogenized. In addition, through digitalization, doctors will be able to detect caries, periodontitis and other tooth diseases in X-rays by studying the human neural networks. The evolution of technology will also help in the evolution of toothbrushes into smart ones that will let you know if you are brushing your teeth properly and the flourishing of regenerative dentistry whereby teeth will be able to heal themselves with proper fillings (Alexiou, 2015-2016). All of this will go a long way in preventing and quickly and perhaps painlessly treating teeth. This will mean that a large proportion of people will turn to this area, resulting in a blow to the dental industry and a rapid increase in competition. However, all of this will be accompanied by quite high costs that may not be able to be met.

#### Rivalry among existing Competitors

When the growth rate of the market is high and more specifically when there is an increased demand for materials from dentists, Mr. Tzanidakis informed us that it is very likely that they will give some work to a competitor due to the already high workload. This means that in such periods it is very likely that competitors are also "allies" and companies such as VT dentalab do not need additional buyers as they are already thriving. (Tzanidakis & Varvatakos, 2022) However, he stressed that, although this is sometimes the case, competition between firms remains high.

This, confirmed by the lack of differentiation in the products (with exceptions) offered by dental practices. In such businesses there are high barriers to exit. The cost of investing in another sector is high and, of course, the difficulty of transferring technological equipment and machinery. Therefore, many businesses remain in the industry until they go bankrupt, continuing to operate and occupying even a small share of the competition.

Internal environment analysis reveals the strengths and weaknesses of a company or organization; thus, it gives the management essential information for decision-making as well as for strategy development.

In this profession, the division of labor is necessary because it is both personalized and specialized. Nevertheless, the craftsman has all the technical knowledge to respond to all the work that will arise and this is important because he can help at any time in whatever work is required that may not be of his own department but of the one that is needed.

Currently the company's workforce consists of three (3) assistants and two (2) people for the distribution of work to the associate dentists in addition to the founders. A total of seven (7) people are employed within the laboratory. (Tzanidakis & Varvatakos, 2022)

The smooth cooperation of the employees of the laboratory is essential for its proper functioning, as one stage of production is directly linked to the others. This is practically proven by the long-term operation of the company until today with the will, loyalty, high level of knowledge with continuous training and knowledge of the subject.

The structure of the workshop consists of four departments.

- Department of mound making
- Department of fixed prosthetics (sockets and bridges)
- Department of mobile prosthetics (dentures)

and from 2009 onwards, the following section was added

- Digital system department (CAD CAM)

At the end is the distribution department that sends the work to the dental office.

In 30 years of presence in the market, the company has exploited and developed tangible and intangible resources that have led the company to have a strong professional standing. (Alexiou, 2015-2016)

The main material resources of the company are the machinery, which is state-of-the-art and we can add the company's own activity space that ensures zero operating costs (rent).

The intangible resources consist of the continuous training and unbreakable knowledge acquired over the years. Thus, they have strong experience and can offer an excellent and quality product. In this way they have built through word of mouth a remarkable name in the market, increasing the company's profits while increasing their clientele. In addition to a good reputation among customers, they developed a credible position among their suppliers as their payments are prompt. Suppliers recognize that the company is consistent in its commitments and have built such a strong relationship of trust that they send new products to them to test them and evaluate them accordingly if they need improvement, or are satisfactory in processing. Thus, the laboratory also functions as a research department but has the advantage of first contact and knowledge of new products.

In conclusion, the resources of this company contributed significantly to its value to customers and suppliers. A strong two-way relationship has been established.

Having for customers dentists, who in their own words have for customers a target group that concerns people aged 20 to 100, men, women. Some recent requirements for collaboration with dentist are having the necessary equipment that has digital dental imprinting. Today it cooperates with thirty (30) dentists based in Greece, of which 63% are located in Attica (Glyfada, Athens center, Piraeus, Nea Smyrni, Kifissia) and 23% are located in the rest of Greece (Thessaloniki, Veroia, Kalymnos). Also included are four (4) partners abroad who constitute 14% of the clientele, of which three are in Switzerland and one in Belgium.

The company has overcome many invitations and has managed to gain a satisfactory market share from customers and suppliers during its time in the market. It is noteworthy to mention the first investment they made in the digital part because it has played a significant role in their development both in the production process and in the brand name they have acquired. Through quality, fast and authentic work with innovative materials WoM (word of mouth) was the way they became known in the business.

Participation in seminars, either as a speaker or as a listener and the exchange of views and knowledge is invaluable, since the "information" can come from anywhere, as long as it is of course willing and open to receive it. It concludes that it is one of the main reasons why contributes to the development of the company, not only in dentistry, but as people in general.

