

Varazdin Development and Entrepreneurship Agency and
Hue University of Economics, Vietnam

In cooperation with:

Faculty of Management University of Warsaw, Poland

Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat, Morocco

Ecole Nationale de Commerce et de Gestion de Tanger - Abdelmalek Essaadi University, Morocco

GOVCOPP - University of Aveiro, Portugal

Medimurje University of Applied Sciences in Cakovec, Croatia



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SUSTAINABILITY AND RESILIENCE IN WORLD OF CONFLICT

Editors:

Tran Thi Bich Ngoc, Dijana Vukovic, Josko Lozic



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ANALYZING A SUSTAINABLE ENTERPRISE IN AN EMERGING ECONOMY: BLACK CACAU AND THE BEAN-TO-BAR PHILOSOPHY

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ABSTRACT

This study examines sustainable entrepreneurship through the case of Black Cacau, a Brazilian bean-to-bar enterprise that integrates agroforestry, direct trade, and Afro-Brazilian cultural empowerment. While much of the literature on sustainable entrepreneurship draws on large firms in advanced economies, notably Patagonia, little is known about how small ventures operationalize sustainability under conditions of institutional voids and resource scarcity. Adapting the Patagonia-based framework of Allal-Chérif et al. (2023), we analyze Black Cacau across three dimensions: radical strategic disruption, supplier collaboration, and institutional activism, using qualitative data from interviews, field observations, and document analysis. Findings show the reconfiguration of cacao value chain, trust-based partnerships with smallholder farmers, and activism rooted in Afro-Brazilian identity. The study contributes by extending sustainable entrepreneurship frameworks to culturally and structurally diverse contexts, highlighting how grassroots firms achieve socio-environmental transformation despite resource constraints. The case underscores both the promise and limitations of scaling sustainable entrepreneurship in emerging markets.

Keywords: *Sustainable Entrepreneurship, Social Value Creation, Sustainable Development Goals, Bean to Bar, Sustainability, Cocoa Production*

1. INTRODUCTION

Despite remarkable global economic development and significant improvements in human well-being over the past century, contemporary societies in both developed and emerging economies continue to face increasing economic, social, and environmental challenges. While poverty rates, child mortality, and illiteracy have declined dramatically, persistent problems such as resource depletion, biodiversity loss, freshwater scarcity, and climate change now threaten the survival and stability of the modern world (Chistov et al., 2021). These environmental crises contribute to widening wealth disparities, gender inequalities, and unequal access to opportunities and resources, which fuel instability and social unrest. In this scenario, traditional sustainability approaches remain insufficient to resolve today's pressing challenges, therefore the need for innovative solutions, such as sustainable entrepreneurship, has become increasingly urgent, offering pathways to reconcile economic progress with societal well-being and ecological preservation (Alberico et al., 2022; Chistov et al., 2021). Sustainable entrepreneurship (SE) is defined as an approach in which businesses pursue practices that simultaneously create economic, social, and environmental value (Schaltegger & Wagner, 2011). Unlike conventional entrepreneurship, which prioritizes economic outcomes, SE positions entrepreneurial activity as a potential driver of systemic change (Vuorio et al., 2018).

Scholars have emphasized that business viability ultimately depends on healthy ecosystems and just societies (Chouinard et al., 2011), and more recently highlight the increasing convergence between entrepreneurship and activism as ventures take on causes related to social value creation (Monteverde et al., 2024). This is most relevant in emerging economies where entrepreneurial initiatives connect various stakeholders in the search of solutions in the context of institutional voids, inefficient government actions and economic instability. Although academic interest in SE has grown rapidly, especially following the COVID-19 crisis (Allal-Chérif et al., 2023; Vuorio et al., 2018), important gaps remain. Much of the literature remains abstract and global in scope, with insufficient exploration of how SE unfolds in specific cultural and economic contexts (Alberico et al., 2022). Most research has concentrated on high-profile firms in advanced economies, notably Patagonia, which has been widely recognized as a benchmark of sustainable business practices. While these studies provide valuable insights, it remains unclear how such models translate into emerging economies, where entrepreneurs face various challenges. There is little understanding of how small, grassroots ventures adapt and operationalize sustainability in practice, and how their micro-level strategies might connect to macro-level sustainability transitions. This study addresses these gaps by adapting the work of Allal-Chérif et al. (2023), based on the Patagonia company, into a framework to analyze the case of Black Cacau, a pioneering Brazilian enterprise in the cacao value chain. Specifically, we ask:

RQ1: How does Black Cacau operationalize sustainability practices in an emerging economy context, and how do these practices compare to the Patagonia model of sustainable entrepreneurship?

RQ2: What insights from this comparison contribute to understanding the scalability and transferability of sustainable entrepreneurship across contexts?

We examine these questions through the case of Black Cacau, a pioneering Brazilian enterprise within the cacao value chain that adopts the bean-to-bar philosophy as a model for socio-ecological transformation. Drawing on qualitative field data and interviews, we analyze how Black Cacau integrates agroforestry, direct trade, and zero-deforestation practices while fostering empowerment among Afro-Brazilian communities and smallholder farmers. In doing so, the case illustrates how SE can move beyond abstract ideals and operate as a practical response to the challenges presented by an emerging economy. Theoretically, this study contributes to SE literature by extending a model developed around a leading global firm (Patagonia) to an emerging economy context, thereby assessing its applicability and boundaries. Empirically, it enriches research on sustainable supply chains, agroecological entrepreneurship, and community-driven innovation by providing insights from Brazil, a critical but underexplored cacao-producing country that accounts for approximately 5% of global output (Burgon et al., 2024). Practically, the study demonstrates how mission-driven enterprises can reconfigure structurally unequal value chains, offering pathways for more equitable and sustainable models of production. By situating Black Cacau alongside Patagonia, the paper highlights how sustainable entrepreneurship can emerge not only from corporate activism in advanced economies but also from grassroots innovation in emerging markets. The paper proceeds as follows: Section 2 develops the theoretical framework, Section 3 details the methodology, Section 4 presents the empirical findings, followed by discussion and conclusions in Sections 5 and 6.

2. THEORETICAL FRAMEWORK

Persisting environmental degradation and social inequalities have challenged traditional business paradigms. A growing body of literature highlights sustainable entrepreneurship as a transformative approach capable of reconciling economic and triple bottom line goals.

This literature review explores the evolving role of sustainable entrepreneurship in tackling global issues, and the bean-to-bar movement as a practical example of these shifts, offering a tangible case through which these concepts manifest in practice. Together, these strands form a critical framework for understanding how entrepreneurial models such as Black Cacao challenge conventional cocoa value chains and propose alternatives grounded in ethics, sustainability, and sustainable business model innovation.

3. SUSTAINABLE ENTREPRENEURSHIP AND THE PURSUIT OF SOCIO-ENVIRONMENTAL VALUE

Traditional entrepreneurship has been conceptualized as the identification and exploitation of opportunities for the creation of goods and services (Shane & Venkataraman, 2012). In contrast, sustainable entrepreneurship (SE) emphasizes the alignment of economic, social, and ecological objectives, representing a shift in how entrepreneurial activity is theorized and practiced (Alberico et al., 2022). SE reframes entrepreneurial ventures as agents that not only capture opportunities but also contribute to addressing systemic crises, by systematically engaging with the triple bottom line, through the collaboration of diverse stakeholders (Khokhawala & Iyer, 2022). This shift reflects growing societal urgency. Contemporary entrepreneurs increasingly engage with issues such as climate change, energy efficiency, resource depletion, waste reduction, responsible consumption, economic instability, and fair distribution of value (Alberico et al., 2022; Allal-Chérif et al., 2023; Khokhawala & Iyer, 2022). As a result, SE has moved from a theoretical aspiration to a practical necessity, positioning entrepreneurs as potential agents to protect and restore the environment rather than contributors to its degradation (Alberico et al., 2022; Allal-Chérif et al., 2023). Despite growing interest in SE and its goals, critiques emphasize that the field remains conceptually underdeveloped, with limited contextual diversity (Mignon & Bankel, 2023). Most notably, there is a scarcity of empirical studies showing how small firms in emerging economies implement SE in structurally unequal value chains, where institutional voids and systemic inequities pose additional constraints. This reinforces the need to examine cases such as Black Cacao, which illustrate how entrepreneurial practices adapt to context-specific challenges while pursuing sustainability objectives. Sustainable entrepreneurs are expected to creatively overcome social and environmental externalities, and in some cases even bypass government failures, through innovative strategies, open product development, collaboration with local communities, and institutional or individual activism (Allal-Chérif et al., 2023; Schaltegger et al., 2018). By embedding sustainable values into business practices, these ventures have the potential to generate long-term socio-ecological transformations. However, understanding the mechanisms through which this occurs, particularly in grassroots ventures in emerging markets, remains an open research question.

4. THE BEAN-TO-BAR APPROACH: ETHICAL CONSUMPTION AND ENTREPRENEURIAL INNOVATION

The global chocolate industry, valued at USD 126.57 billion and growing at a CAGR of 3.4%, is experiencing a profound transformation. This is driven by shifting consumer expectations, rising scrutiny of sustainability in food systems, and increasing demand for premium, traceable products aligned with ethical and environmental values (Burgon et al., 2024; Market Research Future, 2025). Within this trend, the bean-to-bar segment has emerged as a fast-growing niche, reaching USD 14.60 billion in 2024 and projected to surpass USD 34.15 billion by 2032, with a CAGR of 11.2% (Data Bridge Market Research, 2025). Originating in the United States in the mid-2000s, the bean-to-bar movement emerged as an alternative to industrial chocolate production, emphasizing craftsmanship, transparency, and producer empowerment.

Core features include single-origin sourcing, small-batch processing, low-sugar formulations, and artisanal innovation (Paradelo Gomes & Dias, 2022). While Europe leads due to its artisanal heritage, the Asia-Pacific region is projected to experience the fastest growth, highlighting a global reorientation toward quality and sustainability (Data Bridge Market Research, 2025). The bean-to-bar model is more than a production method it is a structural response to deep problems in the conventional cacao value chain. These include industry consolidation, volatile global prices, abusive labor practices, and persistent marginalization and exploitation of smallholder farmers, particularly in Latin America and West Africa. In contrast, the bean-to-bar model reconfigures the supply chain around direct trade, collaborative partnerships, and value co-creation, redistributing revenues more equitably (Gallo et al., 2018; Woolley et al., 2022). Central to this shift is the integration of agroforestry practices, where cacao cultivation is combined with diverse flora, enhancing biodiversity, carbon sequestration, and climate resilience (Kongor et al., 2024). While ecological benefits are increasingly recognized, fewer studies assess the economic and social impacts of such practices when adopted by small entrepreneurial ventures, a gap this study addresses.

In addition, bean-to-bar producers often adopt relational supply chains, characterized by trust-based, non-exploitative exchanges between farmers and chocolate makers. These decentralized, flexible networks reject exclusive contracts and enable producers to retain autonomy while embedding community values into production (Paradelo Gomes & Dias, 2022). Finally, while the bean-to-bar movement is often celebrated as a reference point for ethical consumption, critiques warn that its benefits may disproportionately serve niche, affluent consumers in developed economies (Woolley et al., 2022). This raises critical questions about inclusivity and accessibility, particularly in emerging markets. By focusing on Black Cacau, a Brazilian enterprise at the intersection of SE and agroecological chocolate production, this study contributes to addressing these questions and expands understanding of how the bean-to-bar model can operate as a transformative entrepreneurial approach in an emerging economy context.

5. BRIDGING SE THEORY, THE BEAN-TO-BAR MODEL, AND PATAGONIA

Taken together, the literature on sustainable entrepreneurship and the emerging bean-to-bar movement highlights the transformative potential of entrepreneurial ventures to address societal and environmental challenges by reconfiguring value chains, engaging in systemic innovation, and fostering community-centered practices. However, most of the existing literature has concentrated on cases in developed economies, particularly Patagonia, which has been widely recognized as a global benchmark in sustainable entrepreneurship (Allal-Chérif et al., 2023). Patagonia illustrates how a large, mission-driven company can integrate activism and entrepreneurship to disrupt conventional business models and influence systemic change.

Yet, the transferability of such frameworks to emerging economies, where firms face institutional voids, structural inequalities, and different market dynamics, remains underexplored. This study addresses this gap by adapting the Patagonia-based framework of Allal-Chérif et al. (2023) to analyze the case of Black Cacau, a Brazilian enterprise that operationalizes the bean-to-bar philosophy within the structurally unequal cacao value chain. By comparing the elements of Patagonia's model with the practices of Black Cacau, the study contributes to theory by assessing the applicability and boundaries of sustainable entrepreneurship frameworks across diverse contexts. Empirically, it extends understanding of how small, grassroots ventures in emerging economies adopt SE principles not as abstract ideals, but as context-specific strategies to overcome institutional and environmental challenges.

6. METHOD

This study analyzed the work of Allal-Chérif et al. (2023) on Patagonia as a benchmark case of sustainable entrepreneurship and responsible management, illustrating how the company combines activism, innovation, and value-driven strategy to create systemic impact. Patagonia’s approach is adapted into a framework that identified three key dimensions to analyze the case of Black Cacau in Brazil:

1) Radical Strategic Disruption, which explores how rejecting market norms and reorienting value chains drives transformation, 2) Collaborative Work with Suppliers, which examines how co-developed solutions with smallholder farmers enhance sustainability and market differentiation, and 3) Institutional Activism, which considers how cultural and environmental narratives reach markets and influence stakeholders (Figure 1).

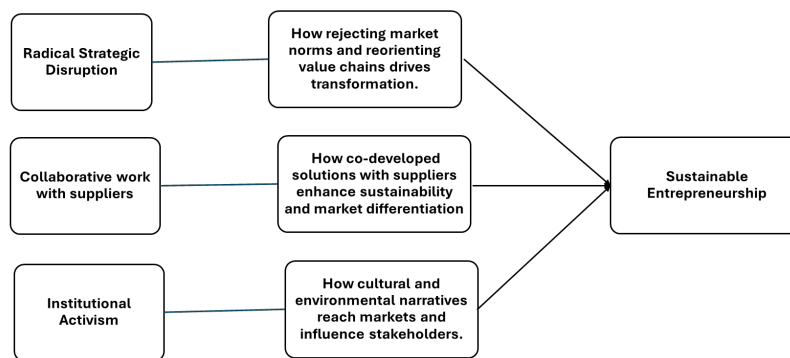


Figure 1: Framework based on Allal-Chérif et al. (2023)

Guided by this framework, the case analysis focuses on seven thematic areas derived from Patagonia’s management model (figure 2), that adapted to Black Cacau’s case would reflect: 1) Black Cacau as a pioneer of responsible management in the Brazilian cacao sector, 2) values at the heart of the organization, 3) innovative artisanal chocolate products that combine technical quality and sustainability, 4) long-term and trust-based partnerships with cacao suppliers, 5) employees and community members embodying sustainability values, 6) consumer education practices and 7) Black Cacau as an activist company promoting ecological conservation and Afro-Brazilian empowerment.

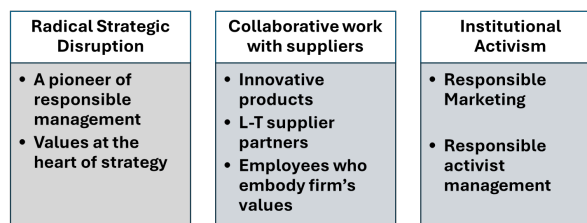


Figure 2: Allal-Cherif et al. (2023) thematic areas

This study adopts a qualitative single-case study design to analyze sustainable entrepreneurship within the unique context of a small, founder-led firm. Given the depth of inquiry required and the nature of the case, this approach provides rich, contextualized insights into organizational practices and motivations (Eisenhardt & Graebner, 2007; Yin, 2014). Drawing on qualitative field data and interviews, the framework provides a systematic lens for comparing Patagonia’s established model with Black Cacau’s grassroots practices, thereby assessing the transferability of sustainable entrepreneurship strategies across contexts.

Black Cacau was selected using purposive sampling, based on its observable commitment to sustainability and social innovation practices. As the firm is entirely managed by its two co-founders, it offered a rare opportunity for direct access, allowing the possibility to fully collect the necessary insights to develop the study. Primary data were collected through four in-depth, semi-structured interviews with the two co-founders, which ranged from 60 to 90 minutes. In addition to these interviews, the researcher engaged in direct field observation by accompanying the co-founders during two mornings at trade fairs. These sessions allowed firsthand insights into customer interactions, product presentation, and real-time clarification of emerging questions. The whole process was conducted between April and July 2025. The semi-structured interview guide was based on the key dimensions and thematic areas derived from Allal-Chérif et al. (2023). Interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis following Braun & Clarke (2006) six-step process. A hybrid approach was adopted, using deductive coding based on the predefined framework and inductive identification of emergent subthemes within each dimension and thematic area. Supplementary communication via email and WhatsApp provided further context, clarification, and longitudinal follow-up, allowing for iterative understanding and data triangulation. To ensure credibility, member checks were conducted by sharing emergent themes with participants for feedback. Participants provided informed consent, and anonymity has been preserved by not using their names. Data was securely stored in compliance with data protection standards.

7. FINDINGS

Black Cacau - the chocolate that impacts who produce it and who consume it

This section presents the key findings from semi-structured interviews, participant observations, and iterative exchanges with Black Cacau's co-founders. Both are active public advocates for Afro-Brazilian heritage and sustainable trade. The analysis is organized according to the three dimensions of the Allal-Chérif et al. (2023) framework, integrating seven thematic areas to illustrate how Black Cacau operationalizes sustainable entrepreneurship in an emerging economy context.

Radical Strategic Disruption

1) Pioneer of Responsible Management

Black Cacau disrupts conventional practices in the Brazilian cacao sector by positioning itself as a mission-driven, purpose-led enterprise. From inception, the firm has emphasized sustainability, fair trade, and agroecological practices, creating a model of responsible management that challenges industrial norms. The company redefines success by integrating social and environmental goals into strategic decision-making, from its inception.

“Black Cacau was born from a clear mission: to produce the chocolates of the future - sustainable, agroecological, vegan, and rooted in ancestral traditions.”

2) Values at the Heart of the Organization

The founders' vision is deeply rooted in ancestral knowledge and ethical principles. Values such as respect for nature, social equity, and food purity guide every aspect of operations, from supplier selection to product innovation. One founder noted:

“Our ancestors always emphasized sustainability, respect for nature, and food purity, understanding this as the right way to live.”

These embedded values exemplify how strategic disruption is intertwined with organizational identity, shaping a business model that challenges traditional profit-centric approaches.

Collaborative Work with Suppliers

3) Innovative Artisanal Chocolate Products

Black Cacau's products combine technical quality with sustainability, reflecting collaboration with suppliers to ensure superior cacao and environmentally responsible practices. By integrating agroforestry, organic cultivation, and circular production of cacao by-products, the firm differentiates itself in the market while generating economic and ecological value.

"Our chocolates are clean-label and transparent, made with agroecological cacao and few ingredients, with no chemical additives such as fats, flavorings, or preservatives. As natural and minimally processed as possible, preserving the benefits of this powerful food."

4) Long-term and Trust-based Partnerships with Cacao Suppliers

The company establishes enduring relationships with smallholder farmers, often paying prices up to 35% higher than traditional contracts. These trust-based partnerships foster co-development of sustainable practices and equitable value distribution, contributing to social and economic empowerment in marginalized communities.

"We do not negotiate on price. We invest in relationships, not transactions."

Black Cacau also collaborates exclusively with suppliers engaged in sustainable cacao cultivation, such as the Cabruca system, used in Bahia. This method preserves native vegetation and regenerates Atlantic Forest biodiversity, supporting over 250 native species and capturing ten times more carbon than conventional systems.

5) Employees and Community Members Embodying Sustainability Values

Sustainability is not only operational but relational: employees and local community members participate actively in implementing eco-friendly practices, promoting agroecological knowledge, and strengthening local networks. This co-ownership of values reinforces collaboration as a mechanism for systemic change and long-term impact.

"The company also encourages suppliers to adopt circular practices by purchasing cacao sub-products, like cacao honey jelly, what increases the number of people impacted by creation of new employment, increasing the commitment with Black Cacau."

Black Cacau also, in partnership with the CACAU RJ movement, developed cocoa production in Rio de Janeiro, a region historically excluded from the cacao economy, by identifying high-potential growers and catalyzing public-private partnerships.

Institutional Activism

6) Consumer Education Practices

Black Cacau educates its customers by always presenting their products with an explanation of their methods, production techniques and benefits, highlighting the Black culture in their mission, reflected in their packaging and discourse. Thus, they encourage societal engagement with environmental and social issues, blending market activity with public awareness campaigns.

"Packaging and storytelling emphasize ancestral cacao knowledge, Black pride, and food justice, and comprise our business strategy."

7) Activist Company Promoting Ecological Conservation and Afro-Brazilian Empowerment

The firm's activism extends to broader cultural and ecological advocacy. Through storytelling, branding, and public participation in cultural events, Black Cacau emphasizes Afro-Brazilian heritage, community empowerment, and ecological conservation. These initiatives highlight how grassroots enterprises can influence both market norms and social narratives, exemplifying the activist dimension of sustainable entrepreneurship.

“Our activism and strong cultural focus have helped the firm to achieve 50% year-over-year growth since its product launch in 2023, with a lengthy list of loyal customers. We have also received the Shell Youth Acceleration Program and the 2024 Sustainable and Impact Enterprise Award validating our purpose-driven proposition”. By mapping the seven thematic areas onto the three dimensions of the Allal-Chérif et al. (2023) framework, the findings illustrate how Black Cacau operationalizes sustainable entrepreneurship in an emerging economy context. Radical Strategic Disruption demonstrates the company’s mission-driven identity and value-centered leadership, Collaborative Work with Suppliers reflects in their innovative product portfolio that includes cacao nibs, cacao tea and cacao honey jelly, long-term partnerships, and community integration; and Institutional Activism shows how education and advocacy embed sustainability and cultural empowerment into market practices. Together, these practices exemplify a regenerative model of entrepreneurship that redefines value creation, promotes equity, and fosters social, environmental, and economic transformation, including the alignment with various UN Sustainable Development Goals, such as SDG 8 – Decent Work and Economic Growth, SDG 12 – Responsible Consumption and Production, and DG 15 – Life on Land.

8. DISCUSSION

This study contributes to the literature on sustainable entrepreneurship (SE) by extending the Patagonia-based study of Allal-Chérif et al. (2023) in to a framework to analyze the context of an emerging economy, represented by Black Cacau in Brazil’s cacao sector. Whereas Patagonia demonstrates how a large global brand can embed activism and sustainability within advanced-economy markets, Black Cacau illustrates how grassroots entrepreneurs, constrained by resource scarcity and institutional voids, deploy similar principles in structurally unequal value chains. This comparison advances theoretical understanding in three ways. First, the findings affirm the transferability of SE frameworks across contexts but also reveal critical boundary conditions. Unlike Patagonia, which leverages scale and global visibility, Black Cacau mobilizes cultural heritage, localized supply chain restructuring, and identity-based activism as its principal resources. This highlights how SE in emerging markets is inherently more relational, embedding sustainability not only in ecological practices (agroforestry, zero-deforestation cacao) but also in social narratives of racial justice and cultural empowerment. Thus, the study expands SE theory by integrating the role of cultural embeddedness into existing models of sustainable entrepreneurship. Second, the case underscores the importance of collaborative supplier relationships as a strategic force in contexts of exclusion and inequality. By rejecting transactional logics and investing in long-term partnerships with smallholder farmers, Black Cacau operationalizes relational supply chains (Paradelo Gomes & Dias, 2022; Woolley et al., 2022) that redistribute value more equitably. This form of collaboration resonates with Allal-Chérif et al.’s (2023) second dimension but takes on added significance in emerging economies, where access to fair markets is a central barrier. Here, supplier collaboration becomes not only a means of differentiation but also a pathway to community resilience and structural transformation. This also provides a competitive advantage to Black Cacau that although a small producer, is able to guarantee his supply of fine cacao, based on his strong ties with his supply chain. Third, the case shows how institutional activism functions differently in small grassroots firms than in global corporations. While Patagonia’s activism often shapes global policy debates and consumer movements, Black Cacau engages in local advocacy, consumer education, and Afro-Brazilian empowerment. This localized activism demonstrates that systemic change in emerging economies can be catalyzed not only by global campaigns but also by context-specific, identity-driven narratives that legitimize sustainability practices among marginalized communities. Overall, these findings deepen the literature on sustainable entrepreneurship by showing how global frameworks must be adapted to account for context, scale, and cultural identity.

In doing so, the study complements recent calls (Mignon & Bankel, 2023) for more diverse, empirically grounded explorations of SE beyond advanced economies.

9. CONCLUSION

This paper examined Black Cacau as a case of sustainable entrepreneurship within Brazil's emerging bean-to-bar movement, adapting the Patagonia-based framework of Allal-Chérif et al. (2023) to an underexplored emerging economy context. The analysis revealed how Black Cacau operationalizes SE through radical strategic disruption (values-driven management, agroecological practices), collaborative supplier engagement (trust-based partnerships, equitable pricing, agroforestry systems), and institutional activism (Afro-Brazilian cultural valorization, consumer education, ecological advocacy), following the same path observed with Patagonia, what demonstrates the global character and power of sustainable entrepreneurship. Nevertheless, it demonstrates that sustainable entrepreneurship in emerging economies relies less on global visibility and scale, and more on identity, heritage, and trust-based networks. This addresses the research question asking how Black Cacau operationalizes their sustainability practices and how do they compare to the Patagonia model. The study makes three key contributions. Theoretically, it extends SE research by highlighting the role of cultural heritage and identity-based activism in shaping entrepreneurial practices in emerging economies. Empirically, it enriches understanding of how grassroots ventures restructure value chains and create socio-environmental value in structurally unequal contexts. Practically, it demonstrates how mission-driven firms can influence both markets and communities, even when constrained by limited capital and institutional support. At the same time, the case illustrates limitations that must temper expectations of scalability and transferability, addressing the research question concerning sustainable entrepreneurship across different contexts. Black Cacau's future growth is constrained by financial and infrastructural barriers that reflect systemic misalignments in investment and policy environments. Unlike other cases such as the Grenada Chocolate Company or Kallari Chocolate in Ecuador, which benefited from international partnerships and investment (Gallo et al., 2018). Thus, without targeted support, such as inclusive financing mechanisms, ecosystem partnerships, and enabling regulation, ventures like Black Cacau risk remaining isolated exemplars rather than scalable solutions. In sum, Black Cacau exemplifies the potential of small, purpose-driven enterprises to advance sustainability in emerging markets. It shows that SE is not solely the domain of global brands but can also emerge from grassroots actors that creatively reconfigure value chains around equity, ecology, and identity. Replicating and scaling such models will require structural change, reshaping finance, policy, and education to foster a new generation of enterprises capable of aligning profitability with socio-ecological transformation. Nevertheless, the role of SE in emerging economies remains relevant and impactful, illustrating the potential for small firms to drive systemic transformation in the cocoa value chain with the potential to create a macro effect in case of growing initiatives such as Black Cacau's.

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THE CHALLENGES OF TERRORISM AND GLOBAL SECURITY IN THE ERA OF GLOBALIZATION

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ABSTRACT

The era of globalization presents numerous challenges, particularly regarding national security, where terrorism is one of the most significant threats. The reason terrorism has been identified as the greatest challenge is its increasing connection with other global security priorities, such as the proliferation of nuclear, biological, chemical, and radiological weapons of mass destruction. The priority objectives of various terrorist groups have evolved over time, shifting from territorial and nationalist motivations to deeply global concerns, all aimed at achieving international dominance. Al-Shabaab, a militant Islamist organization from Somalia, exemplifies this phenomenon. Each terrorist group, including Al-Shabaab, represents a transnational issue that poses a challenge to the international community and simultaneously threatens to create profound political and national problems.

Keywords: *security, national security, terrorism, militant, globalization*

1. INTRODUCTION

In the twenty-first century, states face both military and non-military challenges that threaten security. Increasingly, non-military forms of security threats, such as terrorism, organized crime, human trafficking, drug and arms trafficking, pandemics, and various infectious disease outbreaks, are becoming prevalent in contemporary practice. Each state must monitor developmental trends, including those in the realm of security. To effectively respond to modern challenges and threats that jeopardize their security, states must possess systems and instruments capable of addressing these issues. Alongside multinational corporations and non-governmental organizations, terrorist groups today represent another significant actor beyond the jurisdiction of states. If "new terrorism" is indeed characterized by its considerable basis in religious identity, then terrorist activities pose a challenge to the sovereignty of states. In fact, the use of terrorism implies an attempt to delegitimize the concept of sovereignty, and even the structure of the state system itself. [LaFree, G. & Dugan, L. (2017) *Introducing the Global Terrorism Database. Terrorism and Political Violence* 19(2): 181–204.] A persistent threat of terrorist attacks comes from the Islamist group Al-Shabaab, which extends its operations beyond the borders of Somalia.

2. WHAT IS GLOBALIZATION?

Globalization can be defined as the integration of economic, social, and cultural relations across borders. [Ganor, B. (2005) *The Counter-Terrorism Puzzle: A Guide for Decision Makers*. New Brunswick, NJ: Transaction Publishers, p. 8.] Many contemporary articles have expanded beyond merely reiterating basic arguments about economic globalization to discuss political and security globalization as well. [Held, E. D., McGrew, P. (1998) *The End Of The Old Order?*, *Review Of International Studies*, No. 24, pp. 219-243.] As Kay notes, "globalization is best understood as the creation of various cross-border mechanisms for interaction that influence and reflect the acceleration of economic, political, and security interdependence." [Kay, S. (2004) "Globalization, Power And Security", *Security Dialogue*, Vol. 35, No. 1, 2004, p. 10.]. With its economic, political, and cultural dimensions, globalization has significant effects on the state.

Ian Clark argues that “globalization should also be understood as numerous changes within the state, not just as a series of external forces opposing it.” [Clark, I. (1999) *Globalization And International Relations Theory*, Oxford, Oxford University Press, p. 52.] Despite the decline of the nation-state, the enduring power of states remains visible and effective on the international stage. Moreover, “globalization is more significant due to the erosion of internal/external divides than due to the erosion of state capacities.” [Clark, I. (1998) ‘Beyond The Great Divide: Globalization And The Theory Of International Relations’, *Review Of International Studies*, Vol. 24, No. 4, p. 480.]. In the post-Cold War era, we are tempted to replace the East-West divide with “fragmentation versus globalization,” viewing globalization as positive and fragmentation as negative. However, both Guehenno and Clark suggest that these two concepts are interconnected and coexist rather than exist in opposition. [Guehenno, J. M. (2019) ‘Globalization And Fragmentation’, In *Globalization, Power And Democracy*, Marc F. Plattner (Ed.), Baltimore, USA: John Hopkins University Press, pp. 14-27.] Furthermore, economic, military, and political globalization and fragmentation are observable within states as well as among them. [Clark, I. (1999) *Globalization And International Relations Theory*, Oxford, Oxford University Press, p. 52.] Alongside the issue of globalization, the question of security is increasingly prominent, often linked to the consequences of globalization, with terrorism emerging as a significant security-challenging phenomenon. Although globalization and international terrorism have been pressing concerns for governments since the 1980s, they also remain among the primary topics dominating the study of international relations. Both issues have been extensively discussed in isolation, both in academia and in the public sphere. However, as Cha pointed out, there has been comparatively less research on the intersection of security and globalization, despite security being a well-established field. [Cha, V. A. (2000) ‘Globalization And The Study Of International Security’, *Journal Of Peace Research*, Vol. 37, No. 3, pp. 391-403.] Nonetheless, as Hughes cautioned, we should be careful when applying globalization to the topic of security, as “there is a risk on various sides of the debate regarding the engagement in securitization (the process of framing a political issue as a security issue) without a deeper analysis or understanding.” [Neuman, P. R. (2020) *Terrorism in the 21st Century*, Friedrich Ebert Stiftung, Germany, p. 24.]

