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Article

Global trade in a VUCA context: A multilevel approach

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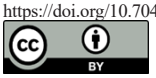

Abstract: The exchange of products allows countries to maximize the use of their resources and support their competitive position in global markets. However, such activities usually involve volatility, uncertainty, complexity, and ambiguity (VUCA). This challenging context has been termed VUCA to describe the reality of the business landscape. Moreover, current events like the Coronavirus disease (COVID-19) pandemic and the political issues between Russia and Ukraine increase the apprehension levels of trade dynamics. This study provides a multilevel approach to macro, meso, and micro interdependencies in response to this complicated context. To accomplish this objective, the research employed a conceptual review by focusing on business as complex adapting systems (CAS) while embracing the significance of the trade facilitation pillars, suggested by UNCTAD, as a fundamental strategy to overcome current challenges. The review concludes on the significance of developing strategies in an interconnected world despite vulnerability. From an academic perspective, the study provides a conceptual framework to analyze global trade dynamics in a VUCA context. More specifically, it explores the importance of implementing and reinforcing different perspectives to facilitate trade to manage environmental conditions vis-à-vis firms' current demands, leading to interconnected strategies.

Keywords: Complex adaptive systems, multilevel approach, trade, VUCA

1. Introduction

Uncertainty is one of the most common characteristics of business making in a globalized world. Trade-related parties are dealing with unprecedented levels of uncertainty where the flexibility of strategies is on the call. Besides trade's nature, current global challenges make embracing a unique definition of trade uncertainty difficult. While uncertainty is frequently associated with information availability, Walker et al. (2003) suggest uncertainty is a dimensional concept, including location (where uncertainty could show within a system), level (uncertainty position between deterministic knowledge or its absence), and nature (quality of expertise due to situation variability). Under this framework, the number of disruptions and events countries face demands increased government policymaking and regulations, particularly for the global supply and value chains (Sénquiz-Díaz, 2021).

Moreover, climate change, demographic changes, post-COVID reconstructions, economic transitions, and technological adoptions such as artificial intelligence (AI) increase challenges and require a diverse perspective and collaboration from different ends. In addition, requirements for higher sustainability levels are becoming more relevant than ever within current crises. The resulting social and economic transformation is epochal, as the world has been challenged with a decade of crises and setbacks. All of these suggest stronger consideration of contexts to enhance opportunities. According to Walker et al. (2003), contexts pertain to the circumstances within a system boundary and how they will be addressed within these specifications. This understanding supports trading systems as they comprise networks and agreements to frame the boundaries of goods and services exchanges between countries.

Trade, as the exchange of goods and services based on countries' specialization, is considered an engine to achieve economic and social progress, usually impacted by two major interdependent components that are barely mentioned. First, business leaders, not firms, decide on product creation and development subject to imports of raw materials or intermediate

inputs and exports (Sénquiz-Díaz, 2021). These export and import decisions are usually underlined by uncertainty, such as price exchange rates, transport mode selection, and product effects in forward markets. The current global scenario forces managers to consider strategies for the availability of all resources and closeness to their main facility operations to avoid risks. Second, these managers' decisions may imply higher costs as they may replace efficiency with availability, as supported by the new just-in-case business adoption in response to uncontrollable events. At a larger level, these micro-actions may jeopardize world exchanges due to the reshoring practices impacting human advancements like the attainment of the well-known United Nations Sustainable Development Goals by 2030, demanding rule-based and predictable trading systems (United Nations Conference on Trade and Development, n.d.), even in a constrained context characterized by volatility, uncertainty, complexity, and ambiguity (VUCA). To delve into the above arguments, this conceptual review embraces two research questions:

(1) How may VUCA conditions reshape global trade dynamics at different levels?
(2) What strategies could be adopted by government and business leaders as a response?

2. Literature Review

2.1 VUCA – a definition

The United States Army War College developed the VUCA term in the 1990s to describe the world order after the Cold War. Later on, VUCA was adopted by business leaders and scholars to represent the challenges of the current world. More often than not, VUCA conditions justify planning limitations following the current situation (Millar et al., 2018). Notwithstanding, VUCA is an opportunity to consider managers' perspectives as part of the international business demands (Clegg et al., 2019).