Digital technology and more generally the evolution of techniques and materials has improved the working conditions compared to earlier years. The digitization of the industry includes: delivery and automation technologies, e-commerce platforms, customer tracking systems, and production process monitoring systems. As organizations face various challenges in motivating their workforce, the shift toward non-financial motivational strategies is gaining increasing attention (Matei & Veith, 2023). Many stages of the work have been simplified or become more controlled. Also, with the use of the internet there is quick and immediate access to information, learning (through webinars, or web links and training videos). Furthermore, social and economic development has been influenced by many changes, particularly due to investments (Voica, et al., 2021). The truth is that all this improvement in manufacturing conditions and times in some work has also led to reverse pressure on the delivery time of the work. Indeed, in some cases there has been a significant improvement in construction time and this is to the benefit all (dental technician - dentist - patient), but it should not be a panacea and be taken for granted in all cases. It should not be forgotten that elsewhere more, elsewhere less, the participation of the classical technique of each dental technician is necessary, which requires a considerable amount of time to deliver a proper work.

In discussion there should be no opposition between proportional and digital technology (Alexiou, 2015-2016). Digital technology comes as a continuation of analogue technology to offer greater ease and more controlled handling of the various techniques, but also based on knowledge that must be available from analogue technology. In addition, digital technology shows the possibility of using new materials which are more aesthetic and biocompatible and improve the quality of the work it produces. does the company believe that the goal should be, where the

two techniques can be combined, taking advantage of the advantages offered by of each mixture. Digitalization is, in fact, an integral part of all our lives, bringing both advantages and disadvantages (Veith, et al., 2021).

## 5. Conclusions

In general, throughout the period they have been on the market they have made good strategies choices. When it first introduced digitalization in the dentistry sector, they were the first in Greece to implement it and this gave them a competitive advantage. However, there are some suggestions that can be made to the business to continue to improve their upward path.

In this industry you can stand out in the market if you keep improving your knowledge and the new technology that is being developed. Investing in the ongoing education and training for your employees is essential in order to keep them well-informed about recent developments and methodologies in dental technology in combination with patient service soft skills, which include, but not limited to, communication and service. It is good to emphasize that it will be very beneficial for the company to be up to date with the new features, but it must be passed on correctly and ethically to the employees as well. This develops the quality of your services, and also, you can prove your dedication to perfection.

Another important part that the company tries hard to maintain is the personalized communication with the dentist and the patient throughout the duration of the dental restoration. Customer Relationship Management (CRM) systems should improve to be used to administer customer relationship, lead tracking, and personalized client interactions. This feature ensures that your channel is always active and you can follow-up with clients even after the event.

Another possibility for improvement is optimization of workflow processes with the view to removing any inefficiencies and reducing the number of bottlenecks. By introducing standard procedures, defining clear guidelines, and utilizing technological tools like practice management software to automate processes, procedures will become more efficient.

One last improvement that can be made for better management in the company is to improve the inventory management systems to decrease the waste, cost savings, and quicker delivery of materials and supplies on time. Utilize inventory tracking systems with the reorder points established to keep the required stock. A more specific improvement they can make is electrification through solar panels for less cost. The machines run 24 hours a day so the electricity consumption is high. Greece has the sun all year round therefore the use of sunlight to reduce the cost of electricity can benefit from the use of solar panels.

Digital technology offers many opportunities that should be exploited by the companies. It is a fact that intraoral scanners will be an essential part of the equipment of a and perhaps quite directly, so technical companies, like VTdentalab will need to be prepared to be able to be able to handle this new reality and the conditions that are created.

In conclusion, it should not demonize digital technology, but instead integrate it into our everyday working life, making the most of the benefits it offers in combination with the knowledge and techniques of analogue technology and thus be prepared the new reality that has been created in the field of dental technology field.

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# Competitive Advantage Based on the Blue Ocean Strategy: A Guide To Cam Caldwell & Verl Anderson

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**Abstract:** A guide to a better understanding of Cam Caldwell & Verl Anderson's famous novel "Blue Ocean Strategies and Disruptive Innovation". I am going to be talking about various chapters that clarify why this strategy works and how from Caldwell & Anderson's point of view, both who were deeply inspired by W. Chan Kim and Renee Mauborgne's novel, Blue Ocean Strategy. In this study I will be explaining and go further into detail about what a blue ocean strategy is, how it works, what it means, where it should be used, how did become so relevant to today's business, how small corporations' benefits from it, the dissimilarities between a red and a blue one, why the blue ocean strategy is important in competitive advantage etc.

Therefore, after characterizing competitive advantage, I will be composing about the main purpose of this paper as well as clarifying Cam Caldwell & Verl Anderson "Competitive Advantage; Strategies, Management and Performance" which was published back in 2017 by Nova Science Publishers as well as using W. Chan Kim and Renee Mauborgne's "Blue Ocean Strategy" published in 2004 and two study cases for a better understanding.