3. SECURITY RISKS OF GLOBALIZATION

Ensuring security in the contemporary world—encompassing the safety of individuals, social groups, states, and international integrations—poses a constant challenge. The threat to security remains a prevalent theme in scholarly work within this field and is a focus of research globally. There are various classifications of security threats in theory, and no singular consensus exists regarding them. By studying the concept from different perspectives, two fundamental viewpoints on security threats have emerged. One perspective advocates for the terms sources, forms (and types), and carriers of threats, while the other focuses on challenges, risks, and threats to security. Given that security is primarily a political issue within international relations; discussions in practice often revolve around challenges, risks, and threats to security. [Forca, B. (2019). *Sistemi bezbednosti*, Faculty of Business Studies and Law, Belgrade, p. 43.] This classification is rooted in Anglo-Saxon security theory and has become well-established in domestic discourse. Without an understanding of the concept, classifications, processes of designing, and perceptions of security challenges, risks, and threats, it is impossible to systematically comprehend security dynamics. Therefore, danger can manifest as a challenge, risk, or threat. It must be clearly emphasized that, although these three types of dangers are often equated, there are conceptual distinctions among them. A challenge is a situation that tests someone or something, which can yield either a negative or positive outcome. Globalization, for instance, is a challenge that tests states, societies, and individuals. If they successfully leverage the process of globalization, this challenge becomes an opportunity for them.

However, if societies and states fail to integrate into the process of globalization, this challenge can evolve into a source of security threats. The second type of danger is a risk, defined as the possibility of loss, injury, embarrassment, or destruction. Unlike a challenge, risk generally carries a negative connotation. From a security perspective, analyses of globalization have revealed that security has become increasingly complex and multidimensional, rendering traditional notions of security—those confined by national borders—insufficient for recognizing new threats that transcend these boundaries. In this context, international terrorism has emerged as a major concern due to its highly complicated characteristics. [Held, E. D., McGrew, P. (1998) *The End Of The Old Order?*, Review Of International Studies, No. 24, pp. 219-243.]. Therefore, the globalized world must confront an imminent threat: international terrorism. This issue has been recognized not only by individual nations but has also become a threat to international security in an era of globalization, where nations have become significantly more interconnected and interdependent. Some countries have experienced terrorist threats for many years. However, while these states have long been familiar with the pains of terrorism, many others became increasingly concerned following the terrorist attacks in the United States on September 11, 2001. This event marked a turning point for all nations in recognizing the threat posed by terrorism. A new awareness emerged, as people witnessed the devastation caused, with many lives lost or injured, and terrorists proclaiming their success. Terrorism quickly ascended to the forefront of the agendas of numerous nations and institutions. The events of September 11 sent a clear message: the target was the principal leader of globalization, the United States. The World Trade Center, as one target in the United States, symbolized the economic dimension of globalization, while the Pentagon represented its political and military dimensions. In other words, terrorism placed globalization among its targets. The transformations brought about by globalization—particularly in communication, information, technology, and the economy—have catalyzed various dangers, including global warming, ozone layer depletion, acid rain, environmental issues, and terrorism. The threat of terrorism was starkly illustrated by the attacks on September 11. Cha also points out that as the scope of threats expands with globalization, the targets increasingly shift from states to individuals. [Strange, S. (1997) ‘The Erosion Of The State’, *Current History*, Vol. 96, No. 613, pp. 365-369.] This shift is undeniably connected to modern terrorism. Specifically, technologies have enhanced the capabilities of groups and cells in areas such as proselytization, coordination, security, mobility, and lethality. [Baylis, J., Smith, S., Owens, P. (2008) *The Globalization Of World Politics: An Introduction To International Relations*, Oxford, Oxford University Press, p. 378.]. Technology, as a driving force of globalization, serves as a tool that terrorist groups exploit to their advantage. The backlash against globalization often favors terrorists, fueled by resistance to perceived unjust economic globalization and to Western culture, which is seen as a threat to local religions and traditions. In this context, a significant danger in the age of globalization is the evolution of terrorism, particularly that involving weapons of mass destruction. Traditional deterrence strategies are inadequate against this threat due to its non-territorial nature, thus prioritizing the need for preventive strategies. [Clark, I. (1999) *Globalization And International Relations Theory*, Oxford, Oxford University Press, p. 110.]. A significant challenge lies in assessing the precise effects of globalization on global security, given that the impact of globalization varies from region to region and is largely determined by a state's ability to adapt to changes and respond to the specific challenges posed by the globalization process. [Kay, S. (2004) “Globalization, Power And Security”, *Security Dialogue*, Vol. 35, No. 1, 2004, p. 11.] Therefore, it is not easy to generalize whether the effects of globalization on international security are stabilizing or destabilizing. One challenge posed by globalization is that individual states can no longer control the movement of technology and information effectively.

Moreover, since the arms industry is predominantly held by the private sector, this leads to the transnationalization of defense production, diminishing state control over such production. Additionally, in the era of globalization, the emergence of information-based economies reduces the significance of national industries. For example, increased foreign direct investment in local economies by multinational corporations diminishes state control over domestic economies, making them more vulnerable to international crises and interventions, thereby threatening economic security. [Cha, V. A. (2000) 'Globalization And The Study Of International Security', *Journal Of Peace Research*, Vol. 37, No. 3, pp. 391-403.] States are becoming more sensitive to security and military developments in other regions due to the rise in financial, trade, and economic relations. [Held, E. D., McGrew, P. (1998) *The End Of The Old Order?*, *Review Of International Studies*, No. 24, pp. 219-243.]

4. TERRORISM IN THE LIGHT OF GLOBALIZATION

Any discussion of terrorism must begin with an attempt to define this phenomenon. As with many political issues, there are numerous and controversial answers to the question of what terrorism is. A standard summary of this controversy asserts that “one person’s terrorist is another person’s freedom fighter,” as terrorism is a highly charged political term that most people use to denote political violence or any other political tactic that is not approved by mainstream society. [Victoroff, J. (2015) The mind of the terrorist – A review and critique of psychological approaches. *Journal of Conflict Resolution*, 49 (1) 3 – 42.]. Cooperation and conflict are two fundamental characteristics of humanity. While the former has fostered the development of civilization, the latter poses a threat to the growth of human society. Terrorism is a complex phenomenon that represents an alarming form of violence—a method of struggle or a strategy aimed at achieving specific goals, with the intention of instilling fear in victims. It is merciless and disregards humanitarian norms, with the public playing a crucial role in terrorist strategies. [Stahelski, A. (2004) Terrorists are made, not born: Creating terrorists using social psychological conditioning, *Journal of Homeland Security*, Vol. 2, No. 1, 22-54.] It often involves the killing of innocents and the destruction of valuable property, thereby creating widespread panic that affects the entire world. The process of globalization has expanded support for terrorism. As globalization has led to negative consequences, such as the marginalization of certain groups and global social and economic inequalities, terrorism has gained greater backing from many marginalized individuals across different nations, becoming increasingly global in nature. Kronin notes that frustrated populations oppose the U.S.-led globalization and global security efforts as a whole. The largest international organization, the United Nations (UN), responsible for maintaining global peace and security, considers this a significant threat to humanity, which could disrupt the maintenance of global peace in our current era and pose a serious challenge to the protection of human rights and fundamental freedoms worldwide. One of the major terrorist challenges on a global scale is the organization Al-Shabaab. This Somali radical Islamist group is closely linked to Al-Qaeda and primarily operates in Somalia, as well as in neighboring countries like Kenya and Ethiopia. The group emerged in 2006 as a militant faction of the Islamic Courts Union, which at the time controlled the capital, Mogadishu. [Kheyre, Z. A. N. (2022). The evolution of the Al-Shabaab jihadist intelligence structure. *Intelligence and National Security*, 37(7), 1061-1082.]. Their objective is to establish strict Sharia law and create an Islamic state in Somalia and throughout East Africa. Al-Shabaab is known for its brutality, employing suicide bombings, explosive attacks, and armed assaults against military and civilian targets. Al-Shabaab is characterized by a specific jihadist ideology that opposes Western values, international presence, and any secular government in the region. Their militants regularly attack civilians, while the Somali government and African Union troops are deployed to stabilize the country. [Yeşiltaş, M., & Shihundu, F. (2024).

From 'Roving' to 'Stationary' Actors: Understanding the Territorial Logic of Al Shabaab in Somalia. *African Security*, 1-25.]. Despite suffering significant losses, including the loss of control over Mogadishu, Al-Shabaab remains active and extremely dangerous. The group employs various tactics to expand its influence and terror, and is known for executing sophisticated and coordinated attacks. One of their most infamous attacks occurred in 2013 at the Westgate shopping mall in Nairobi, Kenya, resulting in the deaths of 67 civilians. [Cannon, B. J., & Ruto Pkalya, D. (2019). Why al-Shabaab attacks Kenya: Questioning the narrative paradigm. *Terrorism and Political Violence*, 31(4), 836-852.]. They also claim responsibility for attacks on military bases and government facilities in Somalia. The group is funded through various sources, including coal smuggling, taxes imposed on the population under its control, and international donations and support. Al-Shabaab is also known for recruiting children and young people from Somalia and other countries. The group uses propaganda, including social media, to attract young individuals to their cause. The Somali government, with the backing of the international community and the African Union, has been trying for years to defeat Al-Shabaab, but this remains a challenge given the complexity of the situation in the country. Although Al-Shabaab has suffered significant blows, they remain active in rural areas of Somalia and continue to carry out terrorist attacks in cities, including Mogadishu. The international community, including the United States, officially designates Al-Shabaab as a terrorist organization. The U.S. military has conducted airstrikes against its leaders and bases, but the group remains operational due to ongoing internal conflicts in Somalia and its role as a symbol of resistance against efforts to establish order and stability in the region. [Mwangi, O. G. (2023). Al-Shabaab and the Regional Security Dilemma. In *The Palgrave Handbook of Contemporary Kenya* (pp. 381-390). Cham: Springer International Publishing.]. Al-Shabaab continues to pose a significant threat not only to Somalia but also to neighboring countries. Globalization, which facilitates faster communication, economic integration, and cultural exchange, enables groups like Al-Shabaab to transcend geographical boundaries and expand their activities worldwide. Social media and the internet, as products of globalization, have become crucial tools for Al-Shabaab's recruitment and propaganda efforts. The group utilizes these platforms to spread its ideology and recruit young people not only from Somalia but also from other parts of the world, including Western countries. [Githigaro, J., & Kabia, A. (2022). An evaluation of factors pushing youth from Majengo, Mombasa Kenya into al-Shabaab: A methodological and theoretical analysis. *Critical Studies on Terrorism*, 15(2), 381-398.]. Internet propaganda specifically targets marginalized young Muslims, leveraging global narratives about injustice, conflict, and religious issues. Through these networks, Al-Shabaab gains support in the form of training, weapons, and financial resources, allowing it to continue its terrorist activities in East Africa and beyond. As a result, Al-Shabaab has emerged as both a regional and international challenge in the fight against terrorism. In the era of globalization, a significant aspect of the security risk posed by Al-Shabaab is its connections with other terrorist groups, such as Al-Qaeda, with which it has long collaborated. The financing of Al-Shabaab is another significant aspect of global security risks. The group exploits global economic flows, including illegal coal trade, extortion, and international donations from the diaspora. In a globalized world, such financial flows are harder to track and control at the transnational level, making it challenging for states and international organizations to cut off the funding sources of terrorist organizations. By establishing connections with the global financial system, Al-Shabaab has managed to evade sanctions and continue its operations, even in the face of military pressure. [Levy, I., & Yusuf, A. (2021). How do terrorist organizations make money? Terrorist funding and innovation in the case of al-Shabaab. *Studies in Conflict & Terrorism*, 44(12), 1167-1189.]. Globalization has also enabled Al-Shabaab to target foreign entities beyond Somalia.

The group poses a threat to international interests, particularly in East Africa, as evidenced by notable attacks such as the Westgate shopping mall attack in Nairobi and the Garissa University attack in 2015, which claimed over 140 lives. These attacks significantly impacted tourism and foreign investment in the region, highlighting the widespread nature of their terror in today's interconnected society.

5. CONCLUSION

Globalization, encompassing global mobility, is a significant factor contributing to the expansion of Al-Shabaab's influence and, consequently, the increase in terrorist attacks. By facilitating the movement of individuals, ideas, and resources across borders, globalization enables Al-Shabaab to recruit, plan, and execute operations beyond Somalia, posing a substantial threat to international security. Understanding this dynamic is crucial for developing effective counter-terrorism strategies that address the root causes and implications of terrorism in our interconnected world. Using various smuggling networks, militant fighters can relatively easily cross borders, posing a significant security challenge for every state. Each terrorist group is highly adaptable to the influences brought by globalization. Consequently, we observe that the Islamist group Al-Shabaab, by adjusting to changing circumstances, utilizes the freedom of movement to relocate fighters from different conflict zones, as well as to recruit new members and resources. However, given the political and economic marginalization that Somalia has experienced, Al-Shabaab is not merely a product of globalization but also a reaction to its challenges. Somalia is one of many countries where globalization has led to inequality, with the majority of people living in poverty and a small number of actors controlling both political and economic power. By positioning itself as an alternative government that offers solutions and promises a fairer social structure based on a strict interpretation of Sharia law, Al-Shabaab exploits these social and economic issues to gain the support of the local population. Moreover, due to varying political agendas and tactics, international efforts to combat terrorism in the era of globalization often encounter challenges. Different actors, such as local governments, regional powers, and global superpowers, adopt diverse approaches to addressing Al-Shabaab, despite a general consensus that it is a terrorist organization. This lack of unified strategy complicates the effectiveness of counter-terrorism initiatives and underscores the need for coordinated action that aligns the interests of all stakeholders involved.

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THE PARADOX OF SUSTAINABILITY IN MODERN WORLD

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ABSTRACT

Sustainability is widely promoted as a guiding principle for economic development, environmental protection, and social well-being. Yet global realities are increasingly characterized by conflicts with new emerging warzones, inequality, and ecological degradation, challenging the very feasibility of a sustainable future. This paper examines the dissonance between aspirational sustainability narratives and persistent structural issues such as war, unequal wealth distribution, and overconsumption. It argues that without addressing fundamental geopolitical and economic imbalances, sustainability risks becoming rhetorical rather than transformative. Through conceptual review and synthesis of current evidence, the paper highlights contradictions between green economic ambitions and ongoing systemic disruptions and ecological stress. The conclusion reflects on whether humanity is truly progressing toward a sustainable society or merely perpetuating unsustainable patterns under a veneer of sustainability discourse.

Keywords: *Conflicts, Ecological Degradation, Sustainability, Unfair Wealth Distribution*

1. INTRODUCTION

The modern sustainability agenda emerged in response to escalating environmental concerns, economic disparities, and social vulnerabilities. Influential international frameworks such as the United Nations' Sustainable Development Goals (SDGs) emphasize integrated approaches to human welfare, ecological integrity, and resilient economies (UN, 2015). However, the world in the early 21st century remains fraught with armed conflict, geopolitical competition for resources, and widening gaps between wealthy and poor regions. This paradox raises pressing questions: Can a global society marked by conflict genuinely pursue sustainability? And if so, how can sustainability policy frameworks be reconciled with persistent structural inequalities? This paper articulates the tensions between sustainability aspirations and real-world conflict dynamics. After a brief review of sustainability discourse, the analysis considers how unequal resource distribution, war economies, and environmental degradation undercut sustainable development. The final section discusses implications for resilience thinking and future research.

2. SUSTAINABILITY DISCOURSE VERSUS GLOBAL REALITIES

2.1 The Promise of Sustainability and Green Economies

Sustainability is broadly understood as development that meets present needs without compromising the ability of future generations to meet their own (Brundtland Commission, 1987).

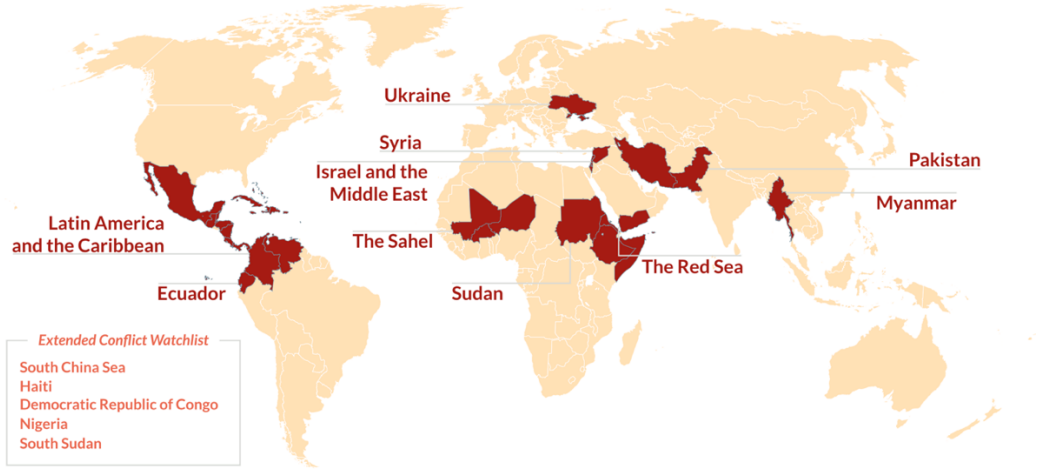
In recent years, this concept has expanded to include the transition to green economies - systems that decouple economic growth from environmental harm through innovation, efficiency, and renewable energy (OECD, 2019). The discourse emphasizes circular economies, decarbonization, and inclusive institutions as pathways to long-term prosperity. Implementation of sustainability principles has increased across policy arenas. For instance, numerous countries have committed to net-zero greenhouse gas targets, while industries are integrating environmental, social, and governance (ESG) criteria into corporate strategies. However, these commitments often coexist with contradictory behaviors - such as continued fossil fuel extraction, subsidization of high-emission sectors, and limited enforcement of environmental regulations. Critical ecological issues include:

- Climate Change & Global Warming
- Biodiversity Loss
- Deforestation & Habitat Destruction
- Water Scarcity and Pollution
- Pollution & Resource Depletion

2.2 Conflict, Inequality, and Structural Barriers

Despite sustainability rhetoric, the global landscape continues to feature significant conflict and inequality. According to global indices, violent conflicts remain prevalent, affecting millions of civilians and destabilizing regions across Africa, the Middle East, and beyond (Smith, 2023).

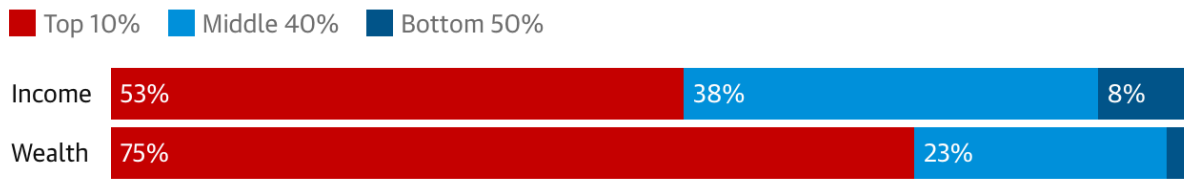
Figure 1. – ACLED's Conflict Watchlist 2026



Source: <https://acleddata.com/series/conflict-watchlist-2026>

Wars disrupt local economies, displace populations, and divert public resources from long-term development toward immediate security needs (Figure 1.). Moreover, the distribution of wealth reveals stark inequalities between the so-called Global North and Global South. A small fraction of the global population holds a disproportionate share of wealth, while many countries struggle with poverty, limited access to basic services, and economic marginalization (Piketty, 2020). These inequalities are not only economic but also embedded in power dynamics that shape global decision-making processes (Figure 2.). The sustainability agenda, although global in scope, often reflects priorities of wealthier nations and corporations with greater technological and financial capacity.

Figure 2. - Share of global income and wealth per group, 2025



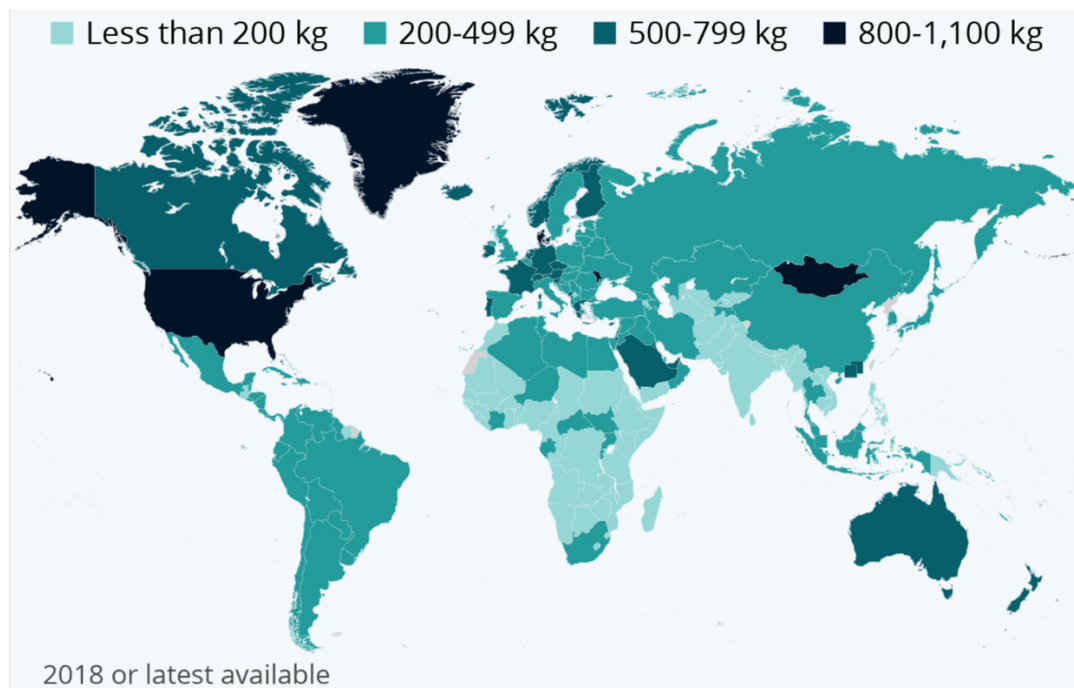
Source: Source: World Inequality Report 2026, wir2026.wid.world/methodology

3. CONSUMPTION, WASTE, AND ECOLOGICAL LIMITS

3.1 Overproduction and Environmental Degradation

The contemporary economy is characterized by unprecedented levels of production and consumption. Consumerism drives resource extraction and manufacturing at scales that exceed planetary boundaries. While proponents of green growth argue that technological innovation can mitigate ecological impacts, empirical evidence suggests that many environmental pressures—such as biodiversity loss, soil depletion, and plastic pollution—continue to intensify (Rockström et al., 2009).

Figure 3. – A World of Waist:
Municipal solid waste generated per year (in kilograms per capita)



Source: statista.com – World Bank What a Waist Global Database

A critical dimension of this problem is waste generation, as presented in Figure 3. Societies produce vast quantities of materials that are not reused or recycled, leading to landfills, ocean pollution, and toxic byproducts. The linear economic model of “take-make-dispose” remains dominant in many sectors, undermining circular economy principles.

3.2 The Planet in Crisis

Planet Earth is showing clear signs of stress. Climate change, driven by greenhouse gas emissions from industrial activities and deforestation, is altering weather patterns, increasing the frequency of extreme events, and threatening food security (IPCC, 2022). Ecosystems once viewed as resilient are now vulnerable to irreversible change. These environmental crises disproportionately affect vulnerable populations—particularly those in low-income countries with limited adaptive capacity. The notion of sustainability as a unifying goal is further challenged by the fact that environmental degradation often intersects with social and political instability. Scarcity of water, fertile land, and energy resources has been linked to tensions and migration pressures, exacerbating existing conflict dynamics.

4. RECONCILING SUSTAINABILITY WITH CONFLICT AND INEQUALITY

4.1 Rethinking Resilience

Given persistent conflict and inequality, resilience becomes a crucial lens for sustainability. Resilience refers to the capacity of systems—ecological, social, economic - to absorb shocks while maintaining essential functions (Folke, 2016). A resilience-oriented sustainability framework acknowledges uncertainty and disruption as inherent conditions of global systems. Rather than assuming linear progress toward sustainability, this perspective emphasizes adaptability, diversification of livelihoods, and inclusive governance structures. Promoting resilience requires addressing root causes of vulnerability: conflict, exclusion, and inequitable access to resources. Peacebuilding and social justice are thus integral to sustainability, not optional 'add-ons'.

4.2 Integrating Equity into Sustainability Policy

Achieving sustainability in a conflict-affected world involves integrating equity into policy design and implementation. Equity goes beyond economic redistribution to encompass procedural justice—ensuring that marginalized communities have meaningful participation in decision-making. Scholars argue that sustainability must be anchored in human rights, democratic accountability, and culturally informed practices that reflect local knowledge (Raworth, 2017). International cooperation and development assistance remain vital but must be restructured to avoid reinforcing dependency or perpetuating power imbalances. Multilateral approaches that support cooperative resource management and shared technological innovation can help bridge divides between nations and communities.

5. CONCLUSION

The concept of sustainability remains a powerful ideal, yet its practical realization is deeply challenged by a world marked by conflicts and warzones, structural inequality, and ecological degradation. Aspirational sustainability discourse coexists with entrenched political and economic systems that perpetuate unsustainable practices. The result is a profound paradox: we speak of sustainability even as the planet and its societies are under increasing strain. This tension calls for critical reflection on what sustainability means and how it might be pursued in ways that are both just and resilient. A true sustainable future cannot be achieved without addressing the root causes of inequality, peace and conflict dynamics, and ecological limits. Humanity must confront difficult truths about consumption, power, and resource distribution if we are to move beyond rhetoric to action. When talking about financial security, it is crucial to understand that nowadays many victims never recover funds because many transactions (especially in crypto) are irreversible, but also due to the lack of regulation, slow legal responses, with more and more market instability. The question remains: do we live on a sustainable planet, or have we created the illusion of sustainability in already unsustainable World?

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CROSS-CULTURAL ANALYSIS OF INDUSTRIAL WORKERS' QUALITY OF LIFE: CONTRASTS BETWEEN BRAZIL AND CHINA

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ABSTRACT

Purpose – This study aims to measure the difference between the industrial workers' quality of life (QoL) from a Brazilian company and a Chinese one.

Design/methodology/approach – The WHOQOL-bref, composed of 26 items, was used to assess workers' QoL. Participants were industrial employees from two organizations, one in Brazil and the other in China. Structural Equation Modeling was employed to identify the domains and facets with the highest and lowest influence on QoL in both groups.

Findings – In Brazil, self-esteem was the facet with the greatest influence on workers' QoL, while positive feelings showed the lowest influence, both within the psychological domain. Among Chinese workers, energy and fatigue (physical domain) had the highest influence, whereas the physical environment (environment domain) had the lowest.

Originality/value – The study provides support for organizations to invest in targeted initiatives, such as QoL programs and improved working conditions, particularly in facets that show lower influence on QoL.

***Keywords:** Quality of Life. People management. Structural equation. WHOQOL-bref.*

1. INTRODUCTION

Quality of Life (QoL) is a powerful tool to evaluate an individual's health, well-being, and physical, psychological, and social behavior (Yoo et al., 2018). Researchers are dedicating increasing efforts to uncover how QoL domains affect the everyday life of specific groups and situations (Maciel and Oetterer, 2010).

The QoL term is widely used in current society, often without a proper connotation, and is frequently related to a high standard of living or socioeconomic indicators such as the Gross Domestic Product (GDP) of a country (Almeida et al., 2012; Gou et al., 2018). However, the QoL concept changes according to time, culture, and even between people from the same group (Pedroso and Pilatti, 2012). According to the World Health Organization (WHO), QoL is “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (The Whoqol Group, 1995). Despite a lack of agreement on the QoL concept or research methodology, countless researchers (Costa et al., 2012; Zhu et al., 2013; Chattopadhyay et al., 2014; Liu et al., 2014; López et al., 2015; Teixeira et al., 2015; Mokarami et al., 2016; Malak, 2017; Kao et al., 2017; Rabanipour et al., 2019) have measured the QoL of people, cities, and countries in the last ten years, using different characteristics for assessment (Gou et al., 2018). The WHOQOL framework defines QoL across four relevant domains: physical, psychological, social relationships, and environment.

These domains include several key facets (Pedroso and Pilatti, 2012). The physical domain covers pain, fatigue, sleep, and work capacity; for example, sleep quality often declines due to psychological, social, and environmental changes (Ropke et al., 2017). The psychological domain involves positive and negative feelings, self-esteem, concentration, and beliefs, with spirituality, religion, and personal beliefs enhancing positive feelings and reducing depression and anxiety (Bettarello et al., 2016). Social relationships encompass personal connections, social support, and sex life; simple activities such as family meals can improve QoL (Sonati and Vilarta, 2010). The environment domain includes safety, financial resources, health access, and physical surroundings, with technological advances sometimes increasing stress and negatively affecting QoL (Lee et al., 2016). Social progress reflects a society's capacity to meet citizens' basic needs, enable individuals and communities to improve and maintain QoL, and create conditions for everyone to reach their potential (Porter et al., 2016). The Social Progress Index (SPI), covering 149 countries, measures progress through basic human needs, well-being, and opportunities (SPI, 2019). In 2019, Brazil ranked 49th (“Medium-High Social Progress”), while China ranked 89th (“Medium-Low Social Progress”), with China's score affected by its large population of approximately 1.4 billion (SPI, 2019). Many global organizations implement QoL programs to gain competitive advantages (Monteiro et al., 2015).

However, balancing work and social life remains a major challenge, directly affecting QoL (OECD, 2017). Labor issues exacerbate this: although work hours are limited to 44 per week in both Brazil and China, Brazil faces problems with working conditions, non-standard hours, and unsafe environments (Estados Unidos, 2017a). In China, informal workers often lack labor contracts, receive lower wages, and work longer hours despite government safety regulations (Estados Unidos, 2017b). Therefore, while the QoL study itself involves various domains and facets, this specific investigation, encompassing industrial workers from the distinct cultures of Brazil and China, introduces additional issues related to social development, culture, values, beliefs, working conditions, and labor law. The relevance of QoL analysis has significantly increased in the last decade (Cruz et al., 2013), integrating several science areas and permeating everyday life (Almeida et al., 2012). However, questions about global QoL suggest the need for further investigations to find solutions related to concept, operationalization, and measurement that previous research has not registered (Glatzer, 2015). Based on this scenario, this study intends to answer the following research question: *In what level is there a difference between the industrial workers' quality of life from a company in Brazil and another in China?*

2. METHODOLOGY

2.1. Population for Data Collection

The study population comprised industrial production line workers from two organizations, one in Brazil and one in China. The Brazilian company, part of a French group, is located in Ponta Grossa, Paraná, and operates in multiservices, including large-scale rental, cleaning, and maintenance of textile goods. The Chinese company, based in Zhuhai, Guangdong Province, also operates in countries such as Thailand and has been in the market for 25 years, providing a wide range of goods and manufacturing GRP/FRP compounds. Both companies are comparable without compromising data analysis, as Brazilian workers are protected under the 1988 Constitution of the Federative Republic of Brazil, while Chinese workers are covered by the 1982 Constitution of the People's Republic of China.