This review does not pretend to provide a thorough explanation of VUCA but rather emphasizes its consideration when dealing with interdependent activities such as trade. Along this line, reading Bennett and Lemoine (2014) is recommended. They described VUCA, which is frequently used in many discussions, using a matrix to denote the prediction level of actions and knowledge about situations by VUCA components and their interactions. In this respect, volatility refers to problems that are new but not always hard to understand. Uncertainty means that there is a need for more information about what caused what. Complexity refers to the many components that need to be handled, increasing the difficulty of situation management. Lastly, ambiguity implies the unknown of the cause-and-effect relationships, requiring different ways to analyze.

2.2 Trade Dependency in a VUCA Scenario

Countries' participation in trade is important because it allows for job creation, poverty reduction, and increased economic opportunities. It can be observed in Figure 1 that there is a strong dependence on the exchange of goods and services, where more than 50% of the worldwide GDP is dependent on trade. This suggests trade relevance to the economies worldwide, validating the urgency to act proactively even during volatile, uncertain, complex, and ambiguous situations.

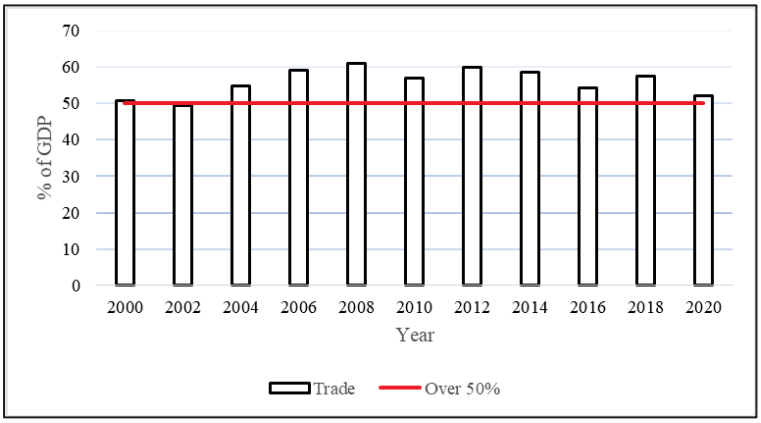

Figure 1. Trade as a percent of GDP Source: Author (2025) based on The World Bank data

Countries' development and firms may look at different performance levels. Hence, this manuscript aims to identify alternatives to manage in a VUCA scenario, understanding that collaboration is essential more than ever (Sénquiz-Díaz, 2021). Demands for flexibility and agility are the new normal. Despite such significance, the alignment of trade and firm managers in a VUCA world seems limited in current literature discussions. Therefore, this manuscript presents an important contribution to the literature enlargement, particularly linked to developing strategies, by moving the managers' firms, the government, and

the environment more into this VUCA context. While trade dependency emphasizes the empirical significance of global trade in a VUCA scenario, framing such dynamics within theoretical perspectives is of utmost importance.

2.3 Theoretical Background

This review incorporates multiple theoretical frameworks to examine the reshaping of global trade activities in a VUCA context necessitating adaptation and learning to pursue equilibrium. The Complex Adaptive System Theory (Holland, 1992) supports this demand as it asserts that organizations and governments are entities whose interactions yield emergent patterns. This encompasses opportunities to adjust in response to evolving regulations (Holland, 1992) and embrace diverse pathways to attain resilience.

Furthermore, the Dynamic Capabilities Theory (Teece, Pisano & Shuen, 2007) explores how firms can cultivate agility to enhance their capabilities as a way to cope with challenging context while emphasizing on the significance of collaboration among different entities, including government and society as suggested by the Stakeholder Theory (Freeman, 1984). However, it is the Resource Dependence Theory (Pfeffer & Salancik, 1978) that elucidates the necessity of managing resource interdependencies within various constraints. For the purpose of this study, the Resource Dependence Theory serves as the bridge that illustrates the need for the entities involved in trade exchanges to share or to provide access to resources. Altogether, these theories establish a strong academic framework for examining the interactions among organizations, government, and other institutions at various levels to overcome the pressures of VUCA.