In these two study cases I will be discussing how Cirque Du Soleil and the famous wine brand Yellow Tail succeeded using the Blue Ocean Strategy and their impact on how efficient this strategy really is.

**Key words:** Blue Ocean Strategy, Competitive Advantage, Disruptive Innovation, Competition.

JEL: L10, M10, O31, L25.

## 1. Introduction

The purpose of this paper is to provide a comprehensive understanding of the Blue Ocean Strategy and the concept of Disruptive Innovation, focusing particularly on the interpretations and contributions of Cam Caldwell and Verl Anderson. Drawing on the foundational work of W. Chan Kim and Renée Mauborgne, the paper seeks to analyze how organizations can move away from competitive, saturated markets—referred to as “red oceans”—and create uncontested market space, or “blue oceans.” The analysis further explores the role of competitive advantage in enabling such strategic moves, particularly through the lens of value innovation.

To enhance understanding of these concepts, the paper reviews the theoretical foundations and applies them to two well-known case studies: Cirque du Soleil and Yellow Tail.

These examples illustrate how companies can successfully implement Blue Ocean strategies to disrupt traditional market logic and achieve differentiation and cost leadership simultaneously. By synthesizing theoretical perspectives with practical illustrations, the paper aims to assess the effectiveness and long-term value of these strategies for businesses seeking sustainable growth.

## 2. Literature review

Enterprises hold an edge when they advertise a product or a service that meets the consumer’s demands at a reduced price, while highlighting distinctive features in a novel manner. The more important original content an establishment has, the easier it is to have an advantage in competition. Market demand for product diversification creates additional costs, requiring a balance to be struck between reducing production costs and market pressures (Voica, et al., 2021).

The prevalence of a business’ asset is habitually the premise for its capacity to construct a competitive advantage. These assets are called; VRIO resources, which shows it has value, rarity, imitability and organization. They are not easy to steal; hence, it would be costly, and it would be exceptionally troublesome to do so.

Cam Caldwell & Verl Anderson expect there are three core elements for a competitive advantage to occur:

- Creating a market position that is valuable and unique on its own way,
- Comprehending the trade-offs linked to choices of what to abstain from,
- Creating tailored strategies for businesses by orchestrating activities to optimally achieve the selected objectives (Caldwell & Anderson, 2017).

In this study, Cam Caldwell & Verl Anderson specifically concentrate on generalities of Blue Ocean Strategies & Disruptive Innovation, Caldwell & Anderson describe these two terms as development of novel market niches that allow organizations to generate demand from customers who were previously unaddressed.

Cam Caldwell defines the term ‘Blue Ocean Thinking’, as it refers to an undiscovered or underdeveloped market that is neither actively sought after by competitors nor actively used to buy goods or services, by offering a service or a good that did not previously exist, unexplored markets offer opportunities for growth and profitability.

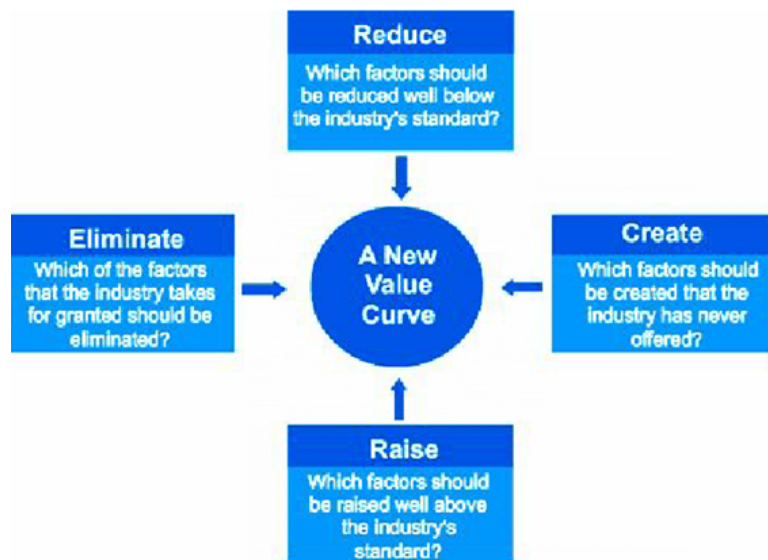
This strategy is predicated on the idea that, in simple terms, a new market arena, low cost and distinction are achievable. He also briefly mentions that this particular term comes from an analogy with characteristics of the big, deep and vast ocean (Caldwell & Anderson, 2017).

In this chapter, Cam Caldwell and Verl Anderson, also compare the dissimilarities among the Red and the Blue Ocean Strategies. When using a Red Ocean Strategy, Cam Caldwell refers to it as a metaphor, he describes it as a “bloodied water” meaning that the market space becomes too competitive, thus the high earning profits decrease.