2.2. Population and Data Collection

The study followed ethical procedures for research involving human participants, in accordance with the Declaration of Helsinki (1964) and its subsequent amendments. Participation was voluntary, and individuals could withdraw at any time, respecting their rights. Authorization was obtained from the production managers of the Brazilian and Chinese companies, while ethics committee approval was not required due to the private, multinational nature of the organizations. Data were collected using the WHOQOL-bref instrument, composed of 26 items: two general questions on QoL and 24 items representing the facets of the original WHOQOL-100. Portuguese and Chinese versions of the questionnaire were applied in printed form, depending on participants' availability and the approval of the production manager or human resources department. The WHOQOL-bref's cross-cultural design allows its use in diverse environments and enables comparisons between countries and populations (The WHOQOL Group, 1995).

2.3. Data Analysis Procedure

Data were analyzed at a 95% confidence level ($p < 0.05$) using the software IBM Statistical Package for the Social Sciences (SPSS), version 23. Structural Equation Modeling (SEM) was also employed to interpret the correlations, complemented by the trial version of Amos. According to the correlation interpretation, by Shimakura (2006), ρ values (either positive or negative) are categorized as: very weak (0.00 to 0.19), weak (0.20 to 0.39), moderate (0.40 to 0.69), strong (0.70 to 0.89), and very strong (0.90 to 1.00). After the data collection and organization, the workers' QoL analysis was made throughout the structural equation modeling, in order to identify the domains and facets with the highest and the lower influence level on the industrial workers' QoL from each company.

3. RESULTS AND DISCUSSIONS

The study included 165 workers, 87 Brazilian and 78 Chinese. After data verification, nine questionnaires (three Brazilian and six Chinese) were excluded because less than 50% of their items were completed. Consequently, 84 Brazilian and 72 Chinese questionnaires were retained for the final statistical analysis.

3.1. Perception About Quality of Life and Satisfaction with Health

To describe the results, measures of central tendency were applied. The workers' perceptions of their QoL and health satisfaction are presented in Table 1.

Table 1 - QoL and Health satisfaction

GENERAL QUESTIONS ABOUT QOL		Brazil		China	
		N	%	N	%
1. How would you rate your quality of life?	1.Very Poor	0	0.0	5	6.9
	2.Poor	5	6.0	4	5.6
	3.Neither Poor, Nor Good	29	34.5	40	55.6
	4.Good	45	53.5	16	22.2
	5.Very Good	5	6.0	7	9.7
	Total	84	100.0	72	100.0
2. How satisfied are you with your health?	1.Very Dissatisfied	2	2.4	1	1.4
	2.Dissatisfied	7	8.3	1	1.4
	3.Neither Satisfied, Nor Dissatisfied	25	29.8	19	26.4
	4.Satisfied	40	47.6	40	55.5
	5.Very Satisfied	10	11.9	11	15.3
	Total	84	100.0	72	100.0

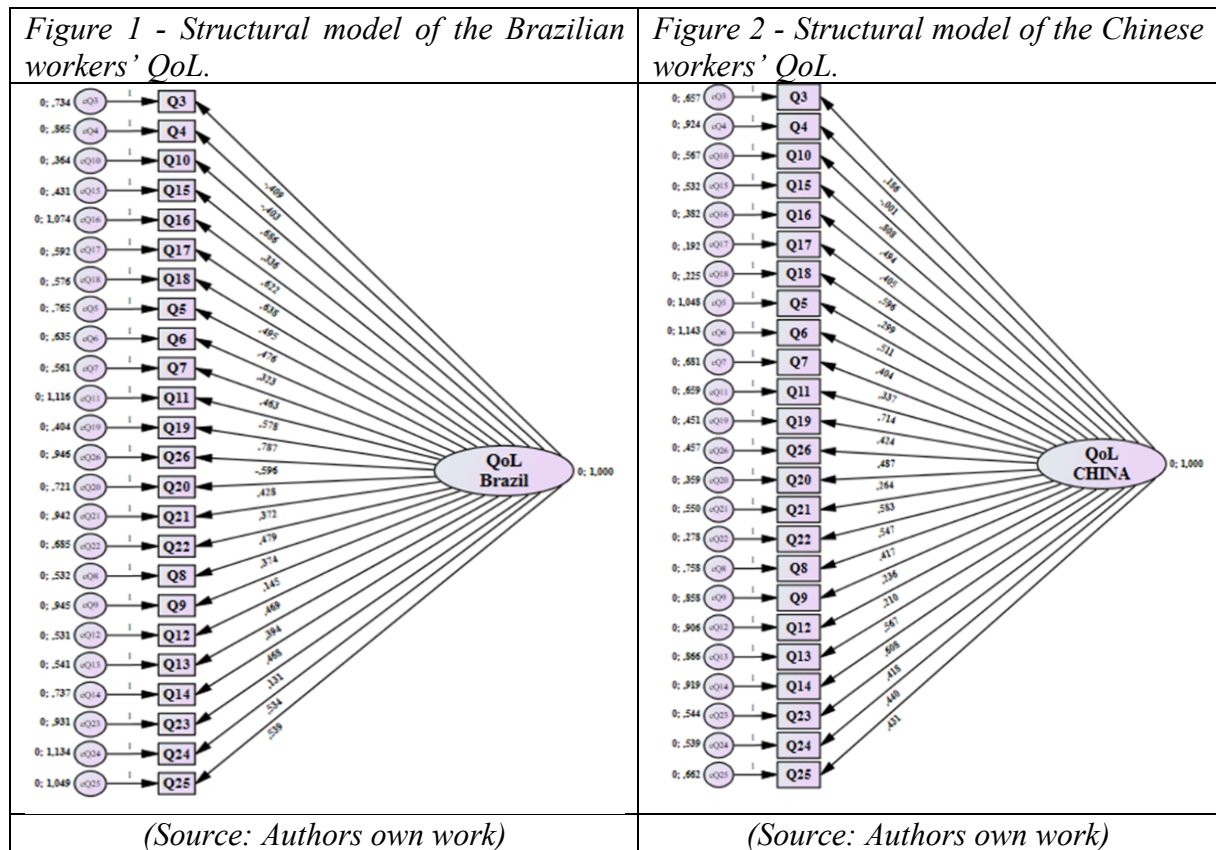
(Source: Authors own work)

The WHOQOL-bref includes two general items assessing overall QoL and satisfaction with health. As shown in Table 1, among the 84 Brazilian workers, 45 (53.5%) rated their QoL as “good”. In contrast, only 16 of the 72 Chinese workers (22.2%) selected the same category—approximately one third of the Brazilian proportion. No Brazilian participant rated their QoL as “very poor”, whereas five Chinese workers (6.9%) did so, and the majority of the Chinese group (40; 55.6%) reported their QoL as “neither poor nor good”. Regarding satisfaction with health, most Brazilian (47.6%) and Chinese workers (55.5%) reported being satisfied.

3.2. Application of Structural Equation Modeling

Multivariate analysis comprises statistical techniques that examine multiple variables simultaneously (Hair Jr. et al., 2017). Structural Equation Modeling (SEM), applied in both exploratory and confirmatory contexts (Byrne, 2016), was employed. The measures were derived from primary data collection rather than secondary sources (Hair Jr. et al., 2017). The structural models and estimates for the QoL of Brazilian and Chinese workers are shown in Figures 1 and 2, respectively.

Figure following on the next Page



Upon finishing the estimates calculations of the Brazilian group, the results showed the facet with the highest influence level on the workers' QoL is the "Self-esteem" related to the Psychological domain. When asked about "How satisfied are you with yourself?" (Q19) the workers answered, the most of them, being satisfied. The facet "Self-esteem", which represents the Q19, presented the strongest correlation (0.787) with the group's QoL, in other words, according to the estimates when the workers' self-esteem variable increases, the QoL also increases, coming closer to 1. Rogers *et al.* (2019) highlights the lack of self-esteem, anxiety, blue mood and bad bodily appearance can affect the individual's ability to interact and communicate, resulting in social isolation. The facet that less influences on this workers' QoL is "positive feelings", also related to the Psychological domain. This variable presented the lowest correlation (0.323) with the participants QoL, having the closest to zero (null) result. In this context, Rabanipour *et al.* (2019) affirmed positive aspects of the worker's mental health such as feeling calm, glad, relaxed and happy, improve the social relationships and the worker's QoL. In contrast, negative feelings such as depression, anxiety and stress, influence on the QoL low level, affecting the body, mood, thoughts and behavior, besides impacting the capacity for work, study, interact and think (Almeida, 2014). In the structural model (Figure 1) is possible to notice, there are two lower values (Q23 and Q9), but according to the results obtained in the software estimates, their results are not significant, because they presented $p\text{-value} > 0.05$.

In Chinese case, the facet with the highest influence level on this workers' QoL is "Energy and fatigue", corresponding to the Physical Domain. The construct "QoL China" presented strong correlation (0.808) with the "Energy and fatigue" variable. From the model results, the workers' QoL increases when the energy level increases, considering the most of the participants answered having much energy for their daily living activities. Yoo *et al.* (2018) affirm the fatigue, when left without treatment, affects the human being's psychological well-being, decreases the motivation, concentration and the energy level for daily living activities.

Regarding the less influential level on the group's QoL, the Environment domain, question Q9, presented the lowest correlation (0.236) between the construct and the variable observed. In this question, the participants reported that their physical environment at work is more or less healthy, regarding the weather, noise, pollution and attractions. Similarly that in the Brazilian structural model, in the Chinese one (Figure 2) is possible to notice there are three lower values (Q3; Q4; Q12) than the Q9 ones, however according to the results obtained in the software estimates, they are not significant, because $p\text{-value} > 0.05$.

3.3. Observed Variables Comparison

As explained in the previous section, the variables which influenced on highest level the workers' QoL were "Self-esteem" and "Energy and fatigue" and in lowest level were "Positive feelings" and "Physical environment", but, besides these variables, others presented strong or moderate association level. The associations between the observed variables and the QoL of each country were presented in the Table 2.

Table 2 - Influence of the observed variables on the QoL construct.

BRAZIL			CHINA		
p	Sig.	Relation	p	Sig.	Relation
-0.596	0.000	Q26 decreases, QoL increases	-0.001	0.991	Not significant
-0.409	0.000	Q3 decreases, QoL increases	0.000		-----
-0.403	0.000	Q4 decreases, QoL increases	0.186	0.069	Not significant
0.000		-----	0.201	0.087	Not significant
0.131	0.244	Not significant	0.236	0.047	Q9 increases, QoL increases
0.145	0.203	Not significant	0.264	0.000	Q20 increases, QoL increases
0.323	0.000	Q6 increases, QoL increases	0.299	0.000	Q18 increases, QoL increases
0.336	0.000	Q15 increases, QoL increases	0.337	0.002	Q7 increases, QoL increases
0.372	0.000	Q21 increases, QoL increases	0.404	0.003	Q6 increases, QoL increases
0.374	0.000	Q8 increases, QoL increases	0.405	0.000	Q16 increases, QoL increases
0.394	0.000	Q13 increases, QoL increases	0.417	0.000	Q8 increases, QoL increases
0.428	0.000	Q20 increases, QoL increases	0.418	0.000	Q23 increases, QoL increases
0.463	0.000	Q7 increases, QoL increases	0.424	0.000	Q19 increases, QoL increases
0.468	0.000	Q14 increases, QoL increases	0.431	0.000	Q25 increases, QoL increases
0.469	0.000	Q12 increases, QoL increases	0.440	0.000	Q24 increases, QoL increases
0.476	0.000	Q5 increases, QoL increases	0.487	0.000	Q26 increases, QoL increases
0.479	0.000	Q22 increases, QoL increases	0.494	0.000	Q15 increases, QoL increases
0.495	0.000	Q18 increases, QoL increases	0.511	0.000	Q5 increases, QoL increases
0.534	0.000	Q24 increases, QoL increases	0.547	0.000	Q22 increases, QoL increases
0.539	0.000	Q25 increases, QoL increases	0.567	0.000	Q13 increases, QoL increases
0.578	0.000	Q11 increases, QoL increases	0.583	0.000	Q21 increases, QoL increases
0.622	0.000	Q16 increases, QoL increases	0.596	0.000	Q17 increases, QoL increases
0.638	0.000	Q17 increases, QoL increases	0.608	0.000	Q14 increases, QoL increases
0.686	0.000	Q10 increases, QoL increases	0.714	0.000	Q11 increases, QoL increases
0.787	0.000	Q19 increases, QoL increases	0.808	0.000	Q10 increases, QoL increases

(Source: Authors own work)

Other questions with significant associations with the QoL can be observed on the Table 2, as in Brazil as in China. For instance:

The question Q10 was the most influential on the Chinese's QoL (0.808) but, this also was the second most influential on the Brazilian's QoL (0.686). Showing the workers from both countries, even in different scores, have their QoL affected by their energy level, meaning that when the Q10 increases, the QoL increases too.

Comparing the answers of Q16 between the groups, The Brazilian group reported being “Neither satisfied, nor dissatisfied” with their sleep and rest, while the Chinese one reported being “Satisfied” with their sleep and rest. This aspect shows the lowest Brazilian score in the facet is affecting the workers’ energy level, since the question Q16 is the fourth most influential facet (0.622) on the Brazilian workers’ QoL. Meanwhile, in the Chinese group, this is one of the lowest influential facet on the QoL (0.405). Hillman *et al.* (2018) comment that according to the technological advances are coming up, the influences on the sleep increase, becoming an unprecedented challenge to obtain quality. Thus, the changes in the sleep, as in quality as in quantity, can be physiological or pathological, resulting in grave consequences such as (i) mortality increase; (ii) physical and mental health impairment; (iii) productivity decrease; (iv) risk of accidents; (v) absences at work and; (vi) lower QoL (Amaro and Dumith, 2017). Another most influential variable on the QoL in both groups was the question Q17, about the ability to perform daily living activities. In Brazil, this was the third most influential on the QoL (0.638), while in China, it was the fourth most influential variable on the workers’ QoL (0.596). Highlighting the ability to perform daily living activities is directly associated to the QoL. As in Brazil as in China, the workers reported being satisfied with their condition. In the case of Brazil, the question Q26 (-0.596) was the fifth most influential variable on the workers’ QoL, but in a inversely proportional way. The Brazilian workers reported having “quite often” negative feelings such as blue mood, desperation, anxiety and depression, in other words, when the negative feelings decrease, the workers’ QoL increases. However, in the case of China, the participants reported having “quite often” negative feelings, in a 1 to 5 scale, “quite often” represents 4. Based on Almeida (2014), negative feelings such as depression can reach the individual’s mood, thoughts and behavior, besides affecting the capacity for work, social interactions and eating habits, varying the symptoms according to each person, being the more common: (i) sadness, anxiety and feeling of emptiness; (ii) energy decrease, fatigue and psychomotor slowing down; (iii) decrease of the interest or the pleasure in usual activities; (iv) changes in appetite or weight (to more or less); (v) sleep disorders (insomnia, excessive sleepiness, waking up earlier than usual) and; (vi) feelings of despair, guilt or worthlessness. The questions Q3 and Q4, related to Brazil, also presented inversely proportional relation to the workers’ QoL. For example, when the physical pain decreases and the necessity of medical treatment decreases, the QoL increases, because the answers show the workers’ physical pain prevents “a little” from doing their activities, needing “a little” medical treatment. In this context, Nepomuceno *et al.* (2016) affirm the health promotion and prevention of injuries at work are actions that require interdisciplinary interventions, however, there is not always a concern from the productive means about these issues. Regarding the Chinese workers, the second most influential variable (0.714) on the QoL is the facet about the “bodily appearance” (Q11). The participants reported being “mostly” able to accept their bodily appearance, showing a direct and significant relation to the workers’ QoL, because based on the results, if the “bodily appearance” variable increases, the QoL increases too. The Brazilian group also presented significant scores in this facet (0.578), being the sixth most influential on the workers’ QoL. When asked “Are you able to accept your bodily appearance?” both groups reported “mostly”. The third variable which presented direct relation to the Chinese workers’ QoL was “opportunity for recreation/leisure activities” related to the Environment domain (Q14). When asked “To what extent do you have the opportunity for leisure activities?”, the Chinese group answered “moderately”. Based on the results, when the Q14 increases, the QoL also increases, therefore, more opportunities for leisure and recreation could improve the indexes of the Chinese group and the Brazilian one, which reported having “a little” opportunity for leisure, lower scores in this facet than the China ones.

About this issue, Teixeira Jr. *et al.* (2012) explain the leisure is part of the human's life, adding benefits to the QoL and collaborating with the health, thus, if the QoL depends directly on leisure and the life is considered the most relevant asset, the search for leisure activities needs to be one of the priorities for the workers' QoL. When the variables which presented the lowest influence level on the groups' QoL are analyzed, the results related to the variables Q15 (Brazil) and Q20 (China) can be highlighted, which were the two which less influenced on each group's QoL. Regarding the question Q15, from the physical domain, the Brazilian group reported having "Good" ability to get around, in other words, the facet mobility direct and significantly affects the QoL, even in a lower level (0.336), when the Q15 increases, QoL also increases in the Brazilian group. Regarding the Q20, from the social relationships domain, the Chinese group reported being "Satisfied" with their personal relationships (friends, relatives, acquaintances and coworkers), showing that even in lower level (0.264) when Q20 increases, the Chinese's QoL also increases. At last, the question Q21, related to the social relationships domain, also presented significant data in the groups comparison. For instance, when asked "How satisfied are you with your sex life?" both groups reported being "satisfied", but differently from China (0.583), in which this is one of the facets that influenced on the highest level the workers' QoL, in Brazil, this was one of the less influential facets on the workers' QoL (0.372). According to Pereira *et al.* (2017), the sex life is related to the cognitive, human being's motor and physical autonomy, because the individuals who keep this function active, present a more satisfactory conception of health.

4. CONCLUSION

This study achieved its objective of assessing the QoL of industrial workers from a Brazilian and a Chinese company using the WHOQOL-bref instrument. It sought to answer the question: *To what extent do QoL levels differ between workers in Brazil and China?* Workers in both countries reported being "satisfied" with their personal relationships. However, Brazilians indicated being "neither satisfied nor dissatisfied" with support from friends, an unexpected result given the cultural value placed on friendships. The greatest disparity concerned physical pain: Brazilians reported that pain "prevents a little" their daily activities, resulting in a low need for medication, whereas Chinese workers stated that pain "prevents very much" their activities, increasing medication use. This difference may reflect cultural patterns in China, where the pursuit of success often leads to overtime work, negatively affecting QoL. Facet-specific analysis revealed distinct influences on QoL.

Among Brazilians, self-esteem had the strongest effect (0.787) and positive feelings the weakest (0.323). In China, the strongest facet was energy and fatigue (0.808), and the weakest was the physical environment (0.236). Both groups showed domains and facets that require improvement. In Brazil, mobility (0.336), sex life (0.372), physical safety (0.374), and opportunities for acquiring new information and skills (0.394) merit attention. In China, personal relationships (0.264), capacity for work (0.299), and thinking, learning, memory, and concentration (0.337) need strengthening. In all cases, higher facet scores were directly associated with better QoL. Regarding contributions, the study provides a basis for targeted investments in QoL programs and improved working conditions, especially in facets with lower influence.

Cultural differences between Brazil and China, particularly in language and organizational practices, represent the main limitation. Moreover, results cannot be generalized beyond the companies studied. Nonetheless, the research fulfilled its objective and supports future investigations into QoL across different countries, cultures, and populations.

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ISO REQUIREMENTS – CONTRIBUTION TO COMPETITIVENESS

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ABSTRACT

The business axiom is that competitiveness is a prerequisite of any business success. The research had different approaches and perspectives how to define, measure and how to improve it. Out of many streams of research of competitiveness we focused on the basic economic category- productivity. Even after several decades of implementing ISO 9001 research has offered controversial results of quality implementation influencing competitiveness. The aim of this paper is to go deeper and detect how mandatory quality requirements from ISO 9001 are being implemented and see how they influence different dimensions of competitiveness. More precisely, the research model was based on examining the relationships between mandatory requirements of knowledge management, change management, continuous improvement on one side and competitiveness on the other. Empirical research was conducted on medium sized firms that hold ISO 9001:2015 from process industry in the Republic of Croatia. A positive and direct influence of knowledge management and change management on the firm competitiveness was confirmed, expanding the partial findings of other authors. A direct impact of continuous improvement on the firm's competitiveness was not confirmed. However, the study confirmed that knowledge management and change management have mediating role in the relation between continuous improvement and competitiveness. The requirements are important to understand the essence of quality, but competitiveness is achieved by implementing formal practices with developed methodologies. The implication for managers is that they should provide targeted education, training, and support to ensure the effective implementation of formal systems, enabling firms to fully realize their positive impact on financial performance and competitiveness.

Keywords: *Change management, Competitiveness, Continual improvement, Knowledge management, Quality management systems*

1. INTRODUCTION

Competitiveness is a concept that the business world respects and promotes as the underpinning way of business conduct across all markets, industries, countries and in all business aspects (Bhawsar, Chattopadhyay, 2015). Different levels of analysis approached competitiveness (Barney, 1991; Grant, 1996; Porter, 1990) whether at country level, regional level, industry level, firm level or value chain level. Each level of analysis has different assumptions and conditions which it has to meet resulting in totally different ways of approaching and perceiving competitiveness. A broad consensus in the literature (Angelos Pantouvakis, 2015; Justino et al, 2025) suggests that improving **business processes, productivity, and overall competitiveness** requires strong managerial focus on the **implementation of quality management systems**, such as the **ISO standards** or equivalent frameworks. The success of implementation of such systems lies in the effective application of **quality requirements**, which are essential for sustaining continuous improvement and operational excellence.

This paper contributes to the literature by examining how the implementation of quality management requirements—particularly the **mandatory requirements of ISO standards** - influences the enhancement of business processes, productivity, and competitiveness. Furthermore, it explores how the **misuse or misinterpretation** of these requirements can potentially **undermine**, rather than strengthen, efforts to improve organizational quality and performance. This contribution is important while it helps disentangling the discussion in quality literature about controversy in operational and financial results achieved by firms implementing quality management systems and question its contribution to productivity (Tari, Claver-Cortes, Garcia-Fernandez, 2023; Long et al., 2023). In order to improve productivity and reach operational excellence one has to understand and properly implement basic quality improvement requirements. The research question is why such contradictory results are been reported in the literature of quality even after several decades of implementing for example ISO standards? Based on that, several recent studies emphasize that deploying AI or automation, as the currents trend in Industry 4.0, without a solid foundation in quality management and requirements per se, can lead to the amplification of inefficiencies rather than their resolution (Patel, 2024; Bukhari & Akhtar, 2024; Kothamali, 2025). The paper is structured into five main chapters. It begins with an Introduction, where competitiveness is positioned as a central concept in business and linked to productivity and quality management. This section also outlines the motivation and purpose of the study, setting the ground for further discussion. The second chapter, Theoretical Background provides an overview of key concepts related to quality management and competitiveness, with special attention to the role of ISO standards as a global framework. It also summarizes the main academic perspectives and debates that form the basis for the research hypotheses. The Methodology, which is the third chapter of the paper, explains the research design and approach applied. It introduces the empirical setting, describes how data were collected, and presents the analytical methods used to examine the proposed relationships. In the fourth chapter, Discussion, findings of the empirical analysis are presented, including the interpretation of findings in light of the theoretical framework and existing literature while the last chapter, Conclusions, summarizes the overall contribution of the paper, emphasizing the broader significance of the study.

2. THEORETICAL BACKGROUND

2.1. ISO Quality management requirements

Quality management has developed as the bridge connecting market needs and technical requirements of the product. After initial stages of developing quality, institutions like ISO started to create management systems that would be used as the recipes for all firms across different countries, industries and sizes with the goal of creating quality product/service. The ISO has played a pivotal role in establishing a common framework for global standardization, fostering international cooperation, and promoting the adoption of best practices across diverse industries. Following the ISO Survey of Management System Standard certification (International Accreditation Forum), a document with a statistical overview of number of certificates for different management systems all around the world, total number of valid ISO 9001 certificates on the day 31.12.2024. was 1.474.118 with 2.321.640 sites covered (permanent location where an organization carries out work or provides a service). ISO mandatory requirements (ISO 9001:2015) are: approved and communicated management policy, documented objectives with monitoring plan, training and competence records, audit reports and corrective actions, meeting minutes and decisions, records of nonconformities and actions taken and performance data and analysis reports. More specific understanding of the mandatory requirements is that for example in clause 7.1.6, ISO 9001:2015 requires organizations to *determine, maintain, and share the knowledge necessary for operational processes and product conformity*- knowledge management.

Furthermore, in the mandatory requirement clause 6.3, *Planning of Changes*, requires organizations to carry out changes to the *Quality Management System in a structured, planned manner to maintain system integrity*- change management. Additionally, mandatory requirement 10.3, *Continual Improvement* mandates that organizations *proactively enhance the suitability, adequacy, and effectiveness of their Quality Management System*- continual improvement. The selection of those three is both subjective and selective but additionally supported by recent research (Demir, A., Budur, T., & Omer, H.M.,2023; Lutete, 2025; Yadav, Heriyati, 2024) which points specifically the importance of knowledge management, change management and continual improvement.

2.2. Competitiveness

The academic stream of research has several theoretical capstones on how competitiveness can be comprehended, utilized and managed; the most dominant idea was promoted by work of Porter (1980) connecting market structure, strategic conduct of the firm and performance. According to this industrial organization model, environment has the most influence on shaping firms' strategies. The counter - balancing approach is the one from Resource based view (Barney, 1991) which identifies inner resources and capability of the firm as the most influential factor in shaping strategies. Starting from Penrose (1959) and Wernerfelt (1984), and later Barney (1991), Grant (1991) and others, resource-based view defines distinctive capabilities on which firm will build their future strategy and competitiveness upon. The third approach is to be sensitive about the changes in the environment and being aware that you can (re)create your capabilities in a dynamic way (Teece, Pisano, & Shuen, 1997) that shaped dynamic capability approach. According to that approach (Sainsbury, 2020) it is important to sense, size and reconfigure in order to identify, understand and put in action all the necessary changes that emerged from the environment. This study adopts the resource-based view on competitiveness in order to address the limitations of static competitiveness models, emphasizing that existing resources in the firm need to be organized well in order to make them function productively and competitive.

2.3. ISO and Competitiveness

ISO offers the array of standards starting from a generic platform of ISO 9001:2015 and niche standards for specific needs. After more than 70 ISO years of writing, training and certifying firms all around the world, research have reported diametric opposite conclusions of ISO implementation benefits on competitiveness (Sfreddo et al., 2021). Conclusion is that results contradict with the similar number of articles in the both groups. One stream of research draws conclusion that ISO 9001 has only the positive impact on business results. The other stream of research draws conclusion that ISO 9001 has impact on only some business aspects results and their impact is not always positive. More specifically, in case the proxy for competitiveness was business financial results there are twofold conclusions of benefits of ISO implementation; one conclusion is that there was a positive financial results after period of implementing ISO (Zayas-Mateo and Martínez-Lorente, 2021; Durak, 2024); while the other group of conclusion is that they have found no connection between implementing ISO and financial results (Duman et al., 2019). In case the proxy for competitiveness is productivity of business processes, the conclusion follows the same pattern. There is positive impact of ISO on productivity of business results (Marimon, Melão & Bastida, 2019; Clay-Williams et al., 2020) and negative impact of ISO on productivity of business processes (Keenan and Rostami, 2019). The contradiction follows even when the proxy for competitiveness is employee satisfaction, motivation and work environment (Purwanto et al., 2020; Casteleiro and Mendes, 2020), innovativeness (Mentel and Hajduk-Stelmachowicz, 2020).

2.4 Hypothesis

The contradict results on researching the relation between ISO quality management implementation and the business performance results are building on the conversation in the quality literature with no resolution or at least possible explanations of the puzzle. Therefore, research proposed several hypotheses in order to help explaining the source of the contradiction. ISO standards comprise a set of requirements and quality requirements that, if implemented without sufficient knowledge, expertise, or with differing motivations for adoption, may lead to inconsistent or even contradictory outcomes. Furthermore, individual requirements and quality requirements do not exert the same level of influence across various dimensions of business performance used as indicators of competitiveness. In addition, firms may comply with these requirements and requirements at varying degrees and levels of intensity. Consequently, this study aims to assess specific quality requirements and examine their distinct impacts on different aspects of business competitiveness. Knowledge management is an activity directed to system perspective of understanding, focusing, deliberate managing and directing of creation, dissemination, application and recreation of knowledge in the overall firm (Wiig, 1997). The goal of knowledge management is to maximize the value of using organizational cognitive asset, experience and learning of employees as part of the productively managing sources of knowledge within the firm. The most recognized critical factors (Gold, Malhotra and Segars, 2001) for implementing such a concept are accessible technology, optimal organizational structure and culture of knowledge management additionally consultants propose adding people, leadership and strategy. Research suggests that promoting and supporting knowledge management will lead to positive financial measures (Abualoush *et al.*, 2018), innovation (Hock-Doepgen *et al.*, 2021; Lam *et al.*, 2021), increased customer satisfaction (Samir, 2020) and productivity (Bentamar, Taj & Ourahou, 2021).

H1: Knowledge management positively impact competitiveness.

Change is crucial and constant element of business. Therefore management literature took a special attention to develop area of change management, defining set of activities that watch over continuous changes within the firm (Waraich & Bhardwaj, 2007), process of changing from current to future state (Andriopoulos & Dawson, 2017) or set of tools and skills needed to change to get implemented in the firm (Kliewe, Davey & Baaken, 2013). The most important contributors were Lewin, Kotter, ADKAR and McKinsey suggested their models of change management but Deming cycle seems to be most widely used in ISO setting.

Each of the model brings both benefits and disadvantages, while complexity brings the burden of misunderstanding and paralyses, research reports less than 30 % change management project have positive success rate (Al-Haddad & Kotnour, 2015) which is of a serious concern.

Also, the change management is found to positively influence process productivity (Thorley, Garza-Reyes and Anosike, 2021), finding reasons of mistakes in the firm (Moran and Brightman, 2000), helping identifying non-efficient processes (Thorley, Garza-Reyes & Anosike, 2021), optimizing the utilization of firm resources and effectively reducing cost (Jacobs, van Witteloostuijn and Christe-Zeyse, 2013) and flexibility in adjusting to the market needs (Thorley, Garza-Reyes & Anosike, 2021).

H2: Change management positively impact competitiveness.

Continuous improvement is the attempt to monitor, check and implement improvements in all activities in the firm no matter how small or insignificant they might seem. The focus is to make service or production better adjusting to the market or competitive needs in order to raise their competitiveness (Aichouni, Ramlie & Abdullah, 2021). The research assigned failure to the continuous improvement as well (Sanchez-Ruiz, Blanco & Diaz, 2018).

The most critical point is the lack of resource and employee engagement (Ahmad *et al.*, 2017) or lack of support from middle management who should be leading the improvements (Lleo *et al.*, 2020).

There are research results indicating that continuous improvement increases business process productivity (Glover *et al.*, 2011), brings to better financial results (Pambreni *et al.*, 2019; Sutrisno and Ardyan, 2020) competitive advantage (Marin-Garcia, Pardo-del-Val & Bonavia, 2008), and firm growth (Tanco *et al.*, 2012). The research (Radej, Drnovsek & Beges, 2017) show that continuous improvement effort make impact on quality and productivity of production processes by making production cost lower.

H3: Continuous improvement positively impact competitiveness.

3. 3. METHODOLOGY

The selected mandatory requirements have been implemented as part of ISO certification, but the research wanted to validate the knowledge, competencies and expertise in those areas of the firms, not by ISO audit criteria, but the criteria of each particular discipline of management behind the requirement. For example, the knowledge was not evaluated by the requirements of ISO, but by the model existing in the body of knowledge management literature.