2.4 Multilevel approach

Business leaders must comprehend the factors influencing their macro environment to select strategies properly. This is extremely important because firms are considered small units in economies. As such, business leaders are the ones who decide what cross-border products have an impact on countries (Sénquiz-Díaz, 2021). Also, regardless of the best firms' plans to outperform, achieving them will not be easy, as their success depends on other factors beyond leaders' control. Therefore, even with the most innovative implementation of business strategies, product exchange efficiency relies on collaboration between different organizations and entities (Sénquiz-Díaz, 2021).

Accordingly, this review employs CAS to explore how actors may adapt at different and interconnected levels. Such complexity may increase when managers make decisions to anticipate possible economic shocks affecting the wellness of countries. Without any specific central component causing major control, CAS highlights the relevance of proper interaction between parts in achieving equilibrium during a becoming process (Holland, 1992). This includes opportunities to adapt based on changing rules (Holland, 1992). Current environmental demands emphasize the relevance of modern perspectives and analyses to capture the latest challenges. The multilevel approach is adequate to assess the importance of interaction in enhancing trade because of its nested and nonlinear structure of related levels. Hence, a multilevel approach is relevant in management research as it supports the joint analysis of components at different levels and their relationship (Molina-Azorín et al., 2019).

This review elaborates on a macro-meso-micro framework regarding trade as a major activity executed by firms' leaders. For example, trade is affected by governmental regulations and market volatility on the macro level. At the meso level, institutions play a crucial role in enhancing the efficacy of trade facilitation and private collaboration to mitigate uncertainty and bolster resilience. Ultimately, the micro level necessitates strategic decisions concerning leadership preparedness and improving capabilities to adjust business models to the VUCA environment effectively.

3. Materials and Methods

VUCA has been used in many fields since it was first thought of in the 1990s. Figure 2 summarizes the top seven subjects after applying delimitations to the search methodology to ensure appropriate results, suggesting business issues as a prevalent theme. The ABI/INFORM GLOBAL database was used as a search engine because it has high-reputation sources and publications from many fields (Zhang & Su, 2018). VUCA was the keyword employed, which should appear in the abstract of each manuscript. Only scholarly journals with peer-reviewed works in English were considered. Lastly, articles must be fully available from 1992 to 2022. A total of 588 articles were identified. After considering their relevance to the discussion and eliminating duplicated manuscripts, a total of 24 manuscripts were included to accomplish the purpose in this research. Findings of these studies were grouped by the multilevel approach providing an integrative framework. Reports from highly recognized trade-related institutions such as the World Bank were considered.

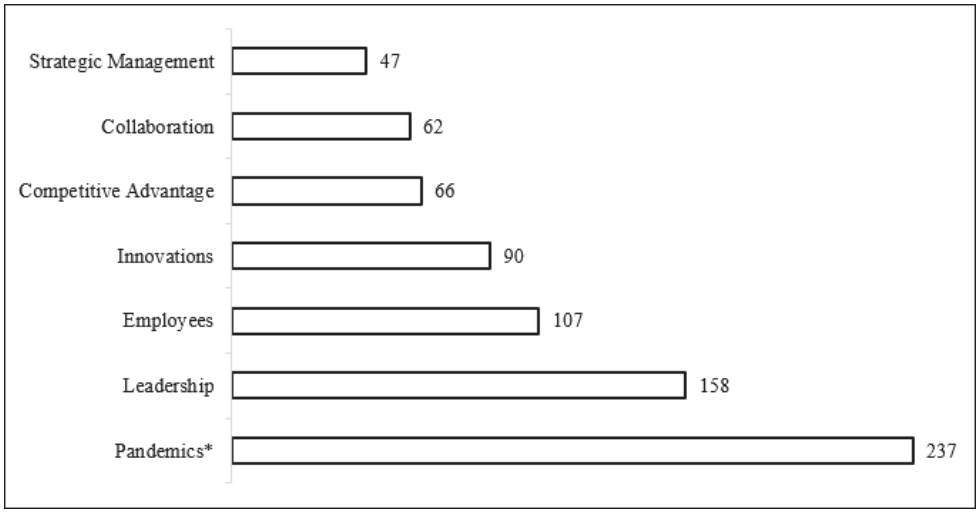

Figure 2. Top subjects Source: Author (2025)

*Include publications under COVID-19 and coronaviruses.