On the contrary The Blue Ocean Strategy, it has clear boundaries, the main goal is to outperform the competitors by either differentiation or low cost but never at the same time. Conversely, when using a Blue Ocean Strategy, Cam Caldwell claims that blue oceans have no boundaries, and it is considered a high risk move because of the unknown. However, as a counter argument he also points out that countless successful businesses had also begun with the Blue Ocean Strategy (Caldwell & Anderson, 2017).

As written in Caldwell and Anderson’s book; Kim & Mauborgne has divided the Blue Ocean Strategy into four sections.

Figure 1: Kim & Mauborgne Blue Ocean Strategy



Source: Caldwell, C., Anderson, V. “Competitive Advantage: Strategies, Management and Performance”

In the image below Cam Caldwell & Verl Anderson has analyzed the dissimilarities between the Red Ocean and Blue Ocean Strategies.

Cam Caldwell also points out; In a market where firms want to make demands from clients and use new chances, The Blue Ocean Strategy looks to switch out the way firms look for an edge with making new worth as the main goal. He explains that several new methods, from focused contrast to big changes, can be used to do a Blue Ocean Strategy (Caldwell & Anderson, 2017).

Figure 2: Red Ocean Versus Blue Ocean Strategy

Red ocean strategy	Blue ocean strategy
Compete in existing market space	Create uncontested market space
Beat the competition	Make the competition irrelevant
Exploit existing demand	Create and capture new demand
Make the value/cost trade-off	Break the value/cost trade-off
Align the whole system of a company's activities with its strategic choice of differentiation or low cost	Align the whole system of a company's activities in pursuit of differentiation and low cost

Source: *The Harvard Business Review*, HBR chart.

Disruptive Innovation competes in an already crowded market by coming up with innovation which is always improving, disrupting the red ocean space of the existing markets and eventually obsoleting existing competitors, although it has a blue ocean objective of making a new market place. In fact, discrimination, pay gaps, equal opportunities between men and women, and the feminist movement are some of the controversial issues addressed in the business world (Matei & Veith, 2023). These two approaches also stress how important it is to bring new customers in by creatively fulfilling the needs of people who have not tried a product or service before. They also understand that prospective buyers are trying to achieve certain objectives and how firms satisfying new clients' demands can help them achieve those objects (Caldwell & Anderson, 2017).

An Austrian economist, Joseph Alois Schumpeter, who taught at Harvard University from 1935 to 1950. More than ninety years ago Schumpeter, who introduced the concept of capitalism as a series of continuous bursts of innovation and 'creative destruction' is attributed with disruptive innovations. Segueing into another topic in his book on capitalism in 1965, Schumpeter also mentions that entrepreneurs often give rise to economic cycles which primarily arise due to changes in the level of technology (Śledzik, 2013).

Many organizations have taken important steps toward digitizing their activities over the past few years (Veith, et al., 2021). Cam Caldwell also mentions how disruptive innovation is a term that is often misused to refer to any breakthrough that advances the goals of an individual or organization. He stated that this term is frequently used by consultants and researchers to characterize any scenario in which established businesses experience setbacks after an industry upheaval. However, such use is far too broad. More accurately, at a price point those new customers could not previously pay, a disruptive innovation gives consumers access to a good or service that was previously available only to consumers, Christensen, Raynor, and McDonald defined disruptive innovation in a 2015 Harvard Business Review article.

"Disruption involves challenger companies challenging established incumbents by catering to overlooked customers segments with superior functionality at a reduced cost, gaining traction in the process (Christensen, et al., 2015).

### 3. Research methodology

This research adopts a qualitative, theoretical approach based on secondary data analysis. The paper primarily utilizes conceptual literature and case-based evidence from published books, academic articles, and business analyses to investigate the principles and applications of the Blue Ocean Strategy and Disruptive Innovation.

The main sources include Caldwell and Anderson's 2017 publication *Competitive Advantage: Strategies, Management and Performance*, as well as *Blue Ocean Strategy* by Kim and Mauborgne (2004). Theoretical concepts were critically examined and interpreted, and their practical implications were illustrated using two documented cases: Cirque du Soleil and Yellow Tail. These cases were selected due to their strong relevance to the core ideas of value innovation and market disruption.

By combining academic theory with applied business examples, the methodology provides a holistic understanding of how firms can create new market space and redefine competitive dynamics. No primary data collection was conducted; the analysis is based entirely on document review and literature synthesis.

### 4. Results and discussions

An article on Harvard Business Review published in 2004 by W. Chan Kim and Renee Mauborgne wrote about a classical Blue Ocean Strategy; Cirque Du Soleil company.