Knowledge management is being evaluated by construct according to the model of Zaim, Muhammed, Tarim (Zaim, Muhammed and Tarim, 2019), later used by other authors (Demir *et al.*, 2021) which summarized traditional seven level knowledge management cycle in four elements; knowledge creation, knowledge collection, share of knowledge among employees and usage of knowledge in everyday work. Construct for change management is based on the work of Bouckenooghe, Davos and Van den Broeck (Bouckenooghe, Devos and Van den Broeck, 2009), which later used by others (Thorley, Garza-Reyes and Anosike, 2021) based on three pillars; internal context of change, the process of change itself and readiness to change. In order to operationalize construct, we used model (Galeazzo, Furlan and Vinelli, 2021) consisting of components of process management, active engagement and dedication of the top management and firm's determination of proactive improvements. Competitiveness has been assessed by a variety of proxies in the research. The construct of competitiveness was measured by the authors (Chikán *et al.*, 2022), focusing on managers' perception of the firms' business results in the following elements: the level of quality of product or service, level of quality of delivery, flexible servicing and the level of overall financial performance.

The empirical research was conducted on the medium-sized firms operating in the process industry in the Republic of Croatia in 2022. The medium-sized firms are defined by formal EU definition (EU Commission Recommendation 2003/361/EC of 6 May 2003). This is the industry which brings the most contribution to the value added activities in the Croatian economy, employs largest number of people (Prester and Rašić Bakarić, 2017). Apart from that medium-sized firms have resources and organization that supports ISO implementation as deliberate and important business activity. The questionnaire was distributed to 353 medium-sized firms in the processing industry in the Republic of Croatia that hold ISO standard, and our research concluded with 144 valid responses and response rate of 40.79% (Maleković, 2024). We used JASP (version 0.95.4; JASP Team, 2019) for statistical analysis. In order to check the validity of the construct used, a confirmatory factor analysis (Table 1) was performed using standardized factor loadings (Tabachnick and Fidell, 2007).

	Factor loading	Z – value
Construct 1: Knowledge Management		
KM 1: The firm has a formalized promotion of continuous learning for all employees within the organization.	0,54	7,27
KM 2: The firm has an established knowledge base about the features of the products or services it offers on the market.	0,64	9,61
KM 3: The firm facilitates knowledge sharing among employees through a formally established knowledge exchange mechanism.	0,85	11,99
KM 4: The firm provides employees with the ability to effectively utilize the established knowledge base.	0,90	11,69
Construct 2: Change Management		
CM 1: In the event of changes in the firm's business processes, there is support from supervisors for the employees affected by the change (availability to employees in case of uncertainties, questions, etc.).	0,68	10,83
CM 2: In the event of changes in the firm's business processes, employees affected by the change are informed in a documented form through the provision of accessible and updated quality management system procedures, work instructions etc.	0,72	9,82
CM 3: In the event of changes in the firm's business processes, employees affected by the change actively support the changes within the firm.	0,64	8,70
Construct 3: Continual improvement		
CI 1: The firm relies on statistical indicators to monitor the effectiveness of its business processes.	0,64	7,74
CI 2: The firm demonstrates the involvement and commitment of top management to the continuous improvement of business processes.	0,75	11,62
CI 3: The firm proactively works on the continuous improvement of business processes (instead of addressing business process results reactively through a static approach).	0,65	9,86
Construct 4: Competitiveness		
KON 1: The quality of the product or service that the firm provides on the market.	0,41	6,76
KON 4: The adaptability of the firm (e.g., anticipating market changes, innovativeness and proactive employee training in line with anticipated changes, and effective decision-making at the management level).	0,52	8,10
KON 5: The overall business performance of the firm.	0,55	9,31

*Table 1: Results of the confirmatory factor analysis
(Source: Results of empirical analysis).*

The two items KON 2 and KON3 did not fit the construct so it has been excluded from further analysis. Model fit well to data ($\chi^2 = 84,03$; $df = 59$; $CFI = ,97$; $TLI = ,96$; $RMSEA = ,06$). Convergent validity is confirmed (in Table 2) while AVE is higher than 0,50 (Fornell and Larcker, 1981).

Discriminant validity was confirmed, with all AVE values exceeding their corresponding coefficients of determination, in line with the criteria proposed by Fornell and Larcker (1981). Internal reliability was confirmed, with all Cronbach's alpha values exceeding the recommended threshold of 0.70, in accordance with Nunnally (1994).

	KM	CM	CI	KON
KM	1			
CM	,69	1		
CI	,59	,61	1	
KON	,49	,51	,34	1
α	,83	,79	,78	,72
AVE	,59	,55	,55	,48
M	3,88	4,05	4,08	4,10
SD	,79	,77	,77	,49

Table 2: Correlation coefficient, reliability, AVE, mean and standard deviation

(Source: Results of empirical analysis, Note: KM = Knowledge management, CM = Change management, CI= Continual improvement, KON = Competitiveness, α = Cronbach's alpha, AVE = average variance extracted. All correlation coefficient are significant at the level $p < 0,05$.)

The analysis checked for the existence of multivariate extreme values and confirmed that the data met the satisfactory conditions for multivariate normality. No multicollinearity was detected, and homoscedasticity was verified. The tested model (Table 3) predicted that competitiveness is impacted by knowledge management (H1), change management (H2) and not directly to continuous improvement (H3).

Variable	Competitiveness	Knowledge Management	Change Management	Continual Improvement	b	β
Knowledge Management	0,49**				0,21**	0,28**
Change Management	0,51**	0,69**			0,25**	0,33**
Continual Improvement	0,34**	0,59**	0,61**		-0,03	-0,04
					$R^2 = 0,30$	
M	4,05	3,88	4,05	4,08	$R = 0,54**$	
SD	0,58	0,79	0,77	0,77	$F_{3,136} = 19,09**$	

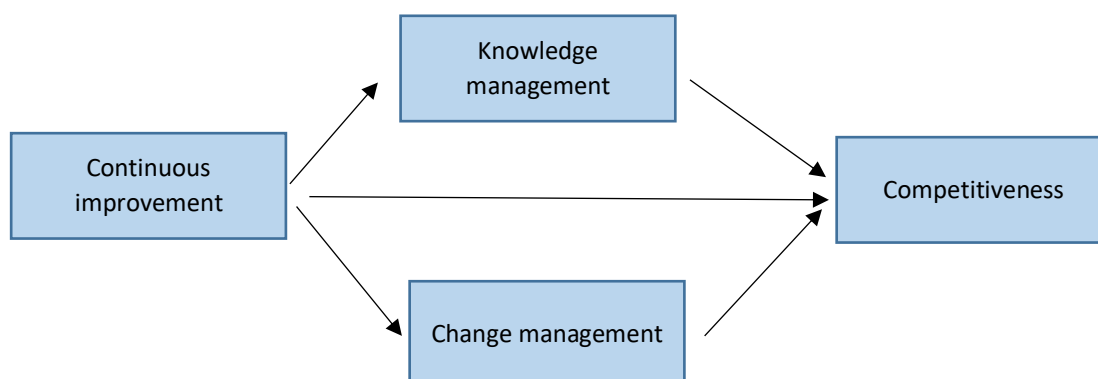
* $p < 0,05$; ** $p < 0,01$

Table 3: Results of regression analysis, descriptive and correlation coefficient

(Source: Results of empirical analysis, the multiple correlation coefficient (R) significantly deviates from zero ($F_{3,136} = 19,09$; $p < 0,01$; $R = 0,54$; $R^2 = 0,30$). R^2 indicates that one third of the variability in competitiveness can be explained by knowledge management, change management and continuous improvement. Out of the tested predictors, two of them impact the competitiveness - knowledge management ($\beta = 0,28$; $p < 0,01$) and change management ($\beta = 0,33$; $p < 0,01$), while continuous improvement was not found to have a statistically significant impact on competitiveness ($\beta = - 0,04$; $p > 0,05$)).

4. DISCUSSION

The first hypothesis was accepted, indicating that implementing the requirements of knowledge management via the ISO certification process positively impacts a firm's product/service quality, flexibility, and overall performance. These findings are consistent with those of other similar studies (Brito *et al.*, 2020). Additionally, Demir *et al.* (Demir *et al.*, 2021) tried to point the contribution of ISO implementation, therefore compared firms that do and do not have certification and their business success. The conclusion was that certified firms have much better results in creating and using knowledge than non-certified firms and overall knowledge management significantly impact sustainability of business. The results imply that knowledge management itself is a complex construct and even elements within the construct may vary and show contradictory results. It is not only that elements of the construct but also the factors that influence each one of them elements vary in different settings (Dzenopoljac *et al.*, 2018) and all that impact the result. This is certainly one of the recommendations for further research. The second hypothesis was accepted, indicating that implementation of the change management requirements via the ISO certification process has a positive effect on a firm's product/service quality, flexibility, and overall performance. The very same kind of research has never been performed before and one can compare it only with other similar research like Moran and Brightman (Moran & Brightman, 2000) who confirmed positive impact of change management on flexibility of firm on the market. Research (Thorley, Garza-Reyes & Anosike, 2021) identified several factors needed to enable such a relation and together with results of de Jesus & Mendonca (de Jesus & Mendonça, 2018) concluded that there should be an active information management system in place within the firm which would enable such a relation. ISO has the requirements specifically like that. This research extends the implications of change management to additional aspects of competitiveness beyond flexibility. The further research is certainly to replicate Thorley, Garza-Reyes and Anosike research trying to identify the factors that contribute to the positive impact on other measures of competitiveness apart from flexibility and make value added contribution to Errida and Lotfi (Errida and Lotfi, 2021) research by identifying which out of the 77 stated factors depend successful ISO implementation in the process industry firms in the Republic of Croatia. The third hypothesis was not accepted, meaning that methodology of continuous improvement implemented via ISO certification process, does not influence competitiveness of such a firm measured by the level of product/service quality, level of flexibility and overall results of the firm. In order to understand what exactly is going on, further analysis was applied. Correlation proved that Continual improvement is significantly correlated to competitiveness ($r = 0,34$; $p < 0,01$) and therefore there could be that knowledge management and change management are actually mediators between continuous improvement and competitiveness (Picture 1).



Picture 1. Redefined model / (Source: Author)

A parallel mediation analysis was conducted using JASP (JASP version 0.95.4; JASP Team, 2019) version 0.95.4], which implements structural equation modeling via the R lavaan package. Bootstrap confidence intervals (5,000 iterations) were used to assess the significance of indirect effects. Results indicated that continual improvement had a significant total effect on competitiveness ($\beta = .39$, 95% CI [.24, .50]). However, when controlling for the mediator's knowledge management and change management, the direct effect of continual improvement on competitiveness was non-significant ($\beta = .00$, 95% CI [-.17, .16]), indicating full mediation. Both indirect paths were significant (CI \rightarrow KM \rightarrow COM: $\beta = .14$, 95% CI [.04, .25]; CI \rightarrow CM \rightarrow COM: $\beta = .26$, 95% CI [.13, .39]). The total indirect effect ($\beta = .39$) accounted for 100% of the relationship between CI and COM, with CM serving as the stronger mediator. From this analysis we can conclude that knowledge management and change management have a mediating role in the relation between continual improvement and competitiveness. Although it is not possible to conclude significantly impact of continual improvement on the competitiveness directly, it can be concluded the significantly impact of continual improvement on the knowledge management and change management which according to H1 and H2 positively impact competitiveness. Actually, these results imply that continual improvement, if understood as the politics or requirement, does not help much and cannot establish a positive impact on competitiveness. It needed a certain form of formality and methodology attached and its main essence is to have positive relation to competitiveness but indirect one through out forms and playsets of improvements. What distinguishes this study from previously mentioned research in terms of hypothesis formulation is that the effects of specific ISO mandatory requirement through a direct link to productivity as the proxy of competitiveness. One of the key managerial implications is that the requirements of ISO standards are closely linked to business competitiveness. However, it is essential to provide targeted education, training, and support to facilitate the implementation of formal systems so that firms can fully realize their positive impact on financial performance and competitiveness. When implementing ISO standards, managers—while striving for more productive use of resources—should focus on adopting concrete methodologies and software tools that guide step-by-step processes of change and knowledge management. If the implementation is approached superficially, the real benefits of ISO adoption will not translate into increased productivity or enhanced competitiveness. It is crucial to prioritize and develop a deep understanding of the essence of ISO requirements, as they are neither identical nor equally significant. Among them, the requirement of *continual improvement* serves as the foundation—it represents a more theoretical and abstract concept from which managers can derive real benefits only through the application of specific methodologies or practices, such as change management or knowledge management. In essence, *continual improvement* is the core quality requirement, while all other requirements and implementation approaches serve to operationalize and reinforce it. The main limitation of this research lies in its focus solely on medium-sized firms operating within the processing industry of the Republic of Croatia. Furthermore, the study examines only three out of the ISO quality management mandatory requirements. Future research could expand the scope by including additional industries, exploring firms from other countries, and incorporating the remaining ISO mandatory requirements providing a more comprehensive understanding of their application and impact.

5. CONCLUSION

The results of this research provide two minor improvements and one general conclusion. One minor improvement focused on addressing knowledge management, recognizing that each component could present distinct or even conflicting obstacles to successful implementation. A second minor improvement involved linking change management not only to flexibility but also to all other components of competitiveness.

The general conclusion is that continual improvement is a general requirement but it cannot be directly linked to competitiveness on its own because achieving competitiveness requires the implementation of formal systems and methodologies. Such methodologies are for example change management and knowledge management which mediate the relationship between requirements and overall competitiveness. Therefore, it can be concluded that requirements alone do not generate competitiveness, and consequently, effective methodologies must be applied in order to achieve it successfully. Based on facts outlined above, this paper proposed several incremental steps toward quality and overall competitiveness of the firm.

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DRIVERS OF ECONOMIC GROWTH IN CROATIA: EVIDENCE ON INVESTMENT, INSTITUTIONS, AND DEVELOPMENT CONSTRAINTS

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ABSTRACT

Through inductive research approach, this paper analyzes the sources of economic growth of the Republic of Croatia with particular emphasis on the role of fiscal and monetary policy, the institutional framework, investments, technological progress, and human capital. The theoretical section reviews classical, neoclassical, and contemporary endogenous growth theories, with special attention given to the role of institutions and economic policies. The empirical analysis provides a historical overview of Croatia’s economic growth from independence to the present, including the impact of war, transition, global crises, and accession to the European Union. Fiscal and monetary indicators, GDP trends, public debt, government revenues and expenditures, development investments, education, investment activity, and key economic sectors are examined in detail. The analysis indicate that the Croatian economy has made progress, particularly in terms of macroeconomic stability and access to EU funds, but continues to face challenges such as low productivity, adverse demographic trends, and institutional inefficiencies. The paper concludes that sustainable economic growth requires structural reforms, strengthening innovation capacity, investment in education, sound public finance management, stronger links between the education system and the labor market, and measures to halt the emigration of highly educated workers.

Keywords: *economic growth, investment, human capital, research and development, inductive research, Croatia*

1. INTRODUCTION

Economic growth represents a key objective of every country, as it enables an increase in living standards and the overall competitiveness of the economy. Although it is most commonly measured by gross domestic product (GDP), long-term growth also encompasses structural changes, technological progress, institutional development, and the accumulation of human capital.

Since gaining independence in 1991, Croatia has undergone significant economic and institutional transformations, including market liberalization, structural reforms, and accession to the European Union. Despite these advances, the Croatian economy continues to face challenges such as low productivity, unfavourable demographic trends, and inefficiencies in the public sector. The aim of this paper is to analyse the sources of economic growth in the Republic of Croatia, with particular emphasis on the role of investment, human capital, innovation, the institutional framework, and fiscal and monetary policy. The theoretical part of the paper presents the main theories of economic growth, while the analytical part provides an overview of key macroeconomic indicators and a comparative assessment of Croatia in relation to several other transition economies within the European Union.

2. THEORETICAL FRAMEWORK OF ECONOMIC GROWTH

Understanding economic growth is essential for designing policies that foster development and raise living standards. Throughout history, theories of economic growth have offered different perspectives on the factors that drive growth and development across countries. Classical theories (Smith, Ricardo) emphasize the role of capital, labour, the division of labour, and free markets in promoting growth, but they do not adequately explain long-term technological progress. Neoclassical theories, particularly the Solow model, introduce technological progress as a key exogenous determinant of growth, alongside the importance of savings and investment. Contemporary endogenous growth theories (Romer, Lucas) argue that human capital, innovation, and investment in research and development are the main internal drivers of growth, over which economic policy can exert a direct influence. Institutions also play a crucial role; according to Acemoglu and Robinson, their quality significantly determines a country's economic performance. Beyond theoretical approaches, the main determinants of economic growth include capital investment, human capital development, technological progress, institutional quality, and a stable macroeconomic policy framework. In the context of Croatia, particular challenges include adverse demographic trends, regulatory barriers, and the outflow of skilled labour. Investments in infrastructure, education, research, and innovation are therefore essential for increasing productivity and enhancing economic competitiveness. Fiscal and monetary policy play an important role in stimulating economic growth. Traditional theories emphasize a limited role for the state, whereas Keynesian and contemporary endogenous growth theories highlight the importance of public investment, particularly in education, healthcare, infrastructure, and innovation. A stable monetary policy contributes to overall macroeconomic stability, while coordination between fiscal and monetary policy is crucial for strengthening the effectiveness of public policies and creating the conditions for stable and sustainable economic growth. In the case of Croatia, fiscal policy and the stable exchange rate policy of the Croatian National Bank have played a significant role in stabilizing the economy, particularly during the transition period and the process of accession to the European Union. Nevertheless, further economic growth requires improvements in the institutional framework, greater investment in knowledge, strengthening of innovation capacity, and better coordination of economic policies.

3. KEY FACTORS AND SOURCES OF ECONOMIC GROWTH IN THE REPUBLIC OF CROATIA

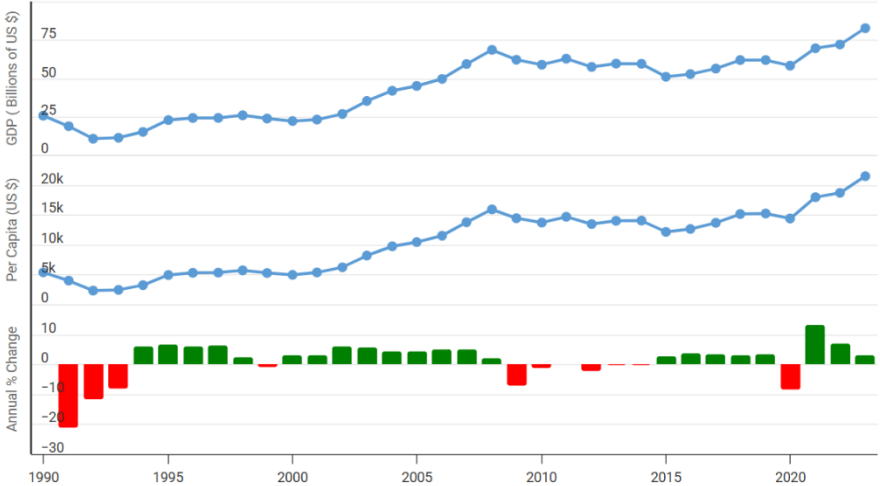
Over the past several decades, the Croatian economy has undergone various stages of development, ranging from the transition from a centrally planned to a market-based economy to integration into the European Union. Each of these stages was characterized by specific economic, social, and political circumstances that shaped the dynamics of economic growth (Bartlett, 2003; Šonje, 2010).

An analysis of the key sources of economic growth in Croatia enables a better understanding of the main factors that have either stimulated or constrained economic development. Accordingly, this chapter focuses on identifying the principal sources of growth and analysing their impact on Croatia’s economic performance across different time periods.

Historical overview of economic growth in Croatia

Economic growth in the Republic of Croatia from independence to the present has gone through several phases marked by transitional challenges, war-related destruction, macroeconomic reforms, economic crises, and integration into the European Union (Woodward, 1995; Bartlett, 2003).

Figure 1. GDP trends in Croatia, 1990–2025



Source: <https://www.macrotrends.net/global-metrics/countries/HRV/croatia/gdp-gross-domestic-product>.

As illustrated in Figure 1, the first phase (1991–1995) was characterized by war and a deep recession, with GDP declining by more than 30% and hyperinflation emerging as a major problem (Šonje, 2010). The stabilization program implemented in 1993 succeeded in curbing inflation and laid the foundations for economic recovery (Croatian National Bank, 1994). The second phase (1996–2008) was marked by economic growth driven by foreign investment, the expansion of the service sector, particularly tourism, and the liberalization of the financial sector. Average GDP growth rates ranged between 4 and 5%; however, growth was largely fuelled by consumption and borrowing, while productivity and competitiveness remained relatively low (Mervar and Nestić, 1999).

The third phase (2009–2014) was shaped by the global financial crisis and a prolonged recession, during which GDP declined by nearly 7% in 2009, accompanied by significant increases in unemployment and external debt (Tomić and Domadenik, 2012; IMF, 2022). In the fourth phase (2015–present), Croatia has recorded positive economic growth, partly supported by EU funds, export growth, and structural reforms. Croatia’s accession to the euro area in 2023 marks a new chapter of economic integration, while simultaneously posing challenges related to increasing productivity and competitiveness (European Commission, 2023).

Main determinants of economic growth for Croatia

Economic growth in Croatia has been shaped by a combination of domestic and external factors. Technological progress and innovation are recognized as key long-term drivers of growth according to endogenous growth theories (Romer, 1990); however, investment in research and development in Croatia remains below the EU average (Tomljanović, 2017). Weak linkages between the academic and business sectors further constrain the country's innovation potential. Investment, particularly through EU funds, has played an important role in financing infrastructure, yet insufficient focus on high value-added sectors and administrative obstacles limit its overall effectiveness (Mervar and Nestić, 1999; European Commission, 2018). Human capital and demographic trends represent a long-term challenge. The emigration of highly educated young people and population ageing negatively affect labour supply and the sustainability of public finances (Lovrinčević, 1998; Tomić and Domadenik, 2012). The quality of institutions and the business environment is crucial for sustainable growth. Efficient institutions and legal certainty encourage investment, whereas administrative barriers, a slow judicial system, and the perception of corruption constrain economic potential (Acemoglu, Johnson, and Robinson, 2005; Vedriš and Šimić, 2008).

Economic structure and sources of growth in Croatia

The Croatian economy is characterized by the dominance of the service sector, particularly tourism, which in favourable years accounts for more than 20% of GDP (Croatian Bureau of Statistics, 2022). Although tourism generates substantial revenues, heavy reliance on a seasonal sector makes the economy vulnerable to global shocks (European Commission, 2021). The industrial sector, which should be a key driver of productivity, remains below its potential. Manufacturing, especially the metal-processing and food industries, has recorded slow progress due to insufficient investment and limited technological development (Mervar and Nestić, 1999).

Agriculture has a long tradition but represents a small share of GDP, characterized by low productivity and insufficient use of EU funds for modernization (European Commission, 2018). Exports and investment, although they have increased since EU accession, have not yet become the primary engines of growth. The trade deficit and low product competitiveness remain persistent problems, while comparable countries such as Poland and Czechia have achieved higher export performance owing to stronger technological foundations (Bezić and Karanikić, 2001; European Commission, 2021).

Fiscal and monetary policy as determinants of economic growth

Fiscal policy in Croatia has played a crucial role in stabilizing the economy and shaping economic growth. The initial period was marked by crisis-driven financing of national defence and the reconstruction of war damage (Franičević and Bićanić, 2000). The introduction of value-added tax (VAT) in 1998 and gradual fiscal consolidation contributed to fiscal stability; however, high public expenditure and inefficiencies in the public sector remained persistent problems (Šimović, Ćorić, and Deskar Škrbić, 2018). The global financial crisis of 2008 exposed weaknesses in fiscal policy stemming from the absence of key structural reforms, while the period after 2015 was characterized by consolidation efforts, preparations for euro adoption, and fiscal interventions during the COVID-19 pandemic. Despite notable fiscal improvements, public debt levels, limited fiscal space for investment, and the ongoing need for reforms continue to pose challenges (Buturac, 2017; European Commission, 2022; Croatian National Bank, 2023).

Monetary policy in Croatia was primarily oriented toward stability through the exchange rate anchor strategy and the maintenance of a stable kuna–euro exchange rate (Lang and Krznar, 2004). The introduction of the kuna in 1994 and the strengthening of the institutional independence of the Croatian National Bank enabled effective inflation control; however, high levels of euroization and structural constraints reduced the flexibility of monetary policy (Dragojević Mijatović, 2011). Economic crises, including the global financial crisis and the COVID-19 pandemic, further tested the monetary system. Croatia’s entry into the euro area in 2023 marked the end of an independent national monetary policy, while simultaneously opening new opportunities through deeper financial integration and reduced exchange rate risk (Bokan et al., 2019; Croatian National Bank, 2023).

Structural reforms and the institutional framework as drivers of economic growth

Structural reforms are widely recognized as a key instrument for increasing long-term growth potential. Their role is particularly important in small, open economies such as Croatia, which are highly exposed to external shocks and characterized by structural weaknesses including low productivity, an inefficient judicial system, a rigid labour market, and adverse demographic trends (Bejaković, 2019). During the transition period and the process of accession to the European Union, several important reforms were implemented, including market liberalization, enterprise privatization, pension reform, and fiscalization measures (Ott, 2008; Bejaković, 2019). A particularly significant reform was the 2002 pension reform, which introduced a second pillar of mandatory funded pension savings, contributing to the stabilization of the pension system and the development of financial markets. However, the implementation of reforms in areas such as education, healthcare, the judiciary, and the labor market remains insufficient. Weaknesses in the institutional framework, inefficiencies in public administration, political fragmentation, and a low level of transparency limit the effectiveness of reforms and undermine investor confidence (Tica and Družić, 2020; Ott, 2009).

The establishment of the European system of economic governance, access to EU funds, particularly through the Next Generation EU instrument, and the National Recovery and Resilience Plan (NRRP) adopted in 2021 provide an opportunity to accelerate reforms. Nevertheless, experience to date indicates that limited institutional capacity and slow administrative procedures continue to hinder effective implementation (European Commission, 2023). To achieve long-term and sustainable economic growth, Croatia must intensify structural reforms, with particular emphasis on judicial reform, modernization of the education system, labour market flexibilization, strengthening public administration capacity, and reducing regulatory barriers. Institutional quality, public sector efficiency, and transparency are key prerequisites for increasing investment, productivity, and the overall competitiveness of the Croatian economy (Acemoglu, Johnson, and Robinson, 2005).

Short review of existing research

Economic growth in Croatia and the European Union has been the subject of numerous economic and scientific studies aimed at identifying the main drivers of growth, detecting structural weaknesses, and providing policy recommendations to enhance long-term development sustainability. Most studies focus on the impact of investment, innovation, labour market conditions, institutional reforms, and the effectiveness of economic policy on GDP growth. Mervar and Nestić (1999) demonstrated that macroeconomic stability, particularly fiscal discipline and a stable monetary policy, was a necessary precondition for economic stabilization; however, insufficiently decisive implementation of structural reforms constrained long-term growth rates.

Similarly, Šonje (2010) argues that privatization, consumption, and foreign capital initially stimulated growth, but without corresponding improvements in productivity and competitiveness, a shortcoming that became particularly evident after the global financial crisis of 2008. Tomić and Domadenik (2012) emphasize the negative impact of labour market rigidity and the mismatch between education systems and labour market needs, which limit competitiveness and employment. Tomljanović (2017) highlights low investment in research and development (R&D) and weak linkages between science and the business sector as key obstacles to faster growth. Bezić and Karanikić (2001) point out that foreign direct investment in Croatia was predominantly directed toward the financial sector rather than manufacturing and export-oriented activities.

In contrast, Acemoglu, Johnson, and Robinson (2005), through a broader European analysis, confirm that stable institutions, legal certainty, and good governance strongly promote economic growth. According to the European Commission (2018) and the IMF (2022), innovation, digital transformation, and investment in human capital are the main growth drivers in advanced EU economies. Comparisons with Poland and Czechia indicate that countries which proactively implemented reforms and invested in knowledge achieved faster convergence with more developed EU member states. Overall, research confirms that Croatia has the potential for stronger and more sustainable growth; however, realizing this potential depends on strengthening institutions, implementing reforms, and increasing investment in innovation and competitive sectors.

4. METHODOLOGICAL FRAMEWORK AND RESEARCH HYPOTHESES

The study is based on a quantitative analysis of key economic indicators of the Republic of Croatia, with the aim of identifying the main factors influencing the dynamics of economic growth. The analysis covers time series of indicators such as real GDP growth, fiscal and monetary indicators, investment in education, research and development (R&D), the level of absorption of EU funds, and indicators of institutional quality. In addition, a comparative approach is applied by comparing Croatia with Poland and Czechia. These countries were selected due to their similar transition paths and membership in the European Union, yet they have achieved significantly better economic outcomes, particularly in terms of utilizing development potential and implementing structural reforms.

The objective of the research is to determine how key factors, such as investment in human capital, the absorption of European Union funds, and institutional quality, affect economic growth in the Republic of Croatia. The analysis focuses on indicators related to education, research and development, as well as the economic effects of EU fund absorption over the past decade. Particular emphasis is placed on assessing Croatia's institutional quality, measured using available international indicators, in order to better understand how the regulatory and administrative environment influences the investment climate and overall economic competitiveness. The results are interpreted through comparison with Poland and Czechia, which have undergone similar transition processes but achieved different economic outcomes, thereby providing a clearer perspective on the scope for further development of the Croatian economy. For the purposes of the analysis, data from relevant domestic and international institutions were used, including the Croatian Bureau of Statistics, the Croatian National Bank, the European Commission, and the World Bank. Based on prior theoretical insights and the identified challenges of the Croatian economy, the following research hypotheses are formulated:

Hypothesis 1 (H1): Investment in human capital is positively associated with economic growth. Human capital, encompassing the knowledge, skills, and education of the workforce, is widely recognized as a key driver of economic development. Previous studies, such as those by Paul Romer (1990), indicate that higher investment in education and research contributes to increased productivity and innovation capacity. In the case of Croatia, where relatively low levels of investment in education and a pronounced outflow of highly educated labor are observed, this hypothesis is of particular importance.

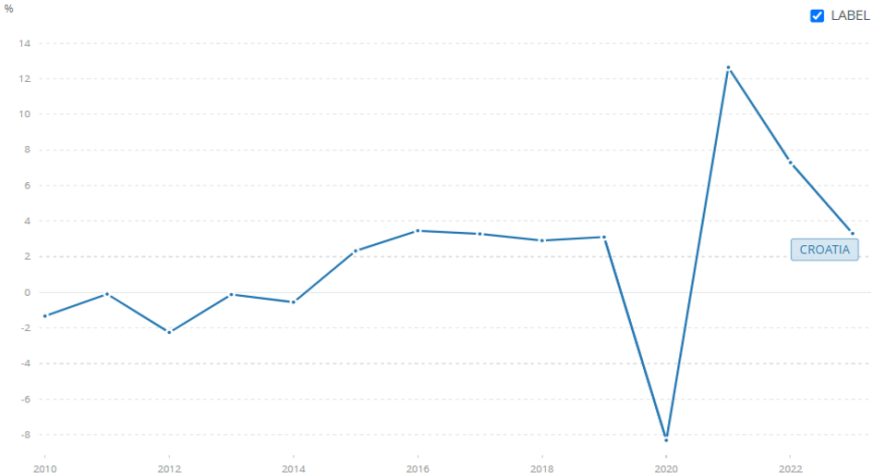
Hypothesis 2 (H2): The absorption and efficient allocation of EU funds have a positive impact on gross domestic product. Membership in the European Union has provided Croatia with access to significant sources of financing through EU funds. Their effective utilization, particularly in infrastructure, education, innovation, and research, can have a direct positive effect on economic growth. However, existing experience points to administrative barriers and capacity constraints that limit the full potential of EU funds. A comparison with Poland and Czechia, which have been more successful in absorbing and allocating these resources, allows for a more accurate assessment of the effectiveness of the Croatian model.