Not surprisingly, pandemics are the highest subject of research as they are a recent disruptive event affecting countries and firms, as suggested in Minciu, Veith, Dobrea and Ionescu (2025). The worldwide economic impact of COVID-19 highlighted the importance of many activities, particularly trade relations. The next field contains topics related to human resources, such as employees and leadership, denoting its importance in business to find ways of improving. After all, decision-making driven by unpredictability of human behavior is a key factor in organizational success. The last four items (innovations, competitive advantage, collaboration, and strategic management) relate to business development and position, which could be jeopardized by VUCA, calling for flexible strategies.

These topics are intricately interconnected to activities in business management. Bentahar and Belhadi (2025) emphasized the need for project management inside the supply chain in a VUCA environment concerning strategic management and collaboration prospects. Supply chain activities are essential to trade operations. Consequently, supply chains are connected to various stakeholders, with an increasing dependence on their interactions. Besides, project management tools facilitate collaborative planning among stakeholders while promoting cooperation. Vermeulen and Hémond (2025) findings also affirm the necessity of enhancing interdisciplinary collaboration to address environmental changes in VUCA. The authors propose ways for genuine collaborative support that will facilitate seamless adaptation. Other authors emphasize the significance of personnel in navigating VUCA to bolster the firm's competitive edge. Minciu, Dobrea, and Susanu (2025) determined that offering ongoing coaching to employees will enhance their capacity to navigate complexity and uncertainties in alignment with VUCA principles. Consequently, human resources facilitate business continuity and sustainability by transforming work processes. The human resources practices correspond with Shet's (2024) study, which classified and categorized staff competencies into dimensions as a strategy to address environmental challenges. Nonetheless, these expectations necessitate adaptability in leadership. Opportunities to improve leadership responses increased by innovations such as digital transformation, globalization exposure, and a systems thinking approach in business (Syamsir, Saputra & Mulia, 2025). Moreover, adopting new technology will enhance the prospects for improved policy coordination and expedite responses to VUCA concerns (Mintrom & Connor, 2024).

Research exploring the implications of VUCA in trade from a public-private perspective should be an essential topic these days. However, it seems limited despite the firms decision-making and the unavoidable dependence to environmental constraints. This brief review addresses this gap by considering firms as the smallest units in economies, impacting their citizens' economic and social development. The article uses a macro-meso-micro approach to emphasize the significance of trade activities and interaction between parties toward developing strategies. It begins with a description of VUCA at a macro level. The meso level suggests a stronger implementation of the trade facilitation principles by the government side in VUCA. Lastly, it explores firms' strategies to increase efficiency in VUCA based on a key characteristic for each component, as depicted in the following figures.

4. Results

4.1 Pressures at a Macro Level

The macro level addresses the environmental challenges during trade-related activities framed in the VUCA context. Undoubtedly, trade activities are complex and sometimes entail unpredictable outcomes. This complexity is more often than not nurtured by government policies, regulations, market demands, currency exchanges, and, among others, demanding arrangements between the parties involved. Figure 3 provides a description for each VUCA component derived from the literature review. At this level, the government's support for higher industrial considerations is essential (Sénquiz-Díaz, 2021). Each nation may have its own rules for handling disruptive events. However, public efforts may impact disruption management, plans, and strategies through different levels of process to facilitate trade (Sénquiz-Díaz, 2021).