They specify how back within the day around the 80's, circuses were generally ruled by two companies; Ringling Bros and Barnum & Bailey. It had three vital perspectives; clowns, animal acts and the three ring circuses. Moreover, the competition was fiercely intense. As a result of this, prices rose but buyer value did not change significantly as circuses moved to ensure more popular performance and the application of more animals that are hard to come by.

Other replacements introduced included video games, mostly PlayStations and TV thus gradually replacing the circuses. Nonetheless, severe dislike and concern for continued animal incarceration and brutal conditioning created growing public anger.

Guy Laliberte, a former busker who established Cirque Du Soleil decided to leave the red sea of circuses and start a new venture in theater entertainment. This is what Cirque Du Soleil did when they shifted into the blue one.

Blue Ocean Strategy by Cirque Du Soleil which set apart from traditional circuses acted out different functional sources;

- Cirque du Soleil Company altered the show's format, which reduced the high expenses that are typical of the business.
- They eliminated the animal performances and the related housing, care, transportation etc.
- They phased out the tree-ring circus format in favor of a single stage, reducing the need for staff. This change in the show's concept enabled Cirque du Soleil to reduce expenses that were traditionally linked to the industry.
- They had masked the identities of the performers, preventing them from obtaining power

and initiating a bidding war with the competitors, also showcased the clowns and the lion tamers.

- Cirque du Soleil heightened customer demand and enriched their experience through and innovative performance.

- Incorporating music, lighting, ambiance and artwork enhanced the production's value, elevating its sophistication to match that top-tier Broadway shows. This allowed theater tickets to command premium pricing (Kim, 2017).

This research field analyzes the competitive environment of the wine industry.

Concurring to a book composed by five analysts; W. Chan Kim, Renee Mauborgne, Jason Hunter, Brian Marks and Wayne-Mortensen, called "Crafting Winning Strategies in a Mature Market: The US Wine Industry in 2001.", published in 2001; originally on July 1, 2009 by INSEAD.

In 2001, Kim & Mauborgne centered on how overflowing and profoundly competitive the wine businesses were. They express themselves about how the wine producers have methodically competed along the same components over the final few centuries.

Nonetheless, in the July of 2001, Casella Winery, based in Australia propelled 'Yellow Tail'. They began as a little and obscure company, being unknown is one of the foremost known traits for utilizing the Blue Ocean Strategy, they had anticipated less than 25,000 demands that year. However, they have made it nine times greater, around 225,000.

By the end of 2005, Yellow Tail's total sales were around 25 million. They have soon developed into being the leading venders of wine, red wine in particular, 750 ml. They have outperformed Californian, Italian and French wine businesses.

After a further analyzing process, they decided to respond that their success played a huge part in how they did not compete with premium based wines, indeed in spite of the fact that the quality was not the same, the competition wasn't as solid. Furthermore, individuals bought it since it tasted great, and they did not overthink it.

To add another reason aside from its taste, they made social drinks for everybody; Beer, cocktail drinks, and non-alcoholic refreshments. Their spectrum for newfound customers was more extensive since they had numerous diverse assortments to offer, which made it unique and set a difference between them and their rivals (Pravin, 2021).

## 5. Conclusions

To sum it all up, my research paper analyzes competitive advantage's impact on the Blue Ocean Strategy and Disruptive Innovation.

Competitive advantage happens when a company has the upper hand when producing a product or a service. They have the upper hand because other firms find it hard to copy. In most cases it cannot be imitated, which results in giving them an advantage.

The Blue Ocean Strategy as described by Cam Caldwell and Verl Anderson, following Kim & Mauborgne's ideas; Blue oceans are described as big and vast as the ocean, the main cause is that in order to use the Blue Ocean Strategies a company must not in the existence, it denoted as the unknown. While they describe the Red Ocean Strategy which is utterly inverse of the Blue Ocean Strategy, it is a much more competitive environment, as Cam Caldwell explains the

competition is too strong. He also points out that despite The Red Ocean Strategy being a common practice among companies, The Blue Ocean strategy should be used more, hence it could make a company become much more successful than it ever was.

Disruptive Innovation is an innovation that just makes affordable products and services to obsolete market places. They continuously produce in a profitable way; however, they ignore the needs and wants of their customers, making the competition higher.