Hypothesis 3 (H3): Improvements in institutional quality increase investment efficiency and contribute to higher rates of economic growth. The institutional framework, including legal certainty, public administration efficiency, and regulatory stability, is crucial for attracting investment and strengthening economic competitiveness. Theoretical research (Acemoglu and Robinson, 2012) confirms the importance of institutions as a fundamental determinant of long-term growth. According to indicators such as the Ease of Doing Business Index, Croatia lags behind comparable countries, indicating the need to improve institutional quality in order to enhance investment efficiency and stimulate economic growth.

Presentation of key data and comparative analysis of Croatia, Poland, and Czechia

GDP is a key indicator of economic health, as it reflects the total value of goods and services produced. In Croatia, the period from 2010 to 2023 was marked by pronounced fluctuations in economic activity, confirming the economy’s vulnerability to external shocks.

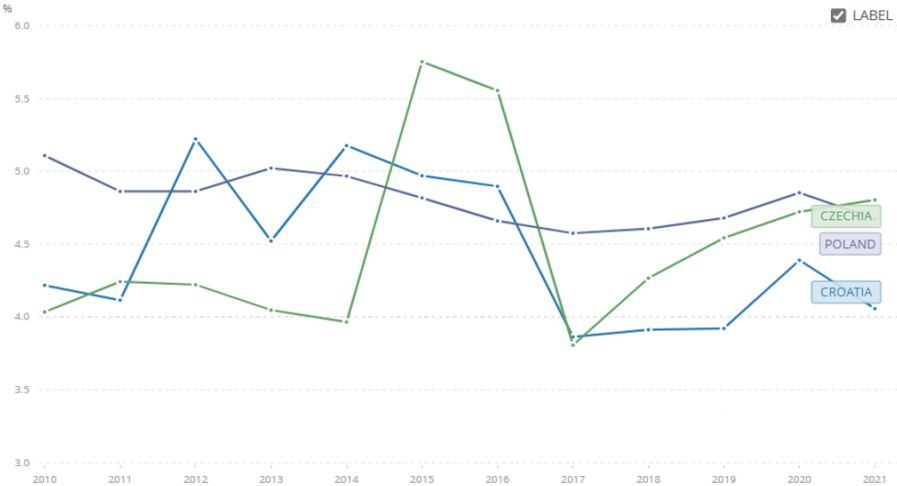
Figure 2. GDP growth in Croatia (%), 2010–2024



Source: <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2023&locations=HR&start=2010>.

As shown in Figure 2, which illustrates GDP growth in Croatia (%) from 2010 to 2024, the economy stagnated in the early years of the period due to the effects of the global financial crisis. Economic recovery began in 2014, with average annual GDP growth of approximately 2.5% until 2019, driven by private consumption, exports, and tourism. In 2020, GDP declined sharply by -8.1% as a result of the COVID-19 pandemic, while 2021 was marked by a strong recovery, with GDP growth reaching 12%, one of the highest rates in the European Union. These GDP dynamics clearly indicate the need to strengthen economic resilience and reduce dependence on tourism and external factors. Human capital, through knowledge, skills, and innovation, is essential for long-term economic growth. In Croatia, expenditure on education during the observed period averaged 4.4% of GDP, which is below the EU average of 5%. Since 2017, this expenditure has stagnated and shown a slight decline, potentially negatively affecting the workforce’s ability to adapt to labor market needs. Compared with Poland and the Czechia, which have continuously increased investment in education, Croatia lags behind, as confirmed by the data presented in Figure 3, which compares education expenditure as a percentage of GDP in Croatia, Poland, and the Czechia. In addition, Croatia records a higher rate of emigration among highly educated individuals. Such trends reduce competitiveness and weaken the economy’s long-term development potential.

Figure 3. Education expenditure as a percentage of GDP in Croatia, Poland, and Czechia, 2010–2023



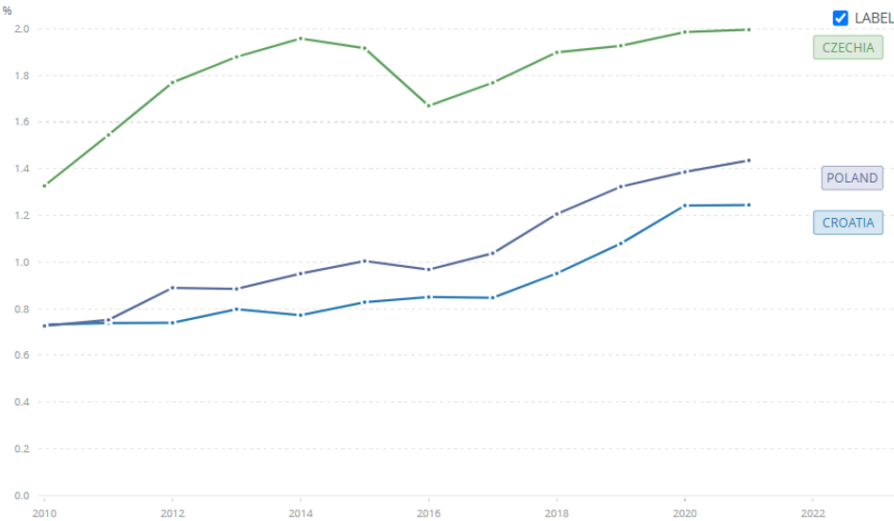
Source:

<https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS?end=2021&locations=HR-CZ-PL&start=2010>.

Investment in research and development is crucial for technological progress and innovation. Over the observed period, Croatia allocated on average only 0.9% of GDP to R&D, which is significantly below the EU average of 2.1%. As shown in Figure 4, which presents R&D expenditure as a percentage of GDP, comparison with Poland (1.4%) and Czechia (around 2%) indicates that Croatia is lagging behind, negatively affecting innovation development and technological competitiveness. Although investment in R&D increased slightly in certain years, prolonged stagnation below 1% of GDP clearly points to the need for stronger incentives and increased investment in this sector in order to reduce the gap with more developed EU member states. EU funds represent an important source of financing for Croatia’s economic development, particularly for infrastructure projects, education, and innovation. The absorption of funds was low in the initial years but improved significantly after 2017, reaching 87.7% by the end of 2023.

The main obstacles included administrative complexity, slow planning and publication of calls for proposals, implementation irregularities, and insufficient capacity for project preparation. To increase the efficiency of fund absorption, it is necessary to simplify bureaucratic procedures and strengthen administrative capacities. Institutional quality is crucial for attracting investment and ensuring a stable business environment. According to World Bank data, Croatia has recorded modest improvements in institutional indicators since 2015; however, it still lags behind the European Union average. The Ease of Doing Business Index has improved, but issues such as administrative barriers, lengthy procedures, and an inefficient legal framework continue to limit competitiveness. Further reform measures are therefore required to enhance Croatia’s attractiveness to investors.

Figure 4. Research and development expenditure as a percentage of GDP in Croatia, Poland, and Czechia, 2010–2023



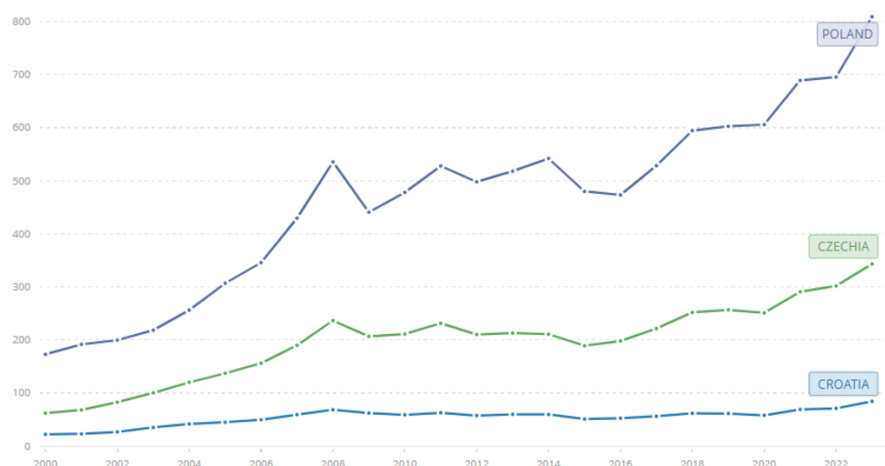
Source:

<https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2023&locations=HR-CZ-PL&start=2010>.

Time-series analysis illustrates the trends of key economic indicators in Croatia from 2010 to 2023. During this period, GDP went through three distinct phases: recession until 2013, recovery until 2019, and a sharp decline followed by a strong rebound as a result of the COVID-19 pandemic. Expenditure on education and research and development remained low compared with the EU average, constraining the economy’s innovation potential. The absorption of EU funds improved considerably, reaching 88% by the end of 2023, although Croatia still lags behind countries such as Czechia and Poland. Institutional indicators show modest progress, yet the business environment remains below the European average. These findings point to the need for further investment in human capital and continued reforms to ensure sustainable economic growth.

The comparison of Croatia with Poland and Czechia in Figure 5 illustrates GDP trends for all three countries from 2000 to 2023. Despite similar transition starting points, significant differences in economic performance are evident. While Croatia’s GDP increased by approximately 282% between 2000 and 2023, Poland and Czechia recorded substantially higher growth. Poland nearly quintupled its GDP, while Czechia increased it more than fivefold. These countries demonstrated greater resilience to global crises and achieved more stable growth due to faster reforms, higher investment in education and innovation, and the retention of skilled labor.

Figure 5. GDP trends in Croatia, Poland, and Czechia, 2000–2023



Source:

<https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2023&locations=HR&start=2010>.

Although Croatia has experienced positive developments, it continues to lag behind because of structural weaknesses and slower adjustment processes, indicating the need for accelerated reforms and enhanced competitiveness. Poland and Czechia have also shown high efficiency in utilizing EU funds, which has contributed to faster economic development and the implementation of structural reforms. Croatia achieved more substantial progress only after 2017, with 88% of available funds absorbed by the end of 2023.

Although this represents an improvement compared with earlier years, Croatia still lags behind more successful countries such as Poland and Czechia. Reducing administrative barriers, improving strategic planning, and increasing project preparation capacity are essential to fully exploit the potential of EU funds in the future. Investment in education directly affects the competitiveness and innovativeness of an economy. Data presented in Figure 3 indicate that Czechia and Poland consistently invest in this sector, with expenditure in some years exceeding 5.5% of GDP. In Croatia, education spending is lower, with visible fluctuations and periods of stagnation.

A particular challenge for Croatia is the continuous outflow of highly educated labor, which in 2023 reached a brain drain index of 6.1, significantly higher than in Czechia (3.5) and Poland (4.6). This trend reduces the availability of skilled labor and weakens the country's long-term economic potential. Research and development are of crucial importance for technological progress; however, Croatia lags considerably in this area.

While Czechia invests close to 2% of GDP and Poland around 1.4%, Croatia surpassed the 1% threshold only after 2019, having previously remained below that level. Insufficient investment in research constrains the development of innovation and high-technology industries and reduces competitiveness in the European market. A favourable business environment and high-quality institutions form the foundation for attracting investment.

Although Croatia has achieved certain improvements in the Ease of Doing Business Index in recent years, it still lags significantly behind Poland and Czechia, which have more stable and efficient institutional systems. Slow administrative procedures, legal uncertainty, and complex regulatory processes continue to represent major barriers that limit investment activity. The comparative analysis shows that Poland and Czechia have systematically used available resources to strengthen human capital, innovation capacity, and the institutional framework, enabling stable and robust economic growth.

Croatia has made progress; however, shortcomings in key areas such as education, research, and institutional efficiency require additional reforms and clearer strategic orientation in order to increase competitiveness and reduce the development gap relative to comparable transition economies.

Analysis of fiscal indicators for Croatia

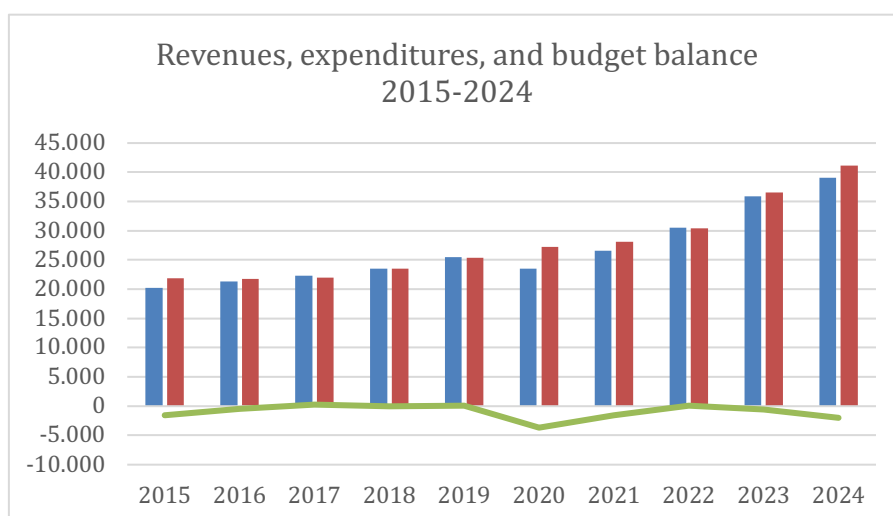
Fiscal indicators, such as trends in public revenues, expenditures, budget balances, and public debt, are essential for understanding the sustainability and effectiveness of public finances. Their dynamics in Croatia largely reflect the processes of economic transition, political circumstances, and the effects of economic shocks experienced over the past three decades. The early years of Croatia's independence were marked by war-related destruction, economic transition, and political instability, which significantly hindered the establishment of a functional fiscal system (Bićanić and Ott, 1997).

Fiscal policy during this period was characterized by high inflation, weak fiscal discipline, and frequent monetary financing of budget deficits, thereby deepening macroeconomic instability (Franičević, 2002). Although partial fiscal stabilization was achieved after 1995, structural problems remained pronounced. GDP increased from EUR 15.7 billion to nearly EUR 24 billion by 2000; however, expenditures exceeded revenues, resulting in a growing budget deficit (Vučković, 2010). Public debt doubled, and its share in GDP rose to 35.4%, partly due to increasing reliance on external borrowing (Glibo, 2018).

The introduction of value-added tax (VAT) in 1998 improved the tax structure, but the dominance of pension spending and transfers revealed significant weaknesses on the expenditure side of the budget (Franičević, 2002). The absence of reforms led to a fiscal model that was unsustainable in the long run without deeper structural interventions (Bićanić and Ott, 1997; Glibo, 2018). At the beginning of the new millennium, Croatia recorded moderate economic growth, which had a positive effect on budget revenues; nevertheless, expenditure growth continued to outpace revenues, resulting in an average budget deficit of -3.8% of GDP (Vučković, 2010). Fiscal policy was procyclical, and the lack of structural reforms increased the vulnerability of the system (Benazić and Tomić, 2014).

The global financial crisis of 2008 had a severe impact on Croatia: GDP declined, revenues fell, and expenditures remained high, leading to an escalation of deficits and indebtedness. By 2014, public debt had doubled to EUR 37.3 billion (83% of GDP), and Croatia entered the Excessive Deficit Procedure, confirming the deep weaknesses of the fiscal system (Škare, Šimurina, and Tomić, 2012). The underlying causes included excessive reliance on borrowing, a rigid labor market, and low productivity, while attempts at fiscal adjustment were insufficient and delayed (Benazić and Tomić, 2014).

Figure 6. Revenues, expenditures, and budget balance in Croatia, 2015–2024



Source: authors' systematisation based on data from the Croatian Bureau of Statistics, Eurostat, and the Ministry of Finance of the Republic of Croatia.

After several years of stagnation and accumulated debt, fiscal consolidation began in 2015, driven by EU pressures and the implementation of measures within the Excessive Deficit Procedure (Deskari-Škrbić and Raos, 2018). By 2017, Croatia recorded a budget surplus for the first time (+0.5% of GDP), while GDP, revenues, and expenditures grew steadily, accompanied by a gradual reduction in the public debt ratio from 83% to 71% of GDP (Šimović, Ćorić, and Deskari-Škrbić, 2014). The COVID-19 pandemic in 2020 once again deteriorated the fiscal position. GDP declined, revenues decreased, and expenditures increased due to crisis-response measures aimed at preserving employment and maintaining economic stability (Deskari-Škrbić and Grdović Gnip, 2020). As a result, the budget deficit widened and public debt rose to 78% of GDP, which presents the evolution of Croatia's fiscal indicators over the period 2015–2024. However, from 2022 onward, Croatia recorded a strong recovery: GDP reached EUR 85.4 billion, revenues amounted to EUR 39 billion, and expenditures to EUR 41 billion, while the public debt ratio declined to 57.6%. The adoption of the euro in 2023 further strengthened the international credibility of fiscal policy and reduced exchange rate risk (Mahović Komljenović and Lulić Stipetić, 2022). Fiscal policy during this period demonstrated that, despite challenges such as demographic pressures and pension obligations, it is possible to achieve sustainable public spending, budgetary discipline, and growth stimulation through tax reforms and sound public finances (Deskari-Škrbić and Raos, 2018).

Analysis of monetary indicators for Croatia

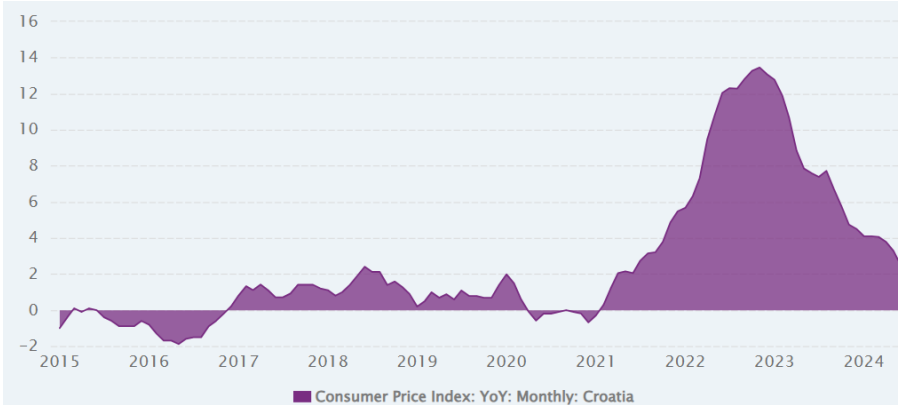
The evolution of monetary indicators, such as inflation, the exchange rate, interest rates, and foreign exchange reserves, in the Republic of Croatia over the past three decades reflects specific processes of transition and economic integration. A high degree of euroization and the openness of the economy have limited the scope of the Croatian National Bank (CNB) to conduct an independent monetary policy; nevertheless, price stability and confidence in the currency have largely been preserved (Šonje, 2000). The early 1990s were characterized by monetary instability and hyperinflation, with annual inflation exceeding 1,500% in 1993, which resulted in a loss of confidence in the then-prevailing dinar (Šonje, 2000). With the introduction of the kuna in 1994 and the adoption of a restrictive monetary policy, the CNB succeeded in stabilizing prices, reducing inflation to 3.95% by 1995, while foreign exchange reserves reached USD 1.9 billion (Babić, 1998; CNB, 2008).

By the end of the decade, foreign exchange reserves had increased to over USD 3 billion. The stability of the kuna against the euro, within a range of 6.76 to 7.58 HRK/EUR, confirmed the fixed exchange rate policy as a nominal anchor (Vujčić, 1999). Real interest rates remained high, between 7 and 18%, reflecting a restrictive monetary stance aimed at preserving currency stability (Vujčić, 1999). These developments created the preconditions for financial consolidation and subsequent integration into European monetary structures.

During this period, Croatia continued to pursue a stable exchange rate policy, accompanied by rising foreign exchange reserves and low inflation, which ranged between 1.7 and 3.8%, with the exception of a mild increase prior to the global financial crisis (Žigman and Lovrinčević, 2005). Real interest rates remained high, particularly in the early 2000s, confirming a restrictive monetary framework focused on stability but with limited capacity for monetary policy to stimulate economic growth (Vizek, 2011). Foreign exchange reserves increased to USD 13.6 billion by 2007, supported by foreign currency inflows from tourism and exports (CNB, 2008). Despite low inflation during the crisis (1.3% in 2009 and 1.1% in 2010), structural weaknesses, such as high euroization and rigidity of the financial system, limited the CNB’s ability to respond effectively to shocks using monetary instruments (Dumičić, Ljubaj, and Martinis, 2017). The stable exchange rate remained the central feature of monetary policy, albeit at the cost of reduced flexibility in economic adjustment (Vizek, 2011). From 2015 onward, monetary policy was oriented toward maintaining a stable exchange rate and preparing for the introduction of the euro (Deskar-Škrbić and Raos, 2018). The kuna–euro exchange rate remained stable, fluctuating between 7.41 and 7.60 HRK/EUR, while inflation remained very low until 2019, ranging between –1.1% and 1.5%, confirming the effectiveness of the existing nominal anchor (Samodol and Čatović, 2020). Interest rates were at historically low levels, in line with the policy of the European Central Bank; however, high euroization limited their impact on borrowing and credit activity (Government of the Republic of Croatia and Croatian National Bank, 2020). By 2019, foreign exchange reserves reached USD 20 billion, supported by service exports and inflows from EU funds (Čehulić and Hrbić, 2019).

The COVID-19 pandemic in 2020 required extraordinary measures by the Croatian National Bank, including the purchase of government bonds and the provision of additional liquidity, thereby preserving the functioning of the financial system (Government of the Republic of Croatia and Croatian National Bank, 2020). As shown in Figure 7, although inflation in 2020 was low (0.15%), it rose sharply to 10.8% in 2022 and remained elevated at 7.9% in 2023, largely due to external factors (Samodol and Čatović, 2020).

Figure 7. Inflation rate (%), 2015–2024



Source: <https://www.ceicdata.com/en/indicator/croatia/consumer-price-index-cpi-growth>.

In 2023, Croatia adopted the euro, thereby concluding the period of independent monetary policy. In doing so, the key objectives of the monetary strategy were achieved, exchange rate stability, financial resilience, and European integration, despite challenges such as elevated inflation and reduced flexibility of monetary policy instruments (Čehulić and Hrbić, 2019).

Discussion and research implications

The research results confirm the relationship between investment in human capital, the effective use of EU funds, institutional quality, and fiscal and monetary policies on the economic growth of Croatia, Poland, and Czechia. Hypothesis 1 (H1), regarding the positive impact of investment in human capital, is confirmed. Poland and Czechia, with higher levels of investment in education and research, have achieved stronger economic growth and faster recovery after crises. In contrast, Croatia, characterized by lower expenditure levels and a pronounced outflow of highly educated workers, records slower growth and weaker innovation capacity. Hypothesis 2 (H2), concerning the impact of EU funds, is also confirmed. Poland and Czechia have been more successful in absorbing and allocating EU funds, resulting in higher GDP growth. Croatia, despite notable progress after 2017, continues to lag behind, particularly in the use of funds for innovation and human capital, thereby limiting the long-term positive effects on economic growth. Hypothesis 3 (H3), which emphasizes the importance of institutional quality, is likewise supported. A stronger institutional framework and higher Ease of Doing Business rankings in Poland and Czechia attract investment and support growth, whereas Croatia, although showing some improvement, continues to lag due to shortcomings in legal certainty, administrative efficiency, and transparency. The analysis of fiscal and monetary indicators confirms their important but limited role in Croatia's economic growth. Prior to 2015, fiscal policy was characterized by instability, high deficits, and rising public debt. Only after 2015 did positive developments become evident, through fiscal consolidation, deficit reduction, a declining public debt ratio, and tax reforms that stimulated consumption and increased fiscal resilience (Deskar-Škrbić and Raos, 2018). Monetary policy, despite constraints arising from euroization, proved to be an effective instrument for maintaining stability. The stable exchange rate policy, low inflation, and growth in foreign exchange reserves confirmed the credibility of the Croatian National Bank, particularly in the period after 2015 (Samodol and Čatović, 2020). Crisis conditions, such as the COVID-19 pandemic, demonstrated that the monetary framework has limited flexibility, and with Croatia's entry into the euro area in 2023, monetary policy authority was transferred to the European Central Bank (Čehulić and Hrbić, 2019). In conclusion, although Croatia has made progress, it continues to lag behind comparable transition economies due to lower investment in human capital, development, and innovation, as well as the underutilization of EU funds and shortcomings in the institutional framework. Long-term economic growth will depend on the implementation of structural reforms that strengthen education, innovation, administrative capacity, and sustainable fiscal policy.

5. CONCLUSION

Through inductive approach, this study has provided insight into the key determinants of economic growth in the Republic of Croatia by analysing investment in human capital, the absorption of EU funds, institutional quality, and trends in fiscal and monetary indicators. The results show that Croatia has achieved a certain degree of progress over the past decade, particularly after 2015; however, it continues to lag behind some transition economies, such as Poland and Czechia. A positive contribution to economic stability is evident through fiscal consolidation, a reduction in the public debt-to-GDP ratio, and the gradual balancing of the state budget.

At the same time, monetary policy, characterized by a stable exchange rate, growing foreign exchange reserves, and low inflation for most of the observed period, has helped preserve confidence in the financial system and supported preparations for entry into the euro area. Nevertheless, structural weaknesses such as high euroization and the limited scope for independent monetary policy action remain present. On the other hand, although the utilization of EU funds has improved since 2017, it still does not reach the level achieved by the most successful member states. Of particular concern is the insufficient allocation of these funds toward sectors that generate long-term growth, such as education, innovation, and research and development. Investment in human capital is crucial; however, Croatia continues to record relatively low levels of expenditure in this area, along with a worryingly high rate of emigration among highly educated workers, which further weakens the country's innovation and development potential. The institutional framework also remains a constraint on economic progress. Although certain reforms and improvements in the business environment have been implemented, the levels of legal certainty, transparency, and public administration efficiency are still insufficient to attract substantial investment inflows and generate stronger economic growth. In conclusion, the long-term economic advancement of the Republic of Croatia will depend on the state's ability to strike a balance between fiscal discipline and proactive structural reforms. It is essential to increase investment in education, research, innovation, and technological development, while simultaneously strengthening institutional quality and the efficiency of public administration. Only through the coordinated action of all these factors, supported by stable fiscal and monetary policies, can Croatia ensure resilience to external shocks, retain highly educated human capital, and create the conditions for sustainable, competitive, and inclusive economic growth.

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TRADITIONAL PEOPLES AND COMMUNITIES: MECHANISMS TO SUPPORT THE SUSTAINABLE USE OF CULTURE HERITAGE

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ABSTRACT

Ecosystem projects for socio-environmental preservation tend to include the cultural heritage of traditional peoples and communities to make them co-responsible for the sustainability of their territories. This work aims to identify mechanisms that support the sustainable use of the cultural heritage of Traditional Peoples and Communities. The methodology adopted included a narrative literature review and a survey of public policies for Traditional Peoples and Communities in Brazil, aligned with the guidelines of the Sustainable Development Goals of the United Nations. From this alignment, the results point to a strong integration between global guidelines and Brazilian public policies with the intention of promoting the cultural heritage of local traditional peoples and communities. It is concluded that by valuing cultural heritage, a country recognizes the importance of its social, cultural and environmental diversity, in addition to favoring the autonomy and protagonism of these groups in the sustainability of the territories they occupy.

Keywords: *Cultural heritage; Traditional Peoples and Communities; Sustainable Development Goals; Public policies*

1. INTRODUCTION

This work is based on postdoctoral research that addressed the importance of qualitatively evaluating Cultural Ecosystem Services in Ecosystemic Social Innovation models. Using some of the data from the narrative literature review of the research, this text aims to identify mechanisms that support the sustainable use of the cultural heritage of Traditional Peoples and Communities. Cultural heritage refers to the set of material (monuments, sites) and immaterial (knowledge, celebrations, forms of expression and way of life) assets that have been historically constructed and are important for the identity, memory, and creativity of a people or social group. (CREPOP, 2019)

In Brazil, Traditional Peoples and Communities (TPCs) are culturally distinct groups that recognize themselves as such. With their own forms of social organization, they contribute to sustainable development with knowledge, innovations, and practices passed down from generation to generation. (Ministério do Meio Ambiente e Mudança do Clima) Despite the importance of protected areas for Brazilian sociocultural diversity and biodiversity, their specificities, needs, and characteristics have often been marginalized in society and in the process of formulating public policies. Currently, there are attempts to reverse this situation. The Federal Constitution (CF/88), also known as the Citizen Constitution for its attempt to affirm universal rights for Brazilians, specifically recognizes the territorial and cultural rights of indigenous and quilombola communities. Internationally, Brazil signed the Convention on Biological Diversity (CBD) during the United Nations Conference on Environment and Development held in 1992 (ECO-92), acknowledging the close relationship between the preservation of biological resources and local communities and indigenous peoples with traditional ways of life (IPEA, 2012). Recognizing the importance of the involvement of traditional communities in achieving sustainable development is supported by the 2030 Agenda, which highlights and prioritizes "shared prosperity" and "leaving no one behind." This requires the formulation and implementation of policies and measures that promote effective participatory governance, including the lifestyles of local communities (IPEA, 2024). This work includes, in addition to this introduction, the methodology, the results, the discussion, and finally, the concluding remarks.

2. METHODOLOGY

This work began with a narrative literature review. This method allows for a broad description of a subject without exhausting all sources of information, as it does not undertake a systematic analysis of the data. This does not detract from the research, which, by producing a quick and comprehensive update of studies on the topic investigated, includes a description of the state of the art of a specific subject, from a theoretical or contextual point of view. (Cavalcante e Oliveira, 2020) The topic defined for this stage was Traditional Peoples and Communities of Brazil, with variation to Traditional Peoples and Communities in Brazil, hereinafter referred to as TPCB. Given the breadth of the subject, the subtopic Brazilian Public Policies (BPP) was added to the research. In addition to consulting books and documents, we used the scientific databases SciELO, Google Scholar, and CAPES journals for this phase. The filters used were 2015 to 2025, open access, and Portuguese or English language. In the second phase of the research, moving from the national to the global level, we conducted a survey of BPP and the Sustainable Development Goals (SDG) of the United Nations, seeking correspondences between those that could represent the protection and enhancement of the rights and ways of life of Traditional Peoples and Communities. This work does not exhaust all the possibilities of this combination, but it organizes a possible choice for carrying out this study. Additionally, we observed that in both phases, the specific data collection period was between 2015 and 2025, coinciding with the launch of the 2030 Agenda for Sustainable Development.