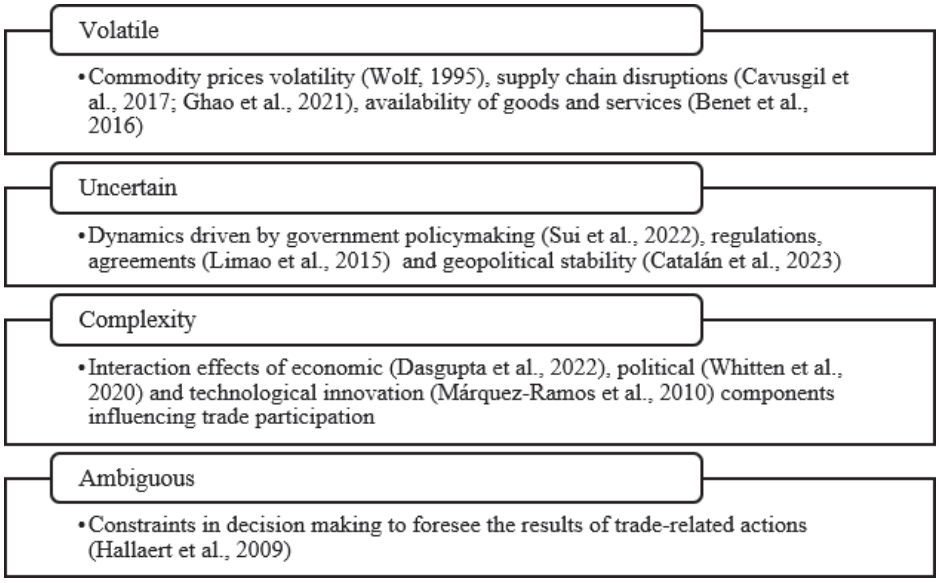

Figure 3. Macro level – Environment Source: Author (2025)

4.2 Challenges and Responses at a Meso Level

The meso level captures the role of the government regarding the outcome of the social and economic linkages of public and private collaboration. This collaboration supports decision-making about business location and further investments. Hence, the stronger the partnership between related parties (Sénquiz-Díaz, 2021; Yang et al., 2017), the more opportunities managers may have to overcome VUCA disruptions.

At this intermediate level, it is suggested that governments embrace the trade facilitation pillars (National Board of Trade – Sweden, n.d.) more than ever as a flexible response to these unpredictable disruptions. Properly managing and controlling what you can or what is foreseeable provides the time to handle unpredictable situations. The fact that managers agree that openness to trade is an important factor in facilitating trade (Sénquiz-Díaz, 2021) may increase volatility levels during exchanges. This is mainly due to the exposure to higher risk levels, highlighting the importance of trade-related facilitation strategies promoting product exchanges even during constraints.

Figure 4 denotes the VUCA characteristics at the meso level. First, it identifies a relevant description of a government priority under a VUCA component, followed by a brief note on how each trade facilitation pillar may reinforce it. Governments are on the call to work on policies to build a resilient and sustainable infrastructure to reduce the effects of VUCA in trade.

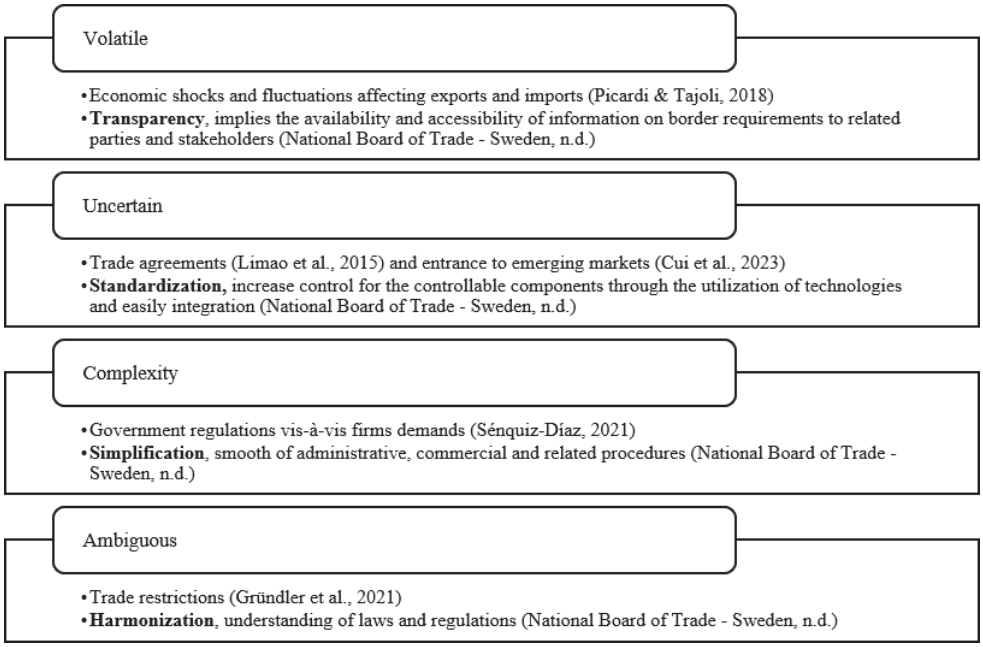

Figure 4. Meso level – Government Source: Author (2025)