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# The role of strategic grouping in achieving competitive success

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**Abstract:** This paper analyzes the critical function of strategic grouping in determining competitive dynamics within industries. Strategic grouping, which refers to clusters of firms in an industry that share similar qualities and tactics, provides insights into competitive challenges and opportunities. The notion grew out of Michael S. Hunt's PhD in 1972 and has become a basic paradigm in strategic management. According to Michael Porter's concept, strategic groupings are formed when organizations utilize comparable tactics across important dimensions. Various criteria, including product or service offering, distribution channels, market segmentation, technology, brand image, customer segments, and cost structure, are used to delineate strategic groups. Typical forms of strategic groups include industry-based, market-based, product-based, resource-based, and geographic-based groups. Strategic group mapping emerges as an effective tool for visualizing industry competitiveness and identifying market positioning and competitive advantages. The procedure entails identifying important rivals, key competitive traits, and charting firms on a map using relevant factors. Case studies of strategic group mapping in the automotive and European airline sectors demonstrate the need of implementation of strategic grouping ideas. The findings provide insight into the complex competition landscape and suggest possibilities for market positioning and strategic decision-making. Finally, strategic group mapping helps firms navigate competitive marketplaces, establish competitive advantages, and discover new prospects for development and differentiation.

Key words: **Strategic group, competition, mapping, automobiles, airlines.**

JEL: L10, M10, L22, L13.

## 1. Introduction

It is believed that a company's ability to compete is crucial to its success. To effectively acquire a competitive advantage, a company is motivated by competition to find creative ways to divert customers away from its competitors' products and services and toward its own. Feedback also plays an important role, as it leads to psychological security and a sense of belonging to the group, with the aim of improving the organization's performance (Matei & Veith, 2023). In this regard, managers must set clear objectives to eliminate the uncertainty that can arise within work teams (Veith, et al., 2021). Various analytical frameworks, such as strategic grouping, make it easier to understand the rivalry. By using strategic grouping, businesses can categorize and understand the diverse array of competitors present in a certain market. This study explores the purpose that strategic groups play in making competitive dynamics and how they impact market positioning, strategic choices, and the overall direction of companies in a certain sector.

In the context of strategic management, a group of businesses within an industry that share comparable traits and approaches is referred to as a strategic group. These businesses may experience comparable opportunities and competitive pressures since they are thought to be more alike than they are to other businesses in the same industry. By examining a company's competitive strategies, product offerings, and market positioning, strategic groups can be discovered. Furthermore, cultural differences between the world's developed economies are the main causes leading to percentage differences in long-term development levels. A company's own strategic decision-making can be informed by its understanding of the dynamics of a strategic group and can aid in the identification of prospective competitors (CEOPEDIA MANAGEMENT, 2023). To put it simpler, a strategic group consists of those firms that are competing and that have comparable approaches and market positioning.

## 2. Literature review

In strategic management, the idea of strategic groups originated with a finding made by Michael S. Hunt (1972). Hunt used the phrase "strategic group" in 1972 to characterize the "symmetry of operations" he saw in the appliance sector. Hunt discovered that while many of the organizations in his study had similar strategies, there were also notable disparities between their characteristics and approaches. The industry's seemingly feasible strategic options were better understood by grouping the enterprises (REGGER & HUFF, 1993).

"In competitive markets, firms need to develop competitive positioning strategies carefully relative to their competitors in order to achieve enduring competitive success." (PORTER, 1980) Despite not having a formal universal definition, Porter has provided the definition of strategic groups that is most frequently used: A cluster of businesses in a certain industry implementing the same perspective throughout the strategic plan.

Using the perspectives of experts and discussing the many kinds of strategic grouping, alongside a deeper look into the standards that can be applied to separate them, the process of strategic grouping is exemplified along the two samples of strategic group mapping of some of Europe's automobile manufacturers and airlines.

Ever since S. Hunt came first with the term in a 1972 report for his PhD thesis, in which he indicates that businesses in this kind of group can be compared to one another in terms of categories such as cost plans and systems of control, more and more specialists have taken his path, creating new criteria as the business world evolves too. Some of the strategic factors that are used to divide strategic groups are:

- **Product or Service Offering.** This examines the different categories of goods and services a business provides, including basic and specialized offerings.
- **Distribution channels.** It examines a company's methods of product or service distribution, including direct sales, e-commerce, and retail locations.
- **Market segmentation.** This dimension examines a company's product or service's positioning in relation to other market segments, such as luxury, budget, or mid-range.
- **Technology.** The degree of technology applied throughout the manufacturing process or in the final goods or services.
- **Brand image/reputation.** This criterion refers to the company's and the brand's image in the marketplace.
- **Customer segments.** This dimension examines the customer segments, such consumers or enterprises, that a business target.
- **Cost structure.** It focuses on the structure of the company's costs, including how high or low they are. (MCGEE, 2014)

Although there are many methods to categorize strategic groups, some typical forms are as follows:

- **Strategic groups that are industry-based.** Groups of businesses in the same sector with similar traits and practices (for example, a chain of fast-food restaurants with drive-thru layouts).
- **Strategic groups that are market-based.** Companies that serve similar industries or clientele (for example, a collection of outdoor gear-focused retail establishments).
- **Strategic groups that are product-based.** Producing companies of the same services or products (for example, a group of automobile manufacturers who all create luxury or premium vehicles).
- **Strategic groups that are resource-based.** Businesses that have similar competencies and resources (for example, a cluster of airlines that are globally recognized).
- **Strategic groups that are geographic-based.** Businesses working in the same region (for example, some technological businesses operating in Silicon Valley). (MCGEE, 2014)

### 3. Research methodology

In order to successfully understand the dynamics of industry competitiveness, especially to recognize opportunities and threats, specialists have created different techniques utilized in strategic management. Changes occurring within organizations can be influenced by a multitude of factors, which must be organized and analyzed in order to reach viable conclusions (Voica, et al., 2021). One of those techniques is strategic group mapping, which represents an industry rival's data that shares similar traits and market share with your own company is incorporated

into a strategic group map. A map like this could include target market information, retailers or platforms, company product or service characteristics, pricing, size, and features. According to Porter, strategic group mapping is the most effective method for revealing the market positioning of industry participants.

Generally, choosing businesses with similar strategic attributes that are in the identical local geographic coverage region and having similar external environment characteristics and range of services or products offerings is the best way to give the proper comparison in a strategic group map (MASTERCLASS, 2022). To put it simpler, it is better to make sure that the companies in question share many strategic similarities.

As already mentioned, Porter claimed that this method is the most effective method for revealing the market positioning of industry participants because it can be advantageous for a business. Illustrating the competitive market can easily be denoted from a strategic group map. A business can create better strategies by starting with an understanding of the competition: through its strengths and weaknesses. Another outcome is the disclosure of a competitive advantage, which is how a company differentiates itself from the competition by comparing its strategic template to other business models through such an analysis. And in the end, to discover unexplored opportunities by finding areas where a company can diversify its offerings after creating a strategic group map to examine the competition in the respective sector (MASTERCLASS, 2022).

#### **4. Results and discussions**

In conclusion, the strategic group map method is a method that brings benefits and opportunities to a business, such as having a better understanding of the competitive market, discovering a competitive advantage that the business holds, and of course new opportunities.

Based on the following steps, a strategic group map can be easily done:

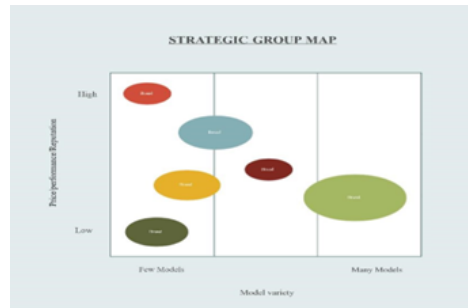
1. Identify main competitors: Even though it should be logical to identify the competitors, it should be mentioned (HARAPPA, 2021). Analyzing and having a better understanding of their goals, future strategies, offerings (products and services), weaknesses and strengths, and market impact. Focusing on the top direct competitors would be the most adequate method.

2. Identify key competitive characteristics: Similar competitive features, like price strategies and product offerings, are shared by numerous businesses. Finding the primary competitive characteristics that logically set companies apart in a competitive set is the first stage in creating a strategic group map (MBA KNOWLEDGE BASE, 2021). These can be product quality and features, distribution channels, brand image, company size, price, cost position and even number of market segments served (CREATELY, 2022).

3. Plot the companies on the map: Give each organization a place on the map (Fig. 1) and indicate the two variables of the axes. The organizations that are closest will be included in the same strategic group. Market share will determine a group's size.

4. Interpret the map: Analyzing the map will aid in strategy improvement and help locate other market positions that can offer a competitive advantage.

Figure 1: Strategic Group Map Structure.



Source: Creately Templates

As seen in Fig. 1, we were able to successfully create a template for a strategic group map by following the instructions. The brands stand in for the rivals that need to be recognised. Then, in order to categorise the competition, we add the criteria—such as price, reputation, and model variety—that we discovered with the aid of the second phase to the graph. With the help of the information acquired, we are able to calculate the competitors' standing in the market for the first category of criteria, which goes from low to high, and the second category of criteria, which goes from few models to many models. Lastly, by highlighting the advantages and disadvantages of the participating brands, we may gain a deeper comprehension of the state of competition within the sector.