3. RESULTS

In the first phase of the research, the survey TPCB, in addition to TPCB/BPP and TPCB/BPP/SDG, the data collected from the Google Scholar, CAPES Journals, and SciELO platforms showed that, over a 10-year period, more specifically between 2015 and 2025, the scientific literature showed some interest in the TPCB, the TPCB/BPP connection is far more significant than when the SDGs are included. (table 1)

DATABASE	PCTB	PCTB/ PPB	PCTB/PPB/ODS
Scholar Google	256	70	0
CAPES Journals	829	95	7
SciELO	800 575	500	1

Table 1 – Results by database

Source: authors

The table above highlights the predominance of articles found in the SciELO system over the CAPES Journals and Google Scholar databases when applying the TPCB filter. The number of articles decreased significantly with the TPCB/BPP filter and was drastically affected in the TPCB/BPP/SDG search results. Based on this survey and following the guidelines of the narrative literature review, our focus was on the articles in the TPCB/BPP/SDG column. The CAPES Journals database recorded 7 articles, whose subjects varied between communities (artisanal fishing and quilombola communities), sustainable development policies and legislation (agroecological, fishing and aquaculture, housing, educational, citizenship), traditional knowledge, management of conservation units and power struggles (Domingos; Braga Júnior, 2024; Santos; Menegon, 2020; Dal Médico et. al, 2019; Ribeiro, 2023; Nascimento et al, 2023; Correia, 2019; Santos, Santana, Reis, 2019). The article published in the SciELO database considers the need to stimulate public policies and/or private investments in circular models for solid waste treatment, following the guidelines of the 2030 Agenda objectives (Clasen, Bonadio, Agostinho, 2022). After this review, correspondences were investigated between global efforts (regarding the SDGs targets) and Brazilian efforts (regarding public policies) which, in our view, are not exhaustive, but represent crucial tools in the recognition and guarantee of rights, preservation of territories and ways of life, as well as the promotion of social and environmental justice for the TPCBs (table 2 – ends on the next Page).

SDG	BPP
2 - Zero Hunger	Feed Brazil Program
3 – Good Health and Well-Being	National Policy for Comprehensive Health of Rural, Forest and Water Populations/NPCHRFWP
4 – Quality Education	Law of Guidelines and Bases of National Education (LGBNE)
5 – Gender Equality	National Policy for the Sustainable Development of Traditional Peoples and Communities Statute of Racial Equality
8 - Decent Work and Economic Growth	National Plan for the Promotion of Decent Work (NPPDW)
10 - Reducing Inequalities	Land Recognition and Titling (LRT) Statute of Racial Equality National Policy for the Promotion of Racial Equality (NPPRE)

11 - Sustainable Cities and Communities	City Statute Municipal Master Plans
13 – Climate Action	National Policy on Climate Change (NPCC) Climate Plan (CP)
14 - Life Below Water	National Water Resources Policy (NWRP)
15 – Life On Land	Rural Education Policy (REP) National Culture Plan and the Convention on Biological Diversity (NCPCBD)
17 - Partnerships for the Goals	Multi-Year Plan (PPA)

Table 2: Correspondence between Sustainable Development Goals and Brazilian Public Policies
Source: authors

In Table 2 above, the 1988 Federal Constitution and the National Policy for Sustainable Development of Traditional Peoples and Communities (NPSDTPC) were intentionally omitted from the BPP column, since all the public policies mentioned are based on them, and therefore it is unnecessary to repeat them in each item of the column.

4. DISCUSSION

The large discrepancy in articles found in the SciELO system compared to the Capes Journals and Google Scholar databases may have occurred due to indexing criteria, content accessibility, or the nature and scope of the data systems. Since our objective was not to conduct a systematic literature review, this finding was not thoroughly examined by the researchers. Obviously, the numerical superiority of SciELO allows us to deduce that this database should receive special attention from those who wish to identify, select, evaluate, and synthesize all available evidence on the relationship between TPCB and BPP in the current literature. Through the creation of a transparent and replicable protocol, the detailed data could provide a more comprehensive and reliable view of the knowledge and gaps surrounding the topics addressed. This could be a starting point for more systematic research. When we conducted research including the SDGs, using the advanced search TPCB/BPP/SDG, the CAPES Journals platform met the requirements of this study, surpassing other databases. The publications found mention public policies and guidelines of the 2030 Agenda considering issues involving communities and waste management, work, health, and education within the theme of sustainable development. In general, we consider that the literature recognizes the link between public policies and the cultural heritage of the TPCB, and that the implementation of these mechanisms already favors community development but is still incipient and irregular. Domingos and Braga Júnior (2024) highlighted the importance of the State Policy for Sustainable Development of Fisheries and Aquaculture in integrating cultural, economic, social, environmental aspects and popular participation in the sustainable development of the local Coastal Zone. Nascimento et al. (2023) also identified legislative benefits with an agroecological focus in quilombola populations. Conversely, Santos and Menegon (2020) identified public policies that recognize quilombola cultural heritage in the conservation of biodiversity and ecological balance, but state that this does not mean that they are implemented and contributing to the protection of this group.

Dal Médico et al (2019) understand that public policies are not always applied considering the cultural specificities of the TPCB. Power struggles between state representatives and ethnic groups interfere with the implementation of public policies aimed at guaranteeing the rights of the latter. (Ribeiro, 2023) For Correia (2019), the integration of TPCB into regional development is rooted in the historical vulnerability of these populations, but it is also necessary to add new knowledge (in this case, principles of education and entrepreneurial management) to the local cultural heritage. Santos, Santana, and Reis (2019) are emphatic about the State's commitment to offering viable, replicable, and adequate responses to community demands to facilitate not only the exchange of knowledge but also to stimulate exchanges between different realities and actors. The correspondence between SDG and BPP revealed numerous correlations, which we discuss below:

Regarding the relationship between Zero Hunger (SDG 2) and Feed Brazil Program, the increase in agricultural productivity and income of small food producers stands out, particularly benefiting women, indigenous peoples, family farmers, pastoralists and fishermen, the populations prioritized in this survey. This correlation is also supported by Law No. 14,284/2021, which established financial assistance for food purchases, with the aim of expanding access to food and encouraging production by family farmers, extractivists, artisanal fishermen, indigenous peoples, quilombola communities, and other traditional populations.

The correlation between Good Health and Well-Being (SDG 3) and the National Policy for Comprehensive Health of Rural, Forest and Water Populations/NPCHRFWP is connected to healthy living and the promotion of well-being among populations. However, while SDG 3 is broad, considering health and well-being for all, at all ages, the NPCHRFWP focuses on the specificities of rural and traditional populations. Its guidelines address social determinants such as access to services, sanitation, work, and the environment. SDG 3, in turn, is more global, establishing goals to reduce mortality, combat diseases, and guarantee universal access to health. Regarding this last point, Ministry of Health Ordinance No. 1,820, of August 13, 2009, in Brazil, addresses the rights and duties of health service users, and affirms, in the sole paragraph of Article 4, the principle of non-discrimination in the health service network.

The connection between the principles of Quality Education (SDG 4) and Law of Guidelines and Bases of National Education (LGBNE) is quite strong. The goals of the 2030 Agenda prioritize literacy, quality of education, and sustainable development. The LGBNE seeks to guarantee access, retention, inclusion, and lifelong learning through compulsory basic education (ages 4 to 17), the promotion of equity for vulnerable populations, and comprehensive education. For TPCB inclusive, equitable, and quality education aligns with SDG 4 by seeking to integrate knowledge emerging from community cultural heritage with that acquired in formal education. Consistent with this objective are Law No. 9,394, of December 20, 1996, which establishes guidelines and bases for national education, and Decree No. 7,352, of November 4, 2010, which provides for the policy of rural education.

Gender Equality (SDG 5), the National Policy for the Sustainable Development of Traditional Peoples and Communities, and the Statute of Racial Equality (SRE) are interconnected and mutually reinforcing through the promotion of equal rights, the fight against intersectional discrimination, and the appreciation of cultural and social diversity.

Gender equality and women's empowerment are priorities in this alignment, as women have historically been more vulnerable to discrimination and violence. Additionally, in Brazil, the racial issue gains relevance as a social marker because it is deeply rooted in the country's socio-historical formation, due to slavery and structural racism. This condition, understood as a determining factor for the access of the Black population to opportunities, resources, and power, is considered in Law No. 12.288/2010, which establishes the SRE. This process includes Decree No. 10,088, of November 5, 2019, which consolidates regulations issued by the Federal Executive Branch regarding the alignment of conventions and recommendations of the International Labour Organization (ILO) and the Durban World Conference and Brazil – International Concentrated Action to Combat Racism and Intolerance.

The goals of the Decent Work and Economic Growth objective (SDG 8) and the National Plan for the Promotion of Decent Work (NPPDW) in Brazil both stem from the International Labour Organization's (ILO) concept of "decent work". The ILO defines decent work as adequately remunerated work, carried out in conditions of freedom, equity and security, capable of guaranteeing a dignified life. It is also possible to verify that the goals of SDG 8 (such as the eradication of forced and child labor, promotion of formal employment, protection of labor rights and sustainable economic growth) are reflected in the areas of action of the NPPDW, making the objectives of both shared. However, the conceptual and objective correspondence between SDG 8 and the NPPDW was shaken by Decree No. 10,088 of November 5, 2019. This Decree consolidated normative acts but revoked specific decrees that promulgated important conventions (such as Convention No. 132 on paid leave and Convention No. 185 on seafarers' identity documents), raising concerns about the country's commitment to ILO standards and, by extension, to the SDG8.

Reducing Inequalities (SDG 10) finds correspondence and mutual relationship with Land Recognition and Titling (LRT), Statute of Racial Equality (SRE) in TPCB case. From the Brazilian perspective, the LRT is crucial and inseparable from the SRE and the NPPRE, functioning as concrete mechanisms to guarantee rights and combat historical inequalities within the national territory. Internationally, Brazil's alignment with policies for the social and environmental inclusion of TPCB ratifies the Convention on the Protection and Promotion of the Diversity of Cultural Expressions, signed in Paris on October 20, 2005, and promulgated in Brazil by Decree No. 6,177 of August 1, 2007. Article 1, paragraph "e", affirms the commitment of countries to promote respect for the diversity of cultural expressions and awareness of their value at the local, national, and international levels.

Sustainable Cities and Communities (SDG 11) correspond to the City Statute, a Brazilian instrument for implementing the guidelines of the 2030 Agenda focused on making cities and human settlements inclusive, safe, resilient, and sustainable. SDG 11 targets 11.4 to 11.7 prioritize everything from strengthening cultural and natural heritage to access to safe, inclusive, accessible, and green public spaces for the population. This scope also includes preventing and reducing the number of people affected by water-related catastrophes and disasters, focusing on protecting the poor and those in vulnerable situations, and reducing negative environmental impacts (related to air quality, municipal waste management, and others) in the States. The City Statute (Federal Law No. 10.257/2001) regulates Brazilian urban policy and establishes public order and social interest norms that govern the use of urban property for the benefit of the collective good and environmental balance. In turn, Municipal Master Plans are key tools for operationalizing the connection between SDG 11 and the City Statute at the local level.

The alignment between Climate Action (SDG 13) and the National Policy on Climate Change (NPCC), established by Law No. 12.187/2009, is expressed in shared objectives and targets, focused on mitigation, adaptation, and cooperation within Brazilian territory. NPCC aims to reconcile economic and social development with the protection of the climate system, legally formalizing the commitment of SDG 13 to implement urgent measures to combat global climate impacts. In order to enhance the role of traditional coastal communities (fishermen, crab gatherers, caiçaras, quilombolas, among others) in this crucial issue, the following additional measures stand out: a) conservation of biodiversity and protection of traditional communities. The Convention on Biological Diversity came into effect in Brazil in 1998, through Decree No. 2,519/1998; b) emphasis on formal and informal education, including work in the countryside (Law No. 9,394/1996; Decree No. 7,352/2010) and c) Valuing diverse and inclusive cultural heritage includes the Convention on the Protection and Promotion of the Diversity of Cultural Expressions, signed in Paris on October 20, 2005, and promulgated in Brazil by Decree No. 6,177/2007, and the National Culture Plan, established by Law No. 12,343/2010. The growth of social participation and innovation is also foreseen in the new Climate Plan, a strategic guide for Brazilian climate policy until 2035. With broad societal participation during COP 30, which took place in Belém do Pará in 2025, it defines goals, actions, and means of implementation to transform commitments into concrete actions. The relationship between Life Below Water (SDG 14) and the National Water Resources Policy (NWRP) is established through the correspondence of the objectives of sustainable use, conservation, and protection of water resources. SDG 14 addresses specifically the conservation and sustainable use of oceans, seas, and marine resources to ensure sustainable development. The NWRP, established by Law No. 9.433/97 (known as the "Water Law"), sets the foundations and instruments for water resources management in the country. Intersection between them includes the prevention of land-based pollution, integrated management of coastal ecosystems, sustainable use of water resources, as well as scientific and monitoring bases to protect marine and coastal ecosystems. Life on Land (SDG 15), the Rural Education Policy (REP), the National Culture Plan, and the Convention on Biological Diversity (NCPCBD) are strongly connected, especially regarding biodiversity conservation and the sustainable use of ecosystems. The importance of family farming for traditional peoples, the protection, recovery and promotion of the sustainable use of terrestrial ecosystems, as well as the sustainable use of forests, and the fight against desertification, land degradation and biodiversity loss, are all combined within the scope of this articulation. In line with these topics, the NCPCBD highlights the importance of valuing the production of family farmers, extractivists, artisanal fishermen, indigenous peoples, and other traditional populations (Law No. 14,284/2021); (Decree No. 6,040/2007); and rural education policy (Decree No. 7,352/2010 and CNE/CEB Resolution No. 2, of April 28, 2008). The NCPCBD comprises an international legal instrument guiding biodiversity management, with three main objectives: conservation, sustainable use of its components, and fair and equitable sharing of benefits arising from the utilization of genetic resources. Together, these instruments recognize the importance of the knowledge, innovations, and practices of traditional communities for the conservation and sustainable use of biological diversity. The integration between Partnerships for the Goals (SDG 17) and the Brazilian Multiannual Plan emphasizes multi-sectoral cooperation (governments, private sector, civil society) and the mobilization of multiple resources (financial, technological, capacity building) to plan and implement sustainable development. In Brazil, the Multiannual Plan is the main planning tool incorporating the 2030 Agenda, defining priorities and the federal government's budget for this purpose over a four-year period.

In an integrated manner, SDG 17 emphasizes partnerships and resources for sustainable development; the Multiannual Plan allocates planning and budgeting, and in this context, the active participation of the TPCs (Technical Cooperation and Development Commissions) seeks to ensure that these actions are relevant and effective in their local realities.

5. CONCLUSION

We started from the growing importance of the active participation of traditional peoples and communities in socio-environmental issues to identify mechanisms that favor support for the sustainable use of cultural heritage in the preservation of biodiversity and the ecological balance of the planet. The literature on the subject proved to be scarce, but although the research used few databases, we can identify the correlation between public policies and cultural heritage stimulating local sustainable development, obviously with limitations and resistances ranging from historical and cultural processes of devaluation of traditional peoples and communities to the need to network and connect traditional and new knowledge to advance this process. Regarding the legislative scope of the Brazilian public policies and their alignment with the UN SDGs, we observe strong integration between national and global guidelines to promote the cultural heritage of Traditional Peoples and Communities. This configuration does not necessarily result in its implementation. Effort is needed from the State and its institutional apparatus, from businesses, from Brazilian civil society, and from international agencies to implement actions that promote the sustainable use of this heritage. In doing so, we recognize the importance of cultural heritage for social, cultural, and environmental diversity, as well as fostering the autonomy and leadership of Traditional Peoples and Communities in the sustainability of their territories. Enquanto limitações da discussão empreendida neste trabalho, está a transversalidade dos temas dos SDG e BPP, que não foi explorada. Por exemplo, a área da educação poderia investigar relações entre a saúde e o trabalho dentre outros. Pesquisas que explorem a aplicabilidade dos temas abordados neste estudo e como as práticas participativas comunitárias podem gerar conhecimentos e inovações no uso sustentável do patrimônio cultural são desejáveis. One limitation of the discussion undertaken in this work is the cross-cutting nature of the SDG and BPP themes, which were not explored. For example, the field of education could investigate relationships between health and work, among others. Future research could explore the applicability of the themes addressed in this study and participatory community practices associated with knowledge and innovations in the sustainable use of cultural heritage.

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STRATEGIC COST ALLOCATION AND LIQUIDITY PERFORMANCE IN THE PHARMACEUTICAL INDUSTRY: EVIDENCE FROM PORTFOLIO TRANSITION

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ABSTRACT

This paper analyzes the relationship between cost management and liquidity within the pharmaceutical industry focusing on Teva Pharmaceuticals Ltd. from 2019 to 2024. The research centers on the "Pivot to Growth" strategic initiative and the company's transition from a generic-focused portfolio to innovative drug development. The primary research question examines how cost management practices impact liquidity during this portfolio shift. Secondary questions investigate the effect of cost composition on cash conversion cycle efficiency (RQ1) and geographic variations in cost strategies across different markets (RQ2). The methodology utilizes a case study design involving horizontal and vertical cost assessments, liquidity ratio calculations, and benchmarking against competitors Pfizer Inc., Viatris Inc., and Sandoz Group AG. Data triangulation is achieved through official financial statements and a semi-structured interview with a company expert. Results show a stable cost structure where cost of goods sold (COGS) accounts for 63% of total costs, followed by selling and marketing (S&M) (20%), general and administrative (G&A) (9%), and research and development (R&D) (8%). The 110.3-day reduction in the cash conversion cycle is a result of factoring activities rather than organic operational growth. This creates a "liquidity-efficiency paradox" where receivables sales obscure limited organic operating cash flows. Strategic cost allocation varies by region: R&D intensity is highest in North America (7.6% of revenue), while S&M expenses peak in international markets (20.7%) due to regulatory requirements and market fragmentation. The paper identifies the direct link between cost composition and liquidity during portfolio transitions, where an innovative portfolio requires active reduction of the cash conversion cycle to mitigate high capital demands and long development cycles of R&D.

Keywords: *Cost Management, Liquidity, Teva Pharmaceuticals, Cash Conversion Cycle, Pharmaceutical Industry*

1. INTRODUCTION

Cost management is viewed as the process of developing and deploying cost-related information to support management functions (Blocher et al., 2024). The main task of cost management is to implement measures aimed at rationalizing incurred costs, which is achieved by increasing the efficiency of using available company resources (Lew, 2019).

Cost systematization is important not only for operational management, but also for strategic cost planning, which aims to reduce business risks, increase the creation of added value and reduce expenses, thereby achieving long-term optimization of business activities (Mikić, 2009). There are several criteria related to cost categorization, and the division itself largely depends on the needs of management, as well as the purpose of cost allocation. Eldenburg et al. (2016) categorizes costs according to relevance, sensitivity to changes in the volume of production, the method of distributing costs by cost objects, function and controllability. According to Bhimani et al. (2018) costs are divided according to: the business function in the company; the way the cost is allocated to the cost objects; change in the scope of business activity; the way the cost is measured; and the way the costs are presented in the accounting department. Costs can be divided into fixed and variable costs (Atrill & McLaney, 2018). Cost information is essential for managerial decision-making. Insights allow managers to assess product profitability, control the operations, and adequately allocate resources (Horngren et al., 2009). In the pharmaceutical industry, standard costs significantly facilitate accounting and are a significant tool for budgetary control (Sgardea et al., 2011). Strategic cost management can be defined as a process that aims to align the cost structure with the organization's strategy and optimize the implementation of the chosen strategy (Kaplan & Norton, 1996). It ensures the long-term sustainability and growth of the organization (Anderson, 2005). Cost structure optimization directly affects the company's ability to meet short-term obligations, which consequently increases its liquidity (Akindehinde et al., 2022). Weiss et al. (2009) indicated that the cost structure of pharmaceutical companies is dominated by the costs of production and commercial activities (each with a 36% share), which emphasizes the continuous strategic challenge of balancing short-term marketing results with long-term investments in research and development (R&D) (12%). That is, although research and development costs bring long-term value, the pressure on positive results in the short term encourages greater investment in commercial activities. In order to better understand cost management in the pharmaceutical industry, it is necessary to understand that the production of an innovative drug is a long and very expensive process, the company can protect it with a patent and enjoy long-term economic benefits and high revenues (García-Goñi, 2022). Once the patent expires, competitors can produce substitute pharmaceutical products in the form of generics or biosimilars, which have specific market dynamics and challenges (van de Vooren et al., 2015). Some companies have decided to reduce operating costs by rationalizing R&D costs through outsourcing and crowdsourcing. Such approaches reduce initial R&D costs, shorten development time, and increase the efficiency of the entire R&D process (Schuhmacher et al., 2016). However, viability of crowd sourcing depends on properly defined scope, where broadly set initiatives contribute to higher transaction costs and decreased efficiency than expected, impacting the financial benefits of drug development (Christensen & Karlsson, 2019). Cost management in pharmaceutical companies focused on innovative development is primarily oriented on high-risk longitudinal investments in R&D that require high initial investments, imply the significant regulatory costs, and a long development cycle. The price pressures on biosimilar products are high, as they compete with more well-known drugs that are already established on the market, which requires a very careful balancing act between reducing prices and ensuring a return on initial investments (Blackstone et al., 2013). Accordingly, the cost strategy of biosimilar companies is based on long-term planning, creating scenario analysis, increasing sales volume and entering as many markets as possible (especially those in development during the initial launch of a biosimilar product), which distributes fixed costs over the largest possible range of sold units. For innovative companies, the key is long-term profitability, which is achieved through the development of a competitive advantage in an innovative product and the protection of innovation. On the other hand, with biosimilar and generic companies, the emphasis is placed on operational efficiency and maintaining competitiveness in markets with lower margins.

Teva Pharmaceuticals Ltd. is one of the leading global pharmaceutical companies in the field of generic drugs, with a simultaneous emphasis on the development of specialized biosimilar and innovative drugs in the field of neuroscience and immunology. In May 2023, Teva presented a new strategic initiative called "Pivot to Growth", transitioning from a period of stabilization to a phase of sustainable development. The strategy is based on strengthening four key areas. The first area is innovative portfolio. The second accelerating the development of the research channels in therapeutic areas with high growth potential. The third strategic pillar focuses on maintaining and strengthening the market position in the segment of generic drugs, and the fourth optimization of capital allocation. Based on the "Pivot to Growth" approach, Teva strives to harmonize its position in the segment of generic drugs with the more intensive development of innovative products (Teva Pharmaceuticals Ltd., 2025). This transition towards an innovative portfolio can be seen in the light of a broader process of financialization in the pharmaceutical industry, which focuses on shareholder value and securing intellectual property rights (Keenan et al., 2022). Viewed this way, cost optimization and liquidity management serve as strategic responses to the increased pressures of the global capital market. The aim of the paper is to analyze the theoretical basis of cost and liquidity management in a complex business environment, identify the basic concepts and their interconnections through analysis of the business operations of Teva Pharmaceuticals Ltd. It enables insight into the current and historical cost structure and the dynamics of cost changes over time. Similarly, the cost management system is linked to financial liquidity indicators in order to find the connection between cost structure and liquidity. The field of work is cost management with a special emphasis on the connection between cost management and liquidity of Teva Pharmaceuticals Ltd. Therefore, we derived main research question: How do cost management practices impact liquidity during the transition from generic to innovative pharmaceutical portfolios? And two subsequent secondary research questions (RQs): RQ1: Does cost composition directly affect cash conversion cycle efficiency? RQ2: How do cost strategies vary across different geographic markets and product types?

Following the introduction, Section 2 presents the research methodology. Section 3 presents the empirical results of business performance along with structural cost decomposition. Section 4 explores working capital dynamics and liquidity benchmarking. Lastly, Section 5 summarizes the conclusions and research implications.

2. RESEARCH METHODOLOGY

The research is based on the case study design focusing on Teva Pharmaceuticals Ltd., for the period from 2019 to 2024. Teva Pharmaceuticals Ltd. as one of the largest generic drugs manufacturers was selected as a revelatory case to examine cost management during the "Pivot to Growth" transition from generic focused to innovation focused operations. Analyzed time period was used to include cost management practices and liquidity indicators before and after the implementation of stated strategic initiative. Triangulation of methods was achieved through data analysis, gathered from official financial statements and relevant documents, and conducted semi-structured interview with a company expert to provide more interpretive depth to data (Yin, 2018). The analytical framework included the horizontal and vertical cost assessment, liquidity ratio calculations, and benchmarking analysis that was applied to compare Teva Pharmaceuticals Ltd. with major competitors: Pfizer Inc., Viartis Inc. and Sandoz Group AG. This triangulation enabled synthesizing quantitative findings and qualitative operational insights.

3. STRATEGIC REVENUE ALIGNMENT AND STRUCTURAL COST DECOMPOSITION

3.1. Business Performance (2019-2024)

Teva Pharmaceuticals Ltd. revenues in the observed period showed slight oscillations, without long-term, strong growth. The 6.0% decline in revenue compared to 2021 in the financial statements states the decrease in revenue from sales of the innovative drug *Copaxone* and respiratory products in the European and North American markets. Since 2023, a relative stabilization of revenue is visible, with revenue returning to 16.5 billion US dollars in 2024. The increase in revenue is primarily the result of increased sales of generic drugs in all market segments and the growth of innovative products such as *Austedo*, *Ajovy*, and *Uzedy*.

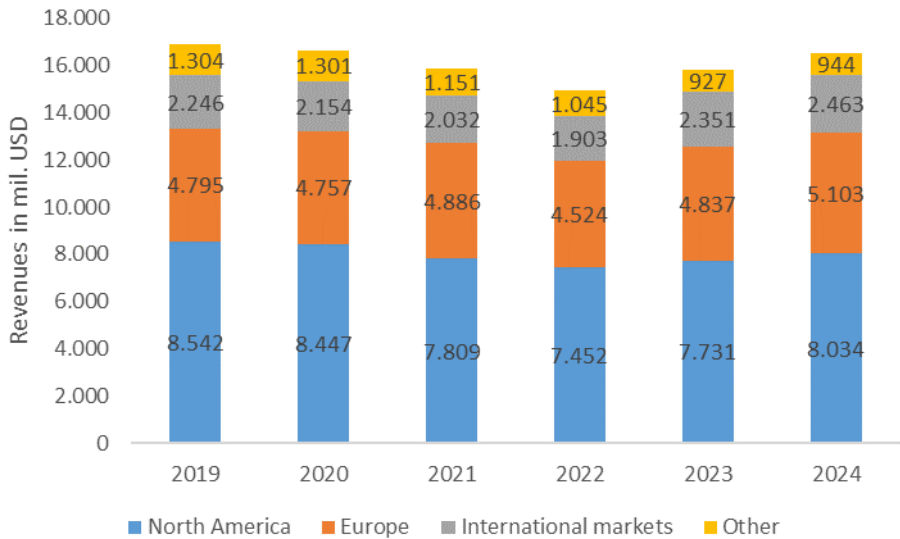


Figure 1: Teva Pharmaceutical Ltd. Revenue by Geographical Segment in Millions USD (2019-2024)

(Source: Authors’ work based on Teva Pharmaceuticals Ltd. financial statements)

Based on Figure 1, almost 50% of operating revenues are generated in North America segment. The decline in 2022 was due to a decrease in revenue from the generic product segment and the innovative products *Copaxone* and *Bendeka*. Europe is the second most important geographic segment, with average revenues of USD 4.8 billion.

Operating revenues in Europe were relatively stable, with this geographic segment showing the greatest consistency in revenue generation. International markets are the smaller and most volatile segment, and the decline in operating revenues in 2022 is associated with lower sales in Japan and the Russian-Ukrainian conflict. The “Other” category includes revenues from the sale of active pharmaceutical ingredients (APIs) to third parties, contract manufacturing services (manufacturing drugs for other pharmaceutical companies), and out-licensing to other pharmaceutical companies. In January 2024, the intention to sell the API business unit in 2025 was announced.

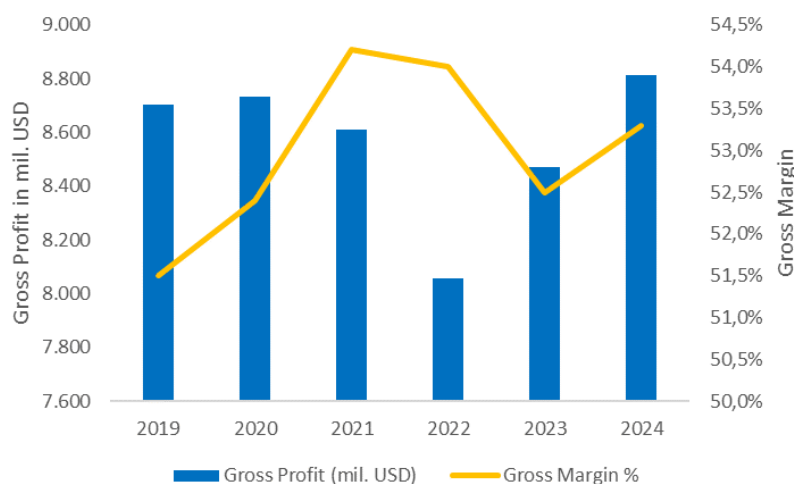


Figure 2: Gross Profit and Gross Margin Trends (2019-2024)
 (Source: Authors' work based on Teva Pharmaceuticals Ltd. financial statements)

Figure 2 shows that Teva's gross profit had reduced in 2022, mainly as decrease in key innovative products, following the loss of patent exclusivity. The primary reason for the decline in gross profit is the decrease in operating income in the North America geographic segment. Gross profit recovers during 2023 and 2024, rising to a level above USD 8.5 billion in 2023, and in 2024 it reached a peak in the observed period, amounting to USD 8.8 billion, driven by "Pivot to Growth" strategy. In the same period, gross margin percentage remained stable at around 53%. This reflects high level of operating efficiency and the management's ability to align the Cost of Goods Sold (COGS) with fluctuating revenue streams.

3.2. Cost Structure Composition

Since Teva Pharmaceuticals Ltd. is listed on the New York Stock Exchange and the Tel-Aviv Stock Exchange, it is required to adhere to the generally accepted accounting principles in the United States (US GAAP). Based on this, it is possible to divide the total costs in the income statement into the cost of products sold, operating costs (research and development expenses, selling and marketing expenses and general and administrative expenses) and the item "Other", which contains other operating costs and one-off and non-cash items. The non-GAAP system will be used.

Item (in USD millions)	2019	2020	2021	2022	2023	2024
Total Revenue	16,887	16,659 (-1.4%)	15,878 (-4.7%)	14,925 (-6.0%)	15,846 (+6.2%)	16,544 (+4.4%)
Cost of Goods Sold (COGS)	8,185	7,925 (-3.2%)	7,266 (-8.3%)	6,870 (-5.5%)	7,375 (+7.4%)	7,730 (+4.8%)
Research & Development (R&D)	1,004	941 (-6.3%)	933 (-0.9%)	838 (-10.2%)	953 (+13.7%)	998 (+4.7%)
Selling & Marketing (S&M)	2,438	2,322 (-4.8%)	2,297 (-1.1%)	2,265 (-1.4%)	2,336 (+3.1%)	2,541 (+8.8%)
General & Administrative (G&A)	1,145	1,115 (-2.6%)	1,029 (-7.7%)	1,180 (+14.7%)	1,162 (-1.5%)	1,161 (-0.1%)
Total Operating Costs	12,772	12,303 (-3.7%)	11,525 (-6.3%)	11,153 (-3.2%)	11,826 (+6.0%)	12,430 (+5.1%)

Table 1: Consolidated Revenue and Operating Costs with Year-over-Year Percentage Changes (2019-2024)
 (Source: Authors' work based on Teva Pharmaceuticals Ltd. financial statements)

The primary reason for the reduction in selling and marketing expenses was a reduction in marketing and business travel expenses due to restrictions related to the COVID-19 pandemic. In 2021, the trend of declining revenues and costs continued, with total costs falling more strongly (-6.3%) than total revenues (-4.7%). In 2022 revenues fell 6.0%, while expenses fell 3.2% compared to 2021. The increase in G&A expenses was influenced by higher litigation expenses, while the decrease in R&D expenses was influenced by a reduction in investments in several projects related to innovative drugs, reduced investments in generic drug projects and one-time adjustments in liabilities to an external partner. After a decline in the first three years, in 2023, revenues increased by 6.2%, while total costs increased by 6.0%. The most pronounced increase was in R&D expenses (13.7%), while costs of goods sold (COGS), as the most significant and largest component of total costs, increased by as much as 7.4%. The reasons for the increase in COGS are stated in the notes to the financial statements as inflationary and other macroeconomic pressures, while the reasons for the increase in R&D expenses are more intensive investments in the late phase of innovative projects in the areas of neuropsychiatry, immunology and immuno-oncology. These increased investments in R&D are aligned with industry trends, considering that the median capitalized cost to bring a new drug to market is around \$1.3. billion, including the costs of failed trials (Wouters et al., 2020). Such cost pressure is above Teva’s annual R&D investments in 2024, which accounted for \$998 million. It stresses the strategic challenges of companies transitioning from generic to innovative portfolios in obtaining operative efficiency with high capital innovation demand. In the last year of the observed period, revenues increased by 4.4%, and total costs increased by 5.1%. The largest increases were recorded in selling and marketing (S&M) expenses (8.8%), costs of goods sold (COGS) (4.8%) and research and development (R&D) expenses (4.7%). The reason for the increase in selling and marketing expenses is the increase in commercial activities related to the launch of new products on the market and commercial activities related to maintaining market share, while the increase in the cost of goods sold was influenced by the continuation of macroeconomic pressures. The shift in Teva’s cost allocation aligns with its new “Pivot to Growth” strategy, following the model by Kaplan and Norton (1996).