4.3 Building Resiliency at a Micro Level

Every effort made by the government may affect the growth or shrinkage of the firms in countries. Hence, at the micro level, managers need to continuously revise their actions and how efficiently they consider the dependence on other complex factors as part of their strategy development. Therefore, business models require renewal (Cavusgil et al., 2021) and flexible strategies. Flexible strategies are essential to support socioeconomic progress in countries, especially for the least developed ones, with the risk of falling even more behind during difficult times. Figure 5 discloses strategies that could be adopted by managers at firms. These strategies are recommended based on Taskan et al. (2022)'s specific VUCA key characteristics in business. The authors developed a conceptual map linking the VUCA dimensions to organizational aspects. Building on this approach, this study translates such recommendations into specific strategies to illustrate how business leaders may combine Taskan et al. (2022) insights within a challenging context in global trade.

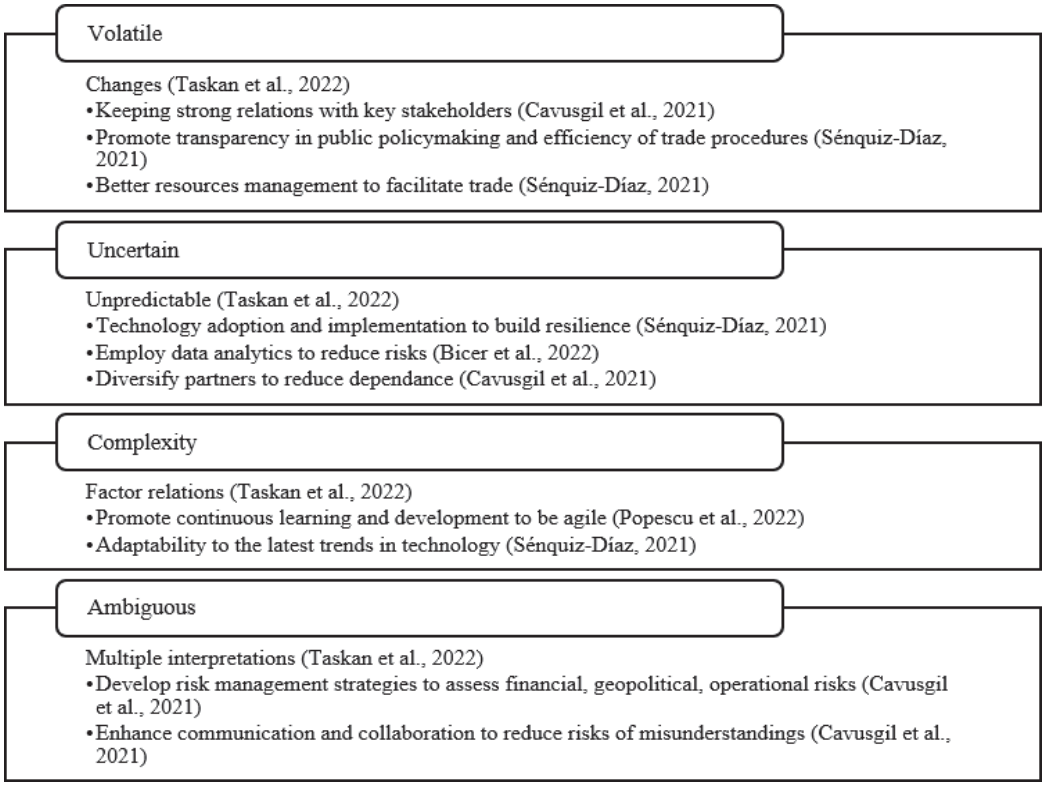

Figure 5. Micro level – Firms Source: Author (2025)

4.4 Multilevel Framework

The interaction between the levels is shown in Figure 6. The macro level, which refers to the environmental conditions, reflects current economic characteristics. Accordingly, VUCA demands continuous support during disruptions and constraints. The meso level, as an intermediate position, suggests increased trade facilitation efforts toward cross-border activities. In other words, if VUCA becomes more challenging, additional government support will be needed so business leaders can cope. Lastly, there is the micro level. The more difficult the environment gets because of VUCA, the more the firms will be affected, and the more trade facilitation strategies should be present. Nevertheless, trade facilitation implementation will support firms' plans to overcome VUCA, implying the need for stronger collaboration between government and business leaders.