Figure 2: Manufacturers Strategic Group Map



Source: 12Manage

Some of the largest automakers in the world are represented in the above figure. The luxury strategic group is represented by the manufacturers in the top-left, who make vehicles that fetch thousands of euros at auction. Adjacent to them lies the premium strategic group, which offers a wider range of products than the preceding group (Mercedes-Benz, for instance, also manufactures trucks), and with most of their vehicle's prices starting at an average between €30,000-€40,000. (CARGURUS, 2024). Hyundai and Kia are at the bottom of that mass-market strategy

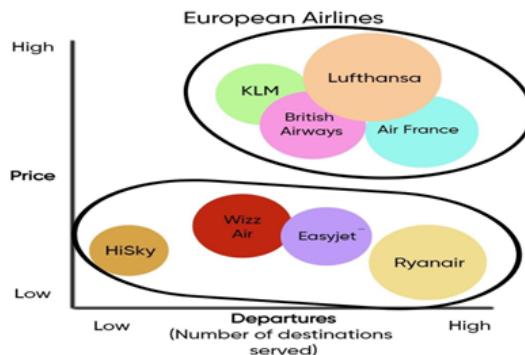
category; they make automobiles that try to be available to as many people as possible, not just the rich or those with needs or hobbies. The last set of producers is the full-line strategic group, meaning they create a much wider range of products.

The map shows how strong the competition is in the market. We can notice the presence of direct competition (for example, Hyundai and Kia), and the cross-group rivalry between the luxury and premium groups, which is noticeable because of the closeness on the map between the two groups. (SHAFAT, n.d.) In the blank spots on the map, we can find strategic business opportunities.

### Strategic Group Mapping of European Airlines

For this example (Fig. 3), I have decided to speak about European airlines and have chosen some of the most popular and some of the top airlines in Europe. And a newer airline such as HiSky. They represent most of the competition in Europe’s aviation industry.

Figure 3: European Airlines Strategic Group Map



Source: Authors’ own research.

The airlines at the top of the graph, which are British Airways, Air France, Lufthansa and KLM Royal Dutch Airlines (KLM), comprise a strategic group of full-service airlines based on their service offering: generally, this kind of an airline includes checked baggage, in-flight entertainment, beverages, food, blankets and more things in order to offer people’s comfort; all included in the price of the ticket. (AIRLINE RATINGS, 2024) They also sell their services in the same price range, from a few hundred euros up to around a few thousand euros, depending on the class and destination. This group also provides more destinations, being able to fly all over the world. For example, Lufthansa has 211 destinations (FLIGHTCONNECTIONS, n.d.), Air France 230 (AIRFRANCE, n.d.), British Airways 206 (WIKIPEDIA, n.d.) and KLM over 170 (WIKIPEDIA, n.d.).

The second strategic group of competitors is comprised of low-cost carriers: Ryanair, Wizz Air, easyJet and HiSky. Compared to full-service airlines, low-cost carriers are the opposite, by providing passengers with lower ticket pricing, but making up the difference by charging extra for things such as the ones mentioned for full-service carriers in the full price. Prices can start from a couple of euros, up to a few hundred, depending on the destination.

When it comes to destinations, the low-cost carrier group provides a substantial number of destinations as well (Ryanair with 229 (FLIGHTCONNECTIONS, n.d.), Wizz Air with 148 (KIWI, 2024) and easyJet with 155 (EASYJET, 2024)), excluding HiSky, which has only 17 destinations. The only difference is that most of the destinations of this group are mostly in Europe, with some exceptions in the northern part of Africa and the western part of Asia, compared to the full-service group that provides destinations all over the world.

The two groups are also divided based on similar product range, quality and performance levels and strategies. The closer to each other the strategic groupings are on the map, the more intense the cross-group competitive rivalry. But we can say, that, for example, Wizz Air would be more concerned with British Airways since their prices went up, not necessarily close to British Airways', but this may have an impact on, for example, Romanian customers' decision. Customers might want the full-service experience because it might end up costing almost the same as the low-cost price with all its extras.

## 5. Conclusions

Strategic group analysis is a critical technique for analyzing competitive dynamics and influencing strategic decisions within sectors. This paper illustrates the practical use of strategic group mapping by reviewing literature and using case studies from the automobile manufacturing and European airline sectors. From luxury to low-cost airlines, strategic group maps reveal the competitive environment, showing cross-group rivalry and strategic gaps. The findings from these analyses have important consequences for market positioning, competitive advantage, and strategic decision making.

Looking ahead, new research projects might look into a variety of routes to improve our understanding of strategic groupings and their ramifications (IMPACT, 2019). Empirical studies might look at the success of strategic group mapping in various sectors and geographic regions, providing information about its usefulness and limits in different circumstances. Furthermore, research might analyze the impact of digital transformation and disruptive technologies in changing strategic groupings and competitive dynamics, thereby providing insights into how businesses can use innovation to obtain a competitive advantage.

Finally, strategic group analysis provides a significant tool for firms to negotiate complicated competitive environments, uncover strategic opportunities, and develop successful long-term growth plans. By continuing to investigate and develop our knowledge of strategic groups, scholars and practitioners alike may help to advance strategic management theory and improve strategic decision-making procedures in today's changing business landscape.

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