	North America	Europe	International markets
COGS as % of Operating Revenue	46.4%	42.8%	48.5%
% of R&D expenses in operating revenues	7.6%	4.9%	4.1%
% of selling and marketing expenses in operating revenue	12.4%	17.0%	20.7%
% of management and administration expenses in operating revenue	5.3%	5.3%	6.1%

*Table 2: Average Share of Cost Components in Revenue by Geographic Segment (2019-2024)
(Source: Authors’ work based on Teva Pharmaceuticals Ltd. financial statements)*

The share of cost of goods sold is highest in international markets (48.5%), mainly due to higher direct labor expenses and higher logistics expenses, while it is lowest in Europe (42.8%). Research and development had the highest relative importance in North America (7.6%), reflecting a greater strategic focus on developing innovative products, while Europe and international markets are less focused in this segment. The average share of selling and marketing expenses is lowest in North America (12.4%), followed by Europe (17.0%), while it is highest in international markets (20.7%).

The reason for this stems from the greater fragmentation of European and international markets, thus the need for a larger number of sales managers and more complex distribution channels. In addition, higher regulatory costs in Europe and the need for maintaining market presence further increase this cost segment. In contrast, the American market is relatively centralized, which directly affects the reduction in the number of selling and marketing managers. Lastly, average management and administration expenses as a percentage of revenue are fairly uniform across regions.

4. WORKING CAPITAL MANAGEMENT DYNAMICS AND LIQUIDITY PERFORMANCE ASSESSMENT

The long-term plan defines the strategic priorities of Teva Pharmaceuticals Ltd. over a five-year horizon. Emphasis is placed on the Pareto approach, which is used to plan by major markets, therapeutic areas and key products, balancing short-term feasibility and long-term growth. The long-term plan serves as the basis for the annual operating plan. The annual operating plan translates the goals into specific operational activities and financial target. The annual operating plan includes a detailed sales plan, on the basis of which a production plan is developed for each production location. In addition, a “rolling” plan process is implemented, which revises expectations throughout the year. The basis for planning the cost of goods sold is the production plan. Based on this, direct machine operating costs, direct material costs, plant employee labor costs and other fixed and variable costs are calculated in order to obtain a standard cost per product unit. Planned volumes play an important role here, because in the case of a smaller production volume, part of the costs that are not included in the cost price of the product are allocated separately. When calculating the standard cost, the ABC method is used.

Operating cost planning is carried out systematically with regard to cost centers, with the responsibility for planning being borne by the cost center managers. Operating costs are planned with regard to historical data. Within the structure of operating costs, management and administration expenses are distinguished, which largely consist of employee labor expenses, and also include audit costs and other administrative costs. Selling and marketing expenses include expenses related to product promotion, market campaigns and commercial activities. Research and development expenses primarily depend on the number of projects, and therefore there is a higher allocation for R&D in the North American market. Cost control is primarily carried out by the manager of the cost center. Variances are analyzed, explanations are given if there are deviations, and in the case of significant deviations, an approval procedure is initiated. Generic and biosimilar medicines operate at lower price points than innovative drugs. Even though they have lower production costs per unit, their profit margins stay thin due to intense price competition and government regulatory limits. The production of biosimilar medicines is characterized by strictly regulated and high production complexity. In addition, the price of generic and biosimilar medicines is also affected by the basic and supplementary lists of medicines. In the area of OTC non-prescription medicines, pricing is more flexible. Innovative medicines do not have direct competitors (during the patent term) and prices are determined through a pricing strategy, with careful selection of markets to avoid price erosion at the global level. In this production segment, the share of costs of goods sold is relatively low (due to the higher price) which allows for higher profitability compared to generic and biosimilar products.

Following the operational planning and cost structure analysis, the assessment of the company’s strategic capabilities to respond to short-term obligations is conducted. The evolution of the company’s liquidity position over the analyzed period is presented in Figure 3.

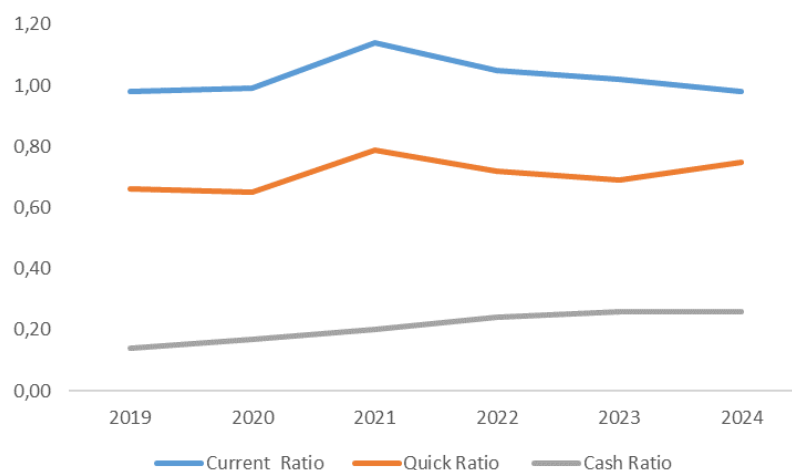


Figure 3: Selected Balance Sheet Liquidity Indicators Trends (2019-2024)
 (Source: Authors' work based on Teva Pharmaceuticals Ltd. financial statements)

Fluctuations in the level of liquidity are visible, with the highest level of current liquidity and quick ratio indicators recorded in 2021. It can be noted that Teva Pharmaceuticals Ltd. operates with marginal liquidity, with a pronounced dependence on inventories and receivables in the structure of short-term assets. Increased risk exposure is visible regarding the settlement of short-term liabilities.

Year	Net Working Capital (Millions USD)
2019	-210
2020	-159
2021	1,546
2022	582
2023	238
2024	-244

Table 3: Trends in Selected Balance Sheet Liquidity Indicators (2019-2024)
 (Source: Authors' work based on Teva Pharmaceuticals Ltd. financial statements)

Negative net working capital in 2019, 2020 and 2024 had a direct impact on the decline in the current and quick ratio. A sharp increase in net working capital in 2021 explains the improvement in the current and quick ratio. In 2022 and 2023, net working capital falls, leading to a weakening of the current and quick ratio, while the negative value of the net working capital in 2024 further confirms the sensitivity of Teva Pharmaceuticals Ltd. liquidity position.

Year	Days Inventory Outstanding (DIO)	Days Sales Outstanding (DSO)	Days Payables Outstanding (DPO)	Cash Conversion Cycle (CCC)
2020	200,4	110,8	78,9	232,4
2021	203,7	103,3	85,3	221,7
2022	200,5	99,2	93,6	206,0
2023	191,7	80,7	109,6	162,8
2024	163,7	70,4	111,9	122,1

Table 4: Cash Conversion Cycle (2020-2024)
 (Source: Authors' work based on Teva Pharmaceuticals Ltd. financial statements)

Between 2020 and 2024, the cash conversion cycle shortened by 110.3 days, significantly improving working capital efficiency. The reduction of the cycle from 232.4 to 122.1 days was achieved by active synchronized optimization of all components, primarily through shortening the period of collection of accounts receivable and transformation of assets. It is in line with the findings of Enqvist et al. (2014) who argued that efficient inventory management and shorter accounts receivable conversion periods are significant during economic changes. A turnaround is notable in 2023 and 2024, when more active collection policies and extension of payment terms to suppliers resulted in faster cash generation.

The noted trend confirms that Teva Pharmaceuticals Ltd. more efficiently releases liquid funds from the operational process, and neutralizes the pressure of growing operating costs and reduces the need for additional external financing. This reflects cost rationalization achieved by increasing resource efficiency (Lew, 2019). The significant reduction of 110.3 days in the cash conversion cycle is influenced by factoring activities. This reduction is not just the result of operational process optimization, but is a result of the sale of accounts receivable. While this improves immediate cash availability, it suggests that Teva Pharmaceuticals Ltd. organic Operating Cash Flow (OCF) ratio remains sensitive and limited, as seen in the low value of 0.10 in 2024.

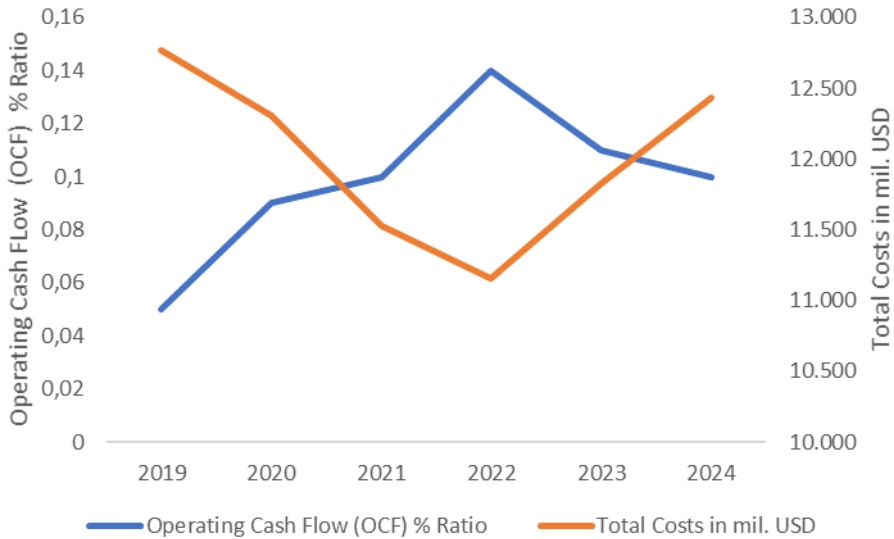


Figure 4: Operating Cash Flow Ratio and Total Costs Trends (2019-2024)
 (Source: Authors' work based on Teva Pharmaceuticals Ltd. financial statements)

By observing the trends it can be confirmed that cost reductions have an impact on increasing operating cash flow. It is visible in 2023 and 2024, where total operating costs rose to a level of 12.430 million USD, while at the same time the indicator fell to 0.10. The decrease confirms that cost structure directly impacts liquidity and short-term business risk during portfolio transitions (Mikić, 2009). It should be noted that this indicator only takes into account operating cash flow, while Teva Pharmaceuticals Ltd. generates a large portion of its cash through factoring, which they report in the investing section of their cash flow statement. It is important as it represents an accelerated realization of receivables rather than purely organic operational growth.

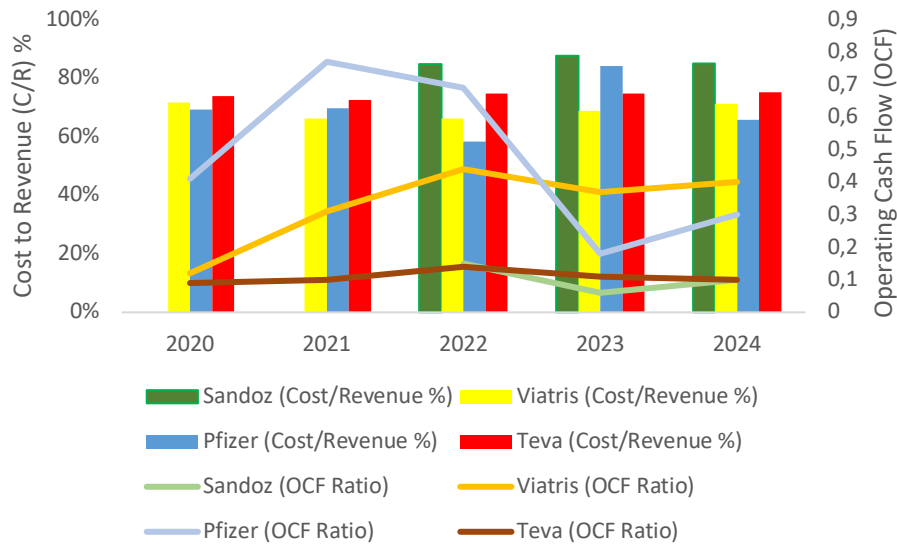


Figure 5: Comparative Analysis of Cost to Revenue Ratio and Operating Cash Flow (OCF) Efficiency (2020-2024)

(Source: Authors' calculation based on the annual reports for the 2020-2024)

Note: Financial data for Sandoz for the years 2020 and 2021 is unavailable as the company was not reported as a standalone entity in the analyzed period.

Pfizer Inc. has the largest oscillations, from a strong growth in the OCF ratio in 2021 and 2022 (0.77 and 0.69), to a sharp decline in 2023 to 0.18, and only a partial recovery in 2024 to the level of 0.3, which indicates volatility in the operational part of the business and high sensitivity to revenues and costs. This sensitivity is notable in 2023, when Pfizer's total costs increased to 84.2% of revenues, resulting in significant OCF decrease.

Viatris Inc. shows a positive trend, from a low OCF of 0.12 in 2020 to a peak of 0.44 in 2022. Sandoz Group AG maintains a low and stagnant OCF ratio (from 0.06 to 0.15), which indicates a weak ability to convert revenue into cash and a low-margin business. If we look at Teva, the OCF ratio was quite stable (a slight increase to 0.14 in 2022 and a further decline to 0.11 in 2023 and 0.10 in 2024). Teva's costs remained consistent in analyzed time period ranging from 72.6% to 75.1%.

On the other hand, looking at Viatris, the data reveals that the reduction of costs in total revenues in 2021 and 2022 led to an increase in the OCF ratio to 0.44, and despite the renewed growth of costs, the ratio is maintained at a stable level of 0.37 to 0.4. Sandoz has continuously had a high share of total costs in revenues during the period (average 85.7%), which also resulted in a low OCF ratio (between 0.06 and 0.15). Visual presentation enabled identification of three clusters: Pfizer as an innovative company which represents high efficiency cluster, with low costs and high OCF.

Sandoz and Teva are in the high cost and lower OCF cluster, confirming the low margin thesis for generic companies, and Viatris as a middle cluster which demonstrates that optimized cost management (average 68.5%) enables generic companies to maintain a better OCF ratio (average 0.33) compared to Sandoz or Teva.

	Sandoz	Viartis	Pfizer	Teva
Average share of total costs in total revenues	85.7% (4)	68.5% (1)	69.5% (2)	74.4% (3)
Average current ratio	1.11 (3)	1.44 (1)	1.21 (2)	1.04 (4)
Average quick ratio	0.71 (4)	0.93 (2)	0.97 (1)	0.72 (3)
Average cash ratio	0.13 (2)	0.12 (3)	0.04 (4)	0.23 (1)
Average OCF ratio	0.10 (4)	0.33 (2)	0.47 (1)	0.11 (3)

Table 5: Comparative Analysis of Cost Efficiency and Liquidity Ratios (2020-2024)

(Source: Authors' calculation based on the annual reports for the 2020-2024)

Note: Numbers in parentheses represent the rank. A lower rank (1) signifies a more favorable result for the company.

Through benchmarking analysis a certain liquidity-efficiency paradox can be noted. By looking at the cash ratio, Teva provides the highest level of cash security, but at the same time is limited with higher costs and a weaker ability to generate OCF. Viartis Inc. has the most effective cost management and medium liquidity, while Pfizer Inc. leads in operational efficiency. It is the result of the highest operating cash flow ratio, although with a very low cash ratio, which indicates reduced efficiency in inventory management and receivables collection. Sandoz Group AG is in the most unfavorable position. It has high share of operating costs and low liquidity indicators. Notably, the companies with a higher share of costs in revenues are more conservative in monetary terms and have higher cash ratios.

5. CONCLUSION AND IMPLICATIONS

A company can show accounting profit while having liquidity problems if its assets remain tied up in inventory. Effective cost management involves controlling working capital, accelerating receivables collection, and negotiating favorable payment terms with suppliers, which improves the cash conversion cycle. Teva Pharmaceutical Ltd. costs have been relatively stable at 73% to 76% of revenues, with the highest efficiency recorded in 2021, when total costs amounted to 72.6% of total revenues. Cost structure is dominated by cost of goods sold (COGS), which on average make up 63% of total costs, followed by selling and marketing costs (S&M) (20%), and general and administrative (G&A) expenses (9%), and research and development (R&D) expenses (8%). The scientific contribution of this paper is in empirically demonstrating how the strategic transition within the pharmaceutical industry from generic to innovative portfolios affects liquidity and operational effectiveness. Analysis provided connection between cost structure and liquidity performance during a company's portfolio product transition. Benchmarking was used to identify three performance clusters: Pfizer as high efficiency with low costs and high OCF, Sandoz and Teva in the high cost and lower OCF cluster, and Viartis as a middle cluster. Viartis demonstrates that optimized cost management (average 68.5%) enables a higher OCF ratio compared to Teva and Sandoz, confirming the low-margin thesis for generic companies. The cash conversion cycle was significantly reduced by 110.3 days through active working capital management (RQ1), although this improvement is influenced by factoring activities rather than just organic operational growth. Empirical findings have also showed that strategic cost allocation varies significantly by region, with the largest R&D investment of 7.6% in North America and 20.7% investment at fragmented international markets, answering RQ2.

Teva Pharmaceuticals Ltd. serves for pharmaceutical companies as a model indicating that undergoing portfolio transitions must prioritize the reduction of the cash conversion cycle to mitigate the pressure of increasing R&D costs, while at the same time cost structure has to remain flexible in response to market regulatory fragmentation. Limitations are the single case analysis and one interviewed expert, the impact of the COVID-19 pandemic that affected standard patterns, as well as the impact of factoring practices on organic cash flow interpretation. Future research should focus on the long-term effects of “Pivot to Growth” strategy and organic cash flow. Digitalization and process automation would be beneficial to explore in the context of reduction of product costs. Teva Pharmaceuticals Ltd. operates at the liquidity limit, with current and quick ratio indicators reaching highest value in 2021, after which they fell again. The cash ratio improved, and the cash conversion cycle shortened, which indicates more favorable conditions in inventories, receivables collection, and the deferred payment period. A high share of costs in revenues compared to competitors and lower liquidity indicators are noticeable, which indicates additional opportunities for improving efficiency in cost management optimization.

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QUALITY MANAGEMENT AT WORTEN: WORTEN RIOSUL COMPARED TO WORTEN COLOMBO (PORTUGAL)

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ABSTRACT

This research sets out to explore and compare how quality management is perceived and implemented in two Worten retail locations — specifically, the store in Rio Sul and the store in Colombo. The main goal is to analyze the sales sector through the eyes of the customer, particularly focusing on how feedback provided by consumers can influence the adaptation or improvement of a particular quality dimension within these environments. To carry out this comparative analysis effectively, the research adopts a methodology based on the SERVQUAL model — a widely recognized tool in the domain of quality management. This model facilitates the evaluation of service quality by examining the gap between customers' expectations and their actual perceptions of the service received. By working through this gap, researchers can understand not only how well a service is being delivered but also how closely it aligns with what customers value. The SERVQUAL framework comprises five main dimensions that provide a comprehensive view of service quality: tangibility (which relates to the physical appearance of facilities, equipment, and staff), reliability (referring to the ability to perform the promised service accurately and dependably), responsiveness (which captures how willing and prompt employees are in providing service), assurance (the knowledge and courtesy of staff, as well as their ability to instill trust), and empathy (the extent to which personalized attention and care are offered to customers). A structured questionnaire, grounded in these five dimensions, was designed and distributed to customers at both Worten stores. The responses gathered from this questionnaire form the empirical base of the study and are analyzed to identify strengths and weaknesses in service quality at both locations. By interpreting these data, the research aims to offer a detailed and data-informed comparison, shedding light on how service quality is experienced differently in two branches of the same retail chain. Ultimately, this study seeks not only to assess the current state of service quality management at the Rio Sul and Colombo Worten stores but also to identify actionable recommendations that could enhance customer satisfaction. The research contributes valuable insights for management teams looking to refine their approach and tailor their services more effectively to customer expectations, particularly in a highly competitive and dynamic retail sector.

Keywords: *Quality Management, Customer Satisfaction, Service Perception, Worten, Comparative Study, Consumer Experience*

1. INTRODUCTION

In today's market, where consumers are constantly bombarded with choices and digital access to alternatives is instantaneous, maintaining a competitive edge in the retail sector requires more than just offering the latest products or competitive pricing. Customer service has evolved into a central pillar of brand identity and business sustainability, especially in specialized retail areas such as electronics and home appliances. As consumer behavior becomes increasingly sophisticated, so do the expectations surrounding the shopping experience. No longer is the transaction solely about acquiring a product — it is about the journey that leads to that purchase, and everything that follows it. The ambiance of the store, the demeanor and helpfulness of employees, the clarity and accessibility of information, and the reliability of after-sales support all play vital roles in shaping the consumer's overall perception of a brand. Against this backdrop, the present study seeks to investigate the quality management practices of Worten, a leading Portuguese electronics and appliance retailer, by comparing two of its physical locations: the store located at Rio Sul Shopping Center and the store at Colombo Shopping Center. While both stores operate under the same corporate framework, they are situated in different geographic and socioeconomic settings. This distinction opens the door to exploring whether — and how — customer perceptions of quality differ between the two locations, despite the shared brand identity. To facilitate this comparison, the SERVQUAL model will be employed as the primary evaluative tool. This model, which has been extensively validated in the field of service quality research, allows for an in-depth analysis of service delivery from the customer's point of view. By collecting data through targeted questionnaires and analyzing responses across the model's five service quality dimensions, this study aims to pinpoint specific areas where each store excels or falls short in meeting customer expectations. The broader objective is to contribute to a more refined understanding of quality management within retail environments that operate across diverse contexts. The findings of this research may offer practical guidance not only to Worten's managerial teams but also to other retailers seeking to enhance their service strategies based on actual consumer insights. Additionally, the study illustrates how models like SERVQUAL can be effectively adapted to modern retail challenges, serving as a bridge between theoretical frameworks and actionable business decisions.

2. LITERATURE REVIEW

2.1. Importance of quality management

In recent decades, quality management has transitioned from being an operational consideration to a strategic imperative. Particularly in competitive, customer-facing industries such as retail, a company's approach to managing quality can significantly impact its reputation, customer base, and long-term viability. Academic literature consistently highlights the importance of well-structured quality management systems (QMS). These systems enable businesses to standardize processes, reduce inefficiencies, and improve overall organizational performance. But more importantly, they play a crucial role in shaping how customers perceive the reliability and value of a company's services. Pinto and Pinto (2011) conducted an in-depth study on the adoption of quality management certification in Portugal, examining data from 364 companies over a 12-year period. The research found that organizations were primarily motivated to pursue certification due to benefits such as cost reduction, improved internal efficiency, and increased competitiveness in their respective markets. These motivations underscore the fact that quality management is not just about meeting minimum standards — it's about gaining a competitive advantage through continuous improvement. Cima and Opazo (2010) contributed further to this discourse by analyzing the role of advanced quality tools such as Failure Mode and Effects Analysis (FMEA) and Six Sigma.

These methodologies allow companies to identify potential points of failure before they manifest, thereby enhancing the reliability and predictability of service delivery. Their research confirms that in a globalized economy, where competition is both fierce and fast-moving, structured approaches to quality management are not optional — they are essential. Moreover, a 2014 study published in the *Brazilian Journal of Business Management* explored the intersection of quality management and innovation. The study found that organizations that engaged in ongoing evaluation and refinement of their processes were also more likely to engage in innovative practices. This finding reinforces the idea that quality management not only improves current performance but also lays the foundation for future growth and innovation. Together, these studies illustrate the multifaceted value of quality management — it enhances operational efficiency, promotes innovation, and most importantly, aligns organizational performance with customer expectations. This last point is especially crucial in the retail sector, where consumer loyalty is often hard-won and easily lost.

2.2. Analysis of quality management from the consumer perspective

While the internal mechanisms of quality management are undoubtedly important, their real-world effectiveness is ultimately judged by the consumer. A well-designed quality system that fails to resonate with customers — or worse, goes unnoticed — can hardly be deemed successful. Therefore, understanding and measuring quality from the consumer's perspective has become a central focus in modern management literature. One relevant study by Guerlixa (2022) examined how perceived service quality influences consumer satisfaction and loyalty in the food retail sector. Interestingly, while the study found a strong relationship between perceived quality and repeat purchases, it noted a weaker correlation with other loyalty indicators such as brand advocacy or price insensitivity. This finding suggests that while service quality is vital, it must be part of a broader value proposition to fully engage customers. Silva and Saraiva (2015) took a slightly different approach by looking at the influence of leadership within Total Quality Management (TQM) frameworks. Their research revealed that leadership is not just a background variable — it is central to the successful implementation of quality practices. Where leadership was strong and visibly committed to quality, customer satisfaction and loyalty tended to be higher. Meanwhile, Dala (2023) focused on the telecommunications market in Angola, specifically the Zap/Fibra service. The study revealed that service quality had a direct impact on both customer satisfaction and loyalty. Notably, the dimensions of reliability, assurance, and empathy emerged as the most influential, providing valuable insights for companies operating in service-heavy industries. What these studies have in common is a clear emphasis on the customer's voice. Whether in food retail, telecommunications, or electronics, service quality is no longer measured only by internal audits or ISO checklists. It is measured by how customers feel — and how those feelings influence their decisions to stay, return, or leave.

2.2.1. Contextualization and characterization of service quality in the sales sector

In the retail environment, especially in the sales sector, service quality is more than a business necessity — it's a defining element of the consumer experience. Companies that recognize this and invest in the consistent delivery of exceptional service are more likely to thrive in an increasingly crowded and demanding marketplace. A range of studies supports this understanding, demonstrating how service quality plays a pivotal role in attracting, converting, and retaining customers. For instance, research by Fabio dos Santos (2017) underscores the fundamental importance of attentive and well-structured service interactions. His work highlights that service quality is directly linked to consumer decision-making — a customer who feels well-treated and well-informed is significantly more likely to return and recommend the business to others.

Similarly, Larissa Muniz Santos (2021) studied retail practices in Itaperuna, RJ, where she observed a tangible correlation between service quality and the purchasing decision process. Her findings pointed to service excellence as a unique differentiator — a strategic asset that impacts the bottom line. The importance of specific quality dimensions is further emphasized in Joana Faria's (2017) research, which notes that reliability — delivering on promises consistently — is particularly influential in determining how customers evaluate their shopping experience. Meanwhile, in a more recent investigation by Ema Rodrigues and Marlene Fainde (2023), service quality was explored in the context of Fersol-Beira. Their results reveal that customers prioritize not only the immediacy of service but also the availability of post-sale support and personalized care. Competitive pricing and technical support also emerged as critical contributors to satisfaction and repeat business. From these analyses, it becomes evident that service quality in sales environments cannot be seen as a secondary element. It is, instead, at the forefront of the customer journey. Whether a consumer is browsing casually or purchasing high-investment electronics, the perceived quality of service directly shapes their level of trust and engagement. For retail organizations like Worten, understanding these expectations and consistently meeting or exceeding them is key to sustainable success.

2.3. Contextualization and promotion of the sales sector in Portugal

The sales sector in Portugal has undergone significant development in recent years, both in terms of growth and strategic innovation. Companies are adapting rapidly to evolving consumer expectations, investing in modern promotional techniques, and reshaping their service models to stay competitive in a digitally accelerated market.

Commerce Expansion and Promotional Trends

In 2023, commercial turnover in Portugal climbed by 4.6%, reaching nearly €195 billion. This upward trajectory reflects the impact of robust marketing strategies, seasonal promotions, loyalty programs, and dynamic in-store campaigns. Businesses across the country have placed greater emphasis on offering value-driven incentives that go beyond pricing, focusing instead on enhancing the overall shopping experience. Specialized service providers, such as SIG Portugal, have played a key role in supporting these efforts by offering brand activation services and point-of-sale promotions that attract attention and engage customers more effectively. These marketing techniques have proven successful in boosting visibility and generating higher foot traffic.

The Rise of E-commerce

E-commerce continues to be a major force shaping the retail sector. According to recent data, the share of online purchases in overall retail activity increased by approximately 9% in 2023. Surveys indicate that 75% of companies operating in various sectors expect digital sales to expand even further in the coming years. This shift toward digital reflects broader changes in consumer behavior. Convenience, price transparency, and the ability to compare options easily have become dominant factors. Retailers are responding by enhancing their digital platforms, investing in user-friendly interfaces, offering faster delivery options, and integrating online and in-store experiences more seamlessly.

New Players and Growing Competition

The competitive landscape in Portugal has intensified with the entry of international players. For instance, the Spanish retailer Primaprix — known for selling well-known brands at discounted prices — is making inroads with store openings in cities like Porto, Lisbon, and Guimarães. This move signals a growing appetite for value-driven alternatives.

Likewise, Mercadona, another major Spanish supermarket chain, has aggressively expanded in Portugal. After five years in the country, the company plans to open 10 new stores in 2025, bringing its total to 70. These developments have intensified pressure on domestic retailers to refine their offerings, improve service quality, and innovate more rapidly to stay competitive.

Changing Consumer Behavior

Portuguese consumers are increasingly focused on savings and strategic buying. A recent study revealed that promotional items were involved in over 51% of purchase decisions. Additionally, 77% of respondents indicated that they regularly compare prices and lean toward budget-friendly brands. This behavior underscores the need for retailers to adopt agile, responsive sales strategies that meet the expectations of a price-conscious, digitally informed consumer base.

2.4. Characterization of the sales sector in Portugal

A Digital Surge

Portugal's retail sector, especially in e-commerce, has seen exponential growth over the past decade. In 2012, online commerce accounted for approximately €39 billion, representing 27% of all commercial transactions in the country. By 2013, this figure had risen to €49 billion — roughly 31% of the national GDP. Projections from that time estimated that e-commerce revenue could reach as much as €73 billion by 2017. Driving this growth was a significant rise in internet usage. In 2013, 64% of the Portuguese population (6.7 million people) were online, with 2.5 million actively engaging in e-commerce. This figure was expected to climb to 3.5 million by 2017, marking a clear transition toward digital retailing.

Product Diversity and Consumer Preferences

The most frequently purchased items online included consumer electronics, sports goods, home furnishings, and mobile phones. This trend aligns closely with Worten's product catalog, highlighting the importance of maintaining a strong digital presence in these categories. As for payment methods, consumers leaned heavily on digital wallets such as PayPal, followed by credit card payments and cash-on-delivery options.

Adapting to the Times

Faced with a digitally empowered consumer base, Portuguese retailers have had to modernize. Many have focused on digital transformation, investing in scalable e-commerce platforms, responsive customer service systems, and advanced analytics tools to personalize marketing and improve the customer journey. This continuous evolution is key to sustaining momentum and adapting to future disruptions.

2.4.1. Evolution of the sales sector in Portugal

Recent years have brought profound changes to how retail operates in Portugal. E-commerce, once a novelty, is now an integral part of the national economy, changing how consumers shop, what they expect, and how companies deliver.

Digital Commerce and Consumer Shifts

In 2022, online retail recorded another 9% growth, with food, fashion, and electronics emerging as dominant categories. The convenience of shopping online, the variety of choices, and flexible payment options have made digital platforms the preferred mode for many. This trend is expected to persist, if not accelerate, with the rise of mobile shopping and personalized marketing.

International Competition and Local Strategy

The arrival of retailers like Mercadona and Primaprix has intensified the need for innovation among Portuguese businesses. Worten, for example, faces pressure not just from local rivals but also from global competitors, requiring constant investment in customer service, product diversity, and omnichannel infrastructure.

Industry-Specific Examples

Portugal's footwear sector provides a strong case study in adaptation. Facing tough competition from countries with lower production costs, Portuguese firms have embraced automation and technological innovation. By 2030, the industry is projected to invest €600 million in modernizing operations, demonstrating how quality, innovation, and efficiency can coexist in a competitive strategy.

Conclusions on Sector Evolution

The transformation of the Portuguese retail landscape is far from over. Companies that succeed will be those that can merge digital agility with customer intimacy, creating retail experiences that are seamless, memorable, and value-rich.

2.4.2. Economic impact of sales at Worten in Portugal

As a flagship brand of the Sonae Group, Worten has a prominent role in the Portuguese economy, particularly within the electronics and home appliances sector. The company continues to show strong financial health and strategic growth. In 2023, Worten reported revenues of €1.3 billion, marking a 4.9% increase over the previous year. This growth reflects the brand's ability to adapt to both digital and physical retail trends. Online sales, for instance, grew by 6%, making up 16% of total revenue — a strong indicator of Worten's effective digital transformation strategy. In terms of physical expansion, Worten opened 18 new stores in 2023, 14 of which were part of the iServices brand. These new locations generated new employment opportunities and contributed to regional economic development. Worten's dual investment in brick-and-mortar and digital platforms strengthens its role as one of Portugal's most influential retail employers and technology providers.

2.5. Worten

2.5.1. Contextualization of the Worten group

Founded in 1996 and integrated into the Sonae Group, Worten has grown into one of Portugal's most recognized names in the technology and electronics retail market. From its inception, the company has focused on offering a diverse catalog of cutting-edge products — from appliances to entertainment systems — and building a strong national presence through dozens of stores. Worten's online store has become a vital component of its strategy, especially in recent years.

Beyond offering products, the brand provides comprehensive services, including home delivery, installations, repairs, and extended warranties. Initiatives like "Worten Resolve" aim to guarantee ongoing support and customer satisfaction after the sale. The company also prioritizes sustainability. Worten has implemented programs to recycle old equipment and reduce its environmental impact while continuing to invest in digital solutions and omnichannel integration. Although it once had physical operations in Spain, Worten has since restructured to focus more effectively on online commerce in international markets. Through its slogan "technology for everyone," Worten reiterates its mission to make innovation accessible and integrated into daily life for Portuguese consumers.

3. RESEARCH METHODOLOGY

This research follows a quantitative methodology designed to capture customer perceptions of service quality at two Worten stores: Rio Sul and Colombo. A questionnaire comprising 28 questions was created and distributed via Google Forms. Of these, 12 questions were dedicated to each store, allowing for balanced comparative insights. The remaining questions collected demographic data and general information about the respondents' familiarity and experiences with the Worten brand. Distribution was done mainly through Instagram, leveraging its high engagement and broad user base.

A total of 54 responses were collected — a sufficient sample for a focused comparative analysis. The sample was selected using a non-probabilistic, convenience-based approach. Although it was not randomized, care was taken to ensure diversity in responses, covering various age groups and usage behaviors. Collected data focused on service quality dimensions such as store layout, staff professionalism, product availability, speed of service, and overall satisfaction. Descriptive and comparative statistical analysis methods were used to uncover meaningful trends.

4. Presentation and data processing

Following the data collection phase, responses were organized using Excel and prepared for statistical analysis. For each store, responses were reviewed and categorized, with averages, frequency distributions, and percentages calculated for key variables. Each set of 14 store-specific questions was evaluated separately and then compared to reveal differences in customer satisfaction, service perception, and operational efficiency.

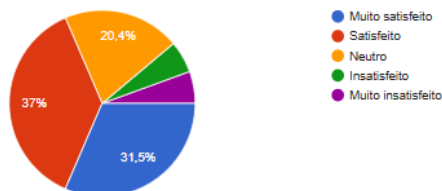
Graphical representations — including bar charts and pie charts — were created to visually convey the results. These visual tools made it easier to identify patterns and highlight where one store outperformed the other or where both shared similar strengths or weaknesses. By comparing responses from the same participants regarding two different locations of the same brand, the study uncovered contextual nuances in customer perception.

These findings contribute directly to the development of data-driven recommendations aimed at improving service quality and overall customer experience at Worten.

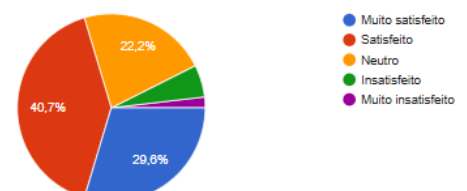
4.1. Google forms

4.1.1 How do you evaluate the cleanliness and organization of the stores?

Como avalia a limpeza e organização das lojas (Rio Sul)?
54 respostas



Como avalia a limpeza e organização das lojas (Colombo)?
54 respostas

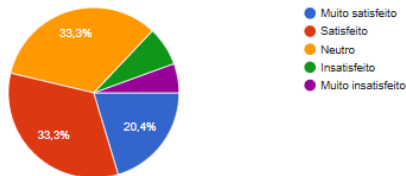


Distribution of evaluations regarding the cleanliness and organization of the stores at Rio Sul Shopping. The majority of customers are satisfied (37%), while 31.5% are very satisfied. Only 20.4% were neutral, and 11.2% remained dissatisfied or very dissatisfied.

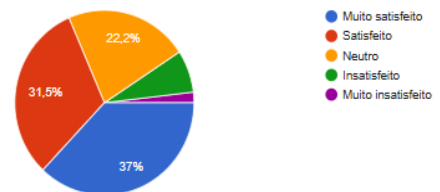
This indicates the need for improvements in the store environment. Distribution of evaluations regarding the cleanliness and organization of the stores at Colombo Shopping. The majority of respondents are satisfied (40.7%), while 29.6% are very satisfied and 22.2% are neutral. Only 7.5% maintain an opinion of dissatisfaction or strong dissatisfaction. The data indicates a predominantly positive perception.

4.1.2. Does the store have modern and well-maintained equipment?

A loja possui equipamentos modernos e bem mantidos (Rio Sul) ?
54 respostas



A loja possui equipamentos modernos e bem mantidos (Colombo) ?
54 respostas



Customer perception of the modernity and maintenance of equipment in the stores at Rio Sul Shopping. The majority of respondents (66.6%) are either satisfied or neutral, with 20.4% being very satisfied. However, 13% express dissatisfaction, suggesting opportunities for modernization and maintenance to improve satisfaction.

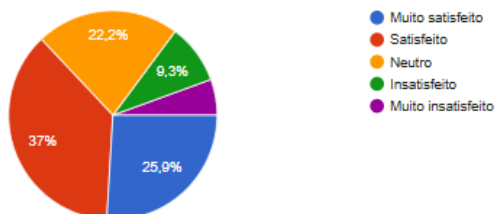
Evaluation of the equipment in the stores at Colombo Shopping. The majority of customers are satisfied, with 37% very satisfied and 31.5% satisfied. Only 9.3% express dissatisfaction. The overall perception is positive, suggesting that the equipment meets consumer expectations well.

4.1.3. Are the employees well-presented and uniformed?

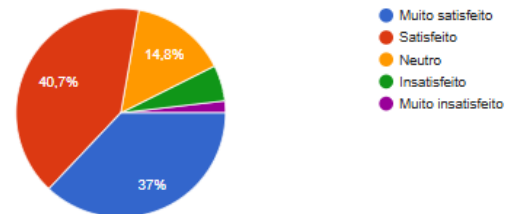
Evaluation of the presentation and uniformity of employees in the stores at Rio Sul Shopping. The majority are satisfied (62.9%), with 25.9% being very satisfied. However, 14.9% express dissatisfaction, indicating room for standardization and improvements in the employees' image.

Customer perception of the presentation and uniformity of employees at Colombo Shopping. The vast majority (77.7%) are satisfied or very satisfied, reflecting a positive image of the staff. Only 7.5% express some level of dissatisfaction, and 14.8% remain neutral.

Os colaboradores estão bem apresentados e uniformizados (Rio Sul) ?
54 respostas



Os colaboradores estão bem apresentados e uniformizados (Colombo) ?
54 respostas



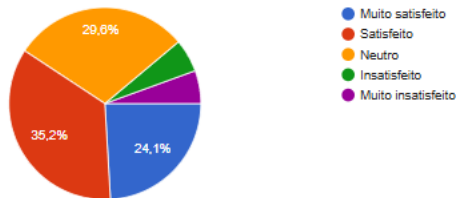
4.1.4. Did the store fulfill what was promised in terms of delivery times and product availability?

Evaluation of the fulfillment of delivery times and product availability in the stores at Rio Sul Shopping. The majority of customers are satisfied (59.3%), with 24.1% very satisfied. However, 28.6% are neutral, and 13% are dissatisfied, suggesting the need for improvements in inventory control and delivery times.

Satisfaction regarding the fulfillment of delivery times and product availability in the stores at Colombo Shopping. The majority of customers (70.4%) are satisfied or very satisfied, with a low dissatisfaction rate (7.5%). The data suggests good logistical performance and stocking in the stores at the location.

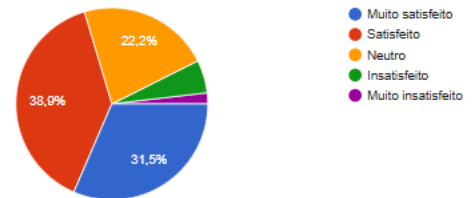
A loja cumpriu o que foi prometido em termos de prazos de entrega e disponibilidade de produtos (Rio Sul) ?

54 respostas



A loja cumpriu o que foi prometido em termos de prazos de entrega e disponibilidade de produtos (Colombo) ?

54 respostas



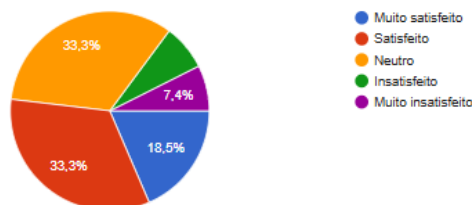
4.1.5. Were the information provided by the employees (about products, prices, and promotions) clear and accurate?

Clarity and accuracy of the information provided by employees in the stores at Rio Sul Shopping. Only 18.5% are very satisfied, while 33.3% are satisfied, and the same percentage remains neutral. With 14.8% expressing dissatisfaction, the data suggests the need to reinforce employee training regarding communication with customers.

Evaluation of the clarity of information provided by employees at Colombo Shopping. The majority of customers (70.4%) are satisfied or very satisfied, demonstrating good performance in communication. Only 11.2% express dissatisfaction, while 18.5% remain neutral.

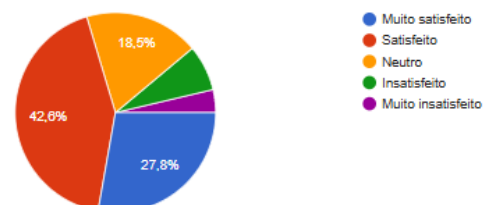
As informações fornecidas pelos colaboradores (sobre produtos, preços e promoções) foram claras e precisas (Rio Sul) ?

54 respostas



As informações fornecidas pelos colaboradores (sobre produtos, preços e promoções) foram claras e precisas (Colombo) ?

54 respostas



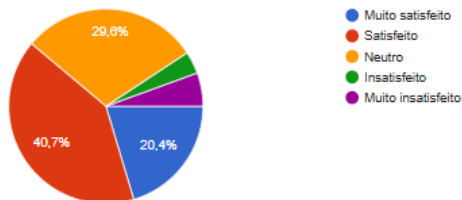
4.1.6. Was the store prepared to meet your needs quickly and efficiently?

Evaluation of the readiness and efficiency of service in the stores at Rio Sul Shopping. The majority of customers (61.1%) are satisfied or very satisfied, although 28.6% have a neutral opinion and 11.1% report dissatisfaction. This indicates overall good performance, with opportunities for improvement in service time and quality.

Customer perception of the ability of the stores at Colombo Shopping to provide quick and efficient service. The majority (66.6%) are satisfied or very satisfied, with only 11.2% dissatisfied. The performance is positive, with potential to reduce neutrality (22.2%) and enhance the perceived excellence.

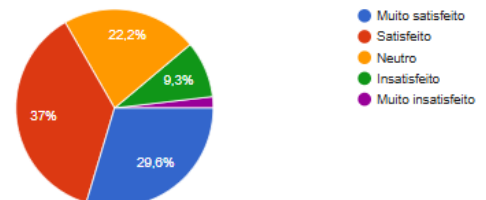
A loja estava preparada para atender as suas necessidades de forma rápida e eficiente (Rio Sul) ?

54 respostas



A loja estava preparada para atender as suas necessidades de forma rápida e eficiente (Colombo) ?

54 respostas



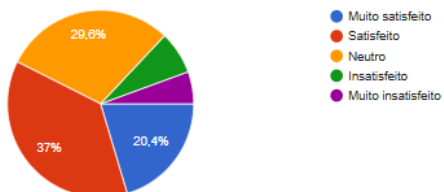
4.1.7. Was the service quick and efficient in the store?

Evaluation of service in the stores at Rio Sul Shopping regarding speed and efficiency. The majority (57.4%) are satisfied or very satisfied, but 29.6% are neutral, and 13% report dissatisfaction. There is room for improvement in response time and the quality of customer interaction.

Evaluation of the agility and efficiency of service at Colombo Shopping. The majority of customers (66.7%) are satisfied or very satisfied, with a low dissatisfaction rate (5.6%) and 27.8% neutral. The data indicates good performance in customer service.

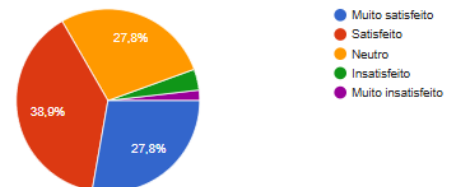
O atendimento foi rápido e eficiente na loja (Rio Sul) ?

54 respostas



O atendimento foi rápido e eficiente na loja (Colombo) ?

54 respostas

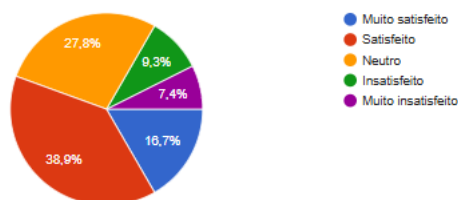


4.1.8. When you requested assistance, were you attended to efficiently and without delay?

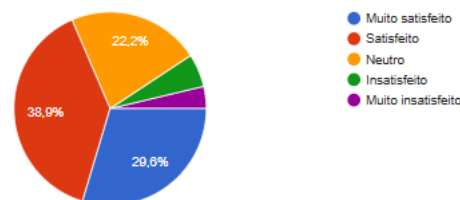
Evaluation of the assistance provided when requesting support at Rio Sul Shopping. Only 16.7% are very satisfied, while 38.9% are satisfied and 27.8% are neutral. With 16.7% expressing dissatisfaction, this is one of the more sensitive areas, indicating the need for improvements in support and agility for specific requests.

Customer perception of the assistance provided when requesting support at Colombo Shopping. With 68.5% satisfaction and only 9.3% dissatisfaction, the data indicates strong performance, surpassing Rio Sul in this aspect, highlighting the preparedness of the teams for customer support.

Quando solicitou assistência, foi atendido de maneira eficiente e sem demora (Rio Sul)?
54 respostas



Quando solicitou assistência, foi atendido de maneira eficiente e sem demora (Colombo)?
54 respostas

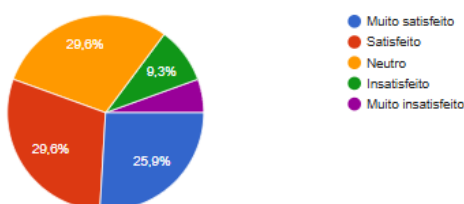


4.1.9. Did you feel that the employees at the store had adequate knowledge of the products and services offered?

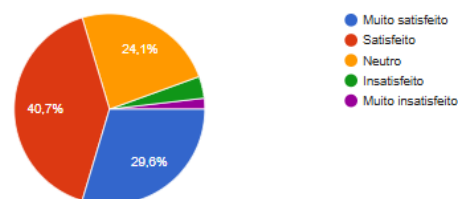
Evaluation of employees' knowledge about products and services in the stores at Rio Sul Shopping. With 55.5% satisfaction, the result is moderately positive, but the high rate of neutrality (29.6%) and 14.9% dissatisfaction indicate room for improvement in training and team development.

Perception of employees' knowledge in the stores at Colombo Shopping. With 70.3% of customers satisfied or very satisfied, and only 5.6% dissatisfied, this is one of the best results in the survey, indicating strong team preparation to guide and inform customers.

Você sentiu que os colaboradores da loja possuíam conhecimento adequado sobre os produtos e serviços oferecidos (Rio Sul) ?
54 respostas



Você sentiu que os colaboradores da loja possuíam conhecimento adequado sobre os produtos e serviços oferecidos (Colombo) ?
54 respostas

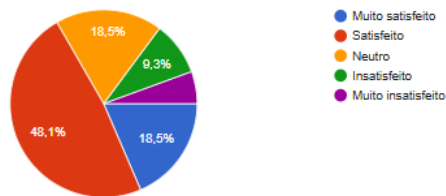


4.1.10. Were the employees at the store courteous and treated you with respect during your visit?

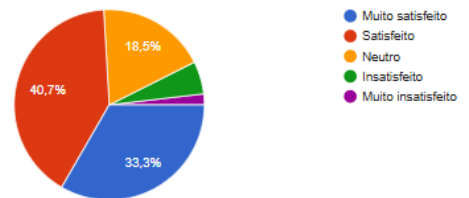
Evaluation of the courtesy and respect of employees during the visit to Rio Sul Shopping. The majority (66.6%) of customers expressed satisfaction, but 14.8% indicated dissatisfaction, suggesting the need for standardization in service and reinforcement of a culture of respect and customer care.

Evaluation of the courtesy and respect of employees at Colombo Shopping. With 74% satisfaction and only 7.5% dissatisfaction, the result reflects a high standard of personalized service, making it one of the strongest points of the unit's performance.

Os colaboradores da loja foram corteses e trataram você com respeito durante a sua visita (Rio Sul) ?
54 respostas



Os colaboradores da loja foram corteses e trataram você com respeito durante a sua visita (Colombo) ?
54 respostas

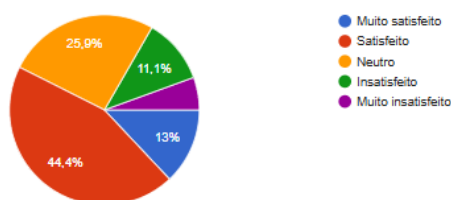


4.1.11. Did you feel safe and confident in your interactions with the employees (regarding service and product quality)?

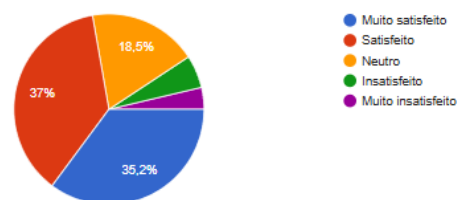
Evaluation of safety and confidence in interactions with employees at Rio Sul Shopping. While 57.4% of customers are satisfied, the low rate of complete satisfaction (13%) and 16.7% dissatisfaction highlight weaknesses in the experience, suggesting the need to strengthen trust and consistency in service and the products offered.

Evaluation of safety and confidence in interactions with employees at Colombo Shopping. With 72.2% satisfaction and only 9.3% dissatisfaction, the data indicates a positive experience, with a notable high rate of complete satisfaction (35.2%), reinforcing trust in the teams and the products offered.

Sentiu-se seguro e confiante nas suas interações com os funcionários (quanto ao atendimento e à qualidade dos produtos) (Rio Sul) ?
54 respostas



Sentiu-se seguro e confiante nas suas interações com os funcionários (quanto ao atendimento e à qualidade dos produtos) (Colombo) ?
54 respostas

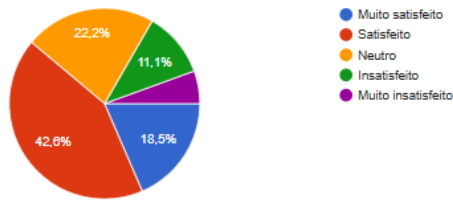


4.1.12. *Did you feel that the employees at the store genuinely cared about meeting your individual needs and preferences?*

Evaluation of the perception of individual care by employees at Rio Sul Shopping. Although the majority of customers are satisfied (61.1%), the dissatisfaction rate (16.7%) and neutrality (22.2%) suggest opportunities for humanizing and personalizing service, especially in terms of active listening and attention to customer preferences. Perception of individual care in customer service at Colombo Shopping. With 68.5% of customers satisfied and only 7.5% dissatisfied, the data reflects a more humanized and personalized service compared to Rio Sul, highlighting the advantage of a close relationship with customers.

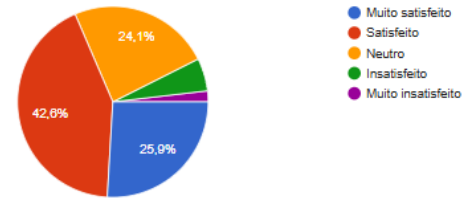
Sentiu que os colaboradores da loja se preocuparam genuinamente em atender às suas necessidades e preferências individuais (Rio Sul) ?

54 respostas



Sentiu que os colaboradores da loja se preocuparam genuinamente em atender às suas necessidades e preferências individuais (Colombo) ?

54 respostas

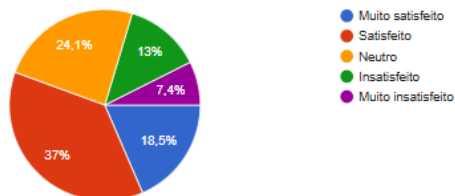


4.1.13. *Was the communication with the employees clear and effective? Did you feel that your desires were understood?*

Evaluation of the clarity and effectiveness of communication with employees at Rio Sul Shopping. Only 55.5% of customers are satisfied, while 24.1% remain neutral and 20.4% are dissatisfied — the highest negative rate in the survey. The result highlights an urgent need for improvements in active listening, empathy, and alignment between expectations and delivery. Evaluation of communication with employees at Colombo Shopping. With 74.1% of customers satisfied and only 5.6% dissatisfied, this is one of the strongest points of the unit, demonstrating effective, clear communication that is well-aligned with customer needs.

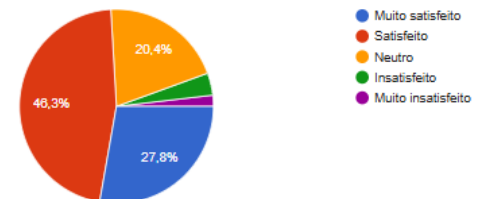
A comunicação com os funcionários foi clara e eficaz? Sentiu que os seus desejos foram compreendidos (Rio Sul) ?

54 respostas



A comunicação com os funcionários foi clara e eficaz? Sentiu que os seus desejos foram compreendidos (Colombo) ?

54 respostas



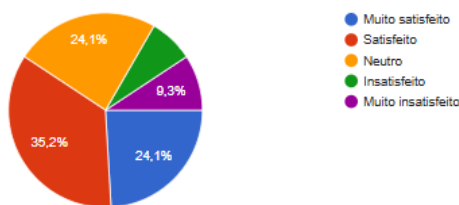
4.1.14. Do the employees dedicate enough time to offer you personalized assistance and resolve your doubts?

Evaluation of the time and attention dedicated by the employees of Rio Sul Shopping. Despite 59.3% of customers being satisfied, 16.6% expressed dissatisfaction, and 24.1% remained neutral, revealing the need for more personalized attention in customer service.

Evaluation of the attention and time dedicated by the employees at Colombo Shopping. With 74.1% of customers satisfied and only 7.5% dissatisfied, personalized service is one of the strengths of the unit, demonstrating care and availability in customer relations.

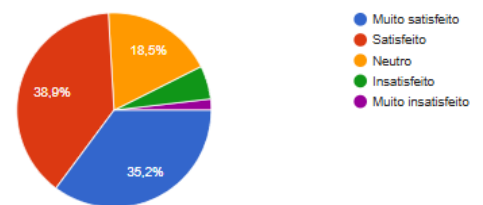
Os funcionários dedicaram tempo suficiente para lhe oferecer assistência personalizada e resolver as suas dúvidas (Rio Sul) ?

54 respostas



Os funcionários dedicaram tempo suficiente para lhe oferecer assistência personalizada e resolver as suas dúvidas (Colombo) ?

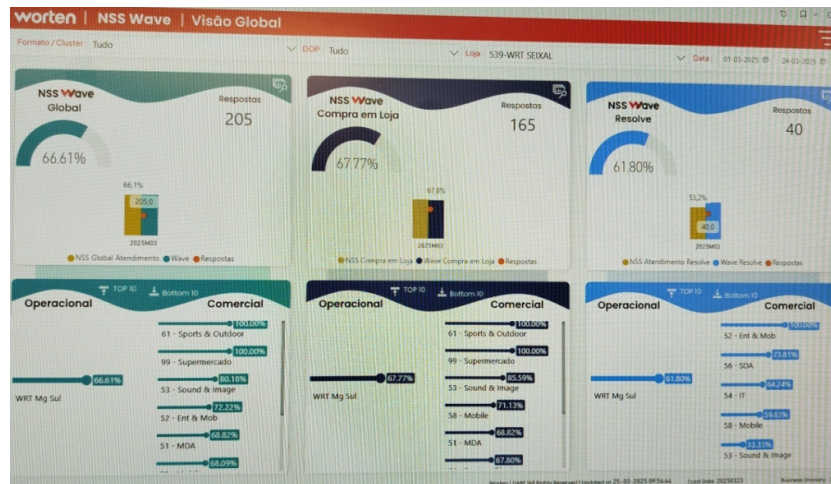
54 respostas



4.2. Internal data

We obtained this image by directly speaking with the company. From it, we can observe that there were 179 responses to the survey, and the approach rate of the employees at the Worten store in Rio Sul is 67.4%. More specifically, the check-in rate is 32.64%, meaning that 32.64% of customers were approached upon arriving at the store. The zoom-in rate was 91.72%, indicating that 91.72% of customers had their questions answered. The specialist transaction rate was 76%, and 73.73% of customers felt that the employee provided a good check-out experience.





In this image, we can observe the overall wave rate of Worten, which corresponds to 66.61%. When comparing the overall rate with the rate at Rio Sul, a difference of approximately 1% is noted, leading us to conclude that this is a positive rate.

5. FINAL CONSIDERATIONS

Comparative analysis of service and operations at Worten stores (Riosul vs. Colombo)

The Colombo store demonstrated superior performance in 12 of the 14 dimensions evaluated, particularly standing out in communication, empathy, and perceived safety. In clear and effective communication with customers, for example, Colombo achieved 74.1% satisfaction, compared to 55.5% at Rio Sul—a difference of nearly 19 percentage points, reflecting a better alignment between expectation and delivery. Regarding safety and trust in interactions, Colombo scored 72.2% satisfaction, while Rio Sul was only at 57.4%. Furthermore, the Colombo store showed stronger results in aspects related to empathy and individualized attention, such as concern for customer needs and time spent, with a difference of over 10% in both metrics. These data reveal a more mature and humanized service model at the Colombo unit, with a stronger focus on customer experience and operational excellence.

Despite the lower performance in several subjective criteria, the Rio Sul store also had some strengths. These include meeting deadlines and product availability—metrics close to or slightly below those of Colombo—indicating a reasonably efficient logistics operation. It also stands out positively in store organization and employee appearance. However, the main challenge for this unit is translating its solid organizational structure into a more personalized and empathetic service. The operational data from the NSS Wave, provided by Worten itself, reinforce the results seen in the comparative charts. The Rio Sul store has an NSS score of 67.4%, slightly above the company's global average (66.61%), indicating stable performance, though not remarkable. When analyzing the indicators by stage of the customer journey, critical failures are observed in the initial approach. The Check-in index is at 32.64%, meaning less than one-third of customers are approached when entering the store—which compromises engagement and connection from the start. On the other hand, the subsequent stages show positive results: Zoom-in at 91.72%, Transition to Specialist at 76%, and Check-out at 73.73%. This indicates that service improves over the course of the journey but falters at the beginning. This analysis is confirmed by qualitative data, which show that the lack of initial attention negatively impacts customer perception regarding empathy, personalization, and understanding of their needs.

The main weaknesses identified at the Rio Sul store include low perceived empathy—16.7% of customers reported unsatisfactory service regarding personalization and time spent—and communication issues, with 20.4% dissatisfied, the highest negative index among all indicators. Additionally, there is a disconnect between the technical operation—which works well—and the human relationship, which still has flaws. To align the Rio Sul store with the level of excellence seen at Colombo, several strategic actions are recommended. It is urgent to strengthen human training, focusing on active listening, empathy, personalization, and clear communication. It is also recommended to implement proactive engagement strategies to increase the Check-in index and initial customer contact. Conducting benchmarking activities with the Colombo store could help replicate successful practices, such as routines for interdepartmental integration and humanized check-out. Finally, continuous monitoring of qualitative indicators is essential, using NSS Wave dashboards to support agile and effective decisions. In summary, the comparative study between Rio Sul and Colombo highlights that customer experience is the main differentiating factor between units with similar operations. Colombo demonstrates that with empathetic service and effective communication, it is possible to turn visits into positive experiences, even within the same network and corporate structure. The Rio Sul store, despite being close to the company's average, has the potential to evolve from a functional operation to a reference in customer experience—provided it strategically invests in the people who build this journey.

Study Limitations Despite the robustness of the analyzed data, the study has some important limitations. First, the analysis is based exclusively on quantitative customer satisfaction data and internal operational indicators, without including in-depth qualitative interviews with employees or customers, which could enrich the understanding of the reasons behind the observed perceptions. Additionally, the data collected are specific to a determined time frame, and may not reflect seasonal variations or recent changes in store operations. Finally, the lack of detailed demographic data on respondents limits segmented analysis by customer type.

Suggestions for Future Research To deepen this investigation, the following is recommended:

- Include qualitative methods in future studies, such as in-depth interviews or focus groups with customers and employees, to capture emotions, expectations, and perceptions that quantitative data do not reveal
- Expand the temporal sample by incorporating data from different months and promotional periods, which would allow for evaluating the consistency of the observed patterns
- Investigate the impact of customer profiles (age, visit frequency, preferred purchase channel) on the experience perceived at each unit
- Assess the impact of corrective actions proposed, should they be implemented, through longitudinal studies
- Compare other Worten units to map whether the Colombo case is an exception or part of a broader trend of good practices in other regions.

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