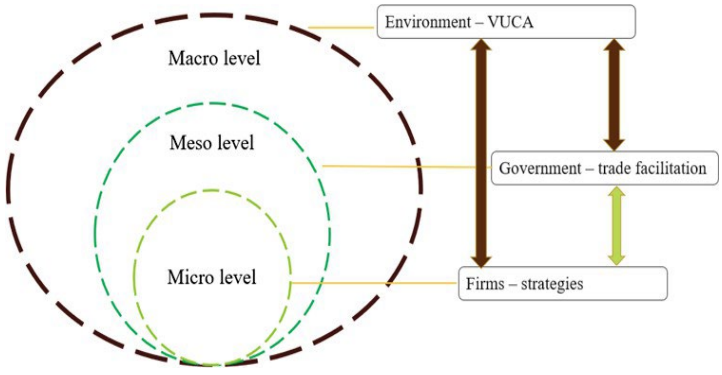

Figure 6. VUCA multilevel approach Source: Author (2025)

5. Conclusions

The study concludes by addressing the research questions that framed the insights discussed. How may VUCA conditions reshape global trade dynamics at different levels? The analysis proved that VUCA reshapes global trade dynamics at a macro-meso-micro level. For example, at a macro level, government and international institutions are challenged to implement policies to reduce market volatility and disruptions. At a meso level, regions may have to adapt different value chain structures considering challenges to their specialization. Lastly, managers must build resilience practices at a micro level to cope with their operations.

What strategies could be adopted by government and business leaders as a response? The research demonstrates that efficient responses to VUCA demands different strategies. In this respect, governments should promote international collaboration and strengthen institutional frameworks. Business leaders should consider adopting emergent technologies, diversifying supply chains, and proactively engaging with public policy. In particular, Figure 5 provides possible actionable practices to sustain each VUCA dimension challenge by the business end.

The findings indicate that a VUCA context requires collaboration at different levels. Thus, the results suggest the convergence of theory and practice to build resilience and competitiveness, especially in global trade exchanges. Transforming trade facilitation levels from different levels, considering policy, governance, and business-level strategy, is fundamental to promoting resilience in global trade under a VUCA world.

5.1 Managerial and theoretical implications

The study provides a seldom-investigated perspective on the effects of VUCA in business, employing a multilevel approach. From a managerial perspective, the study suggests that global shifts necessitate a reevaluation of current viewpoints, such as reshoring, in favor of initiatives that include greater coordination among the major participants in global trade. Managers should actively participate in public policy decision-making to strengthen trade facilitation strategies. The logistics sector should consider developing nearshoring and diversifying providers to reduce vulnerability. While vulnerabilities may affect trade dynamics, managers could explore the opportunities to process innovation and the emergence of new business models. Lastly, firm leaders could also manage VUCA as an alternative to improve the ability to adapt to complex and changing environments.

Regarding the academic implications of this study, it presents a novel perspective on VUCA in global trade using a multilevel approach. Accordingly, it explains how the macro, meso, and micro actors interact when dealing with trade complex issues. Hence, the manuscript contributes to the literature by emphasizing the need to analyze and incorporate the changes in socioeconomic dimensions by employing an approach between firms, such as complex adaptive systems, and governments. More specifically, it explores the importance of implementing and reinforcing, more than ever, relevant theories like stakeholder theory and resource dependence theory in management and business international activities. Lastly, using the pillars of trade facilitation as a strategic response to environmental conditions and the firm's current demands may lead to the recognition of significance when dealing with interconnected strategies, calling for comparative studies to understand better how the actors involved in trade manage VUCA conditions and the integration of different perspectives in theoretical advancements.

5.2 Future research

The future of global trade under VUCA will remain uncertain, particularly given geopolitical factors.Thus, future research should move on to actionable agendas. From a macro-level perspective, future research should delve more into how sustainable trade policies and resilience agreements can reduce the effects of vulnerabilities. From a meso-level perspective, empirical studies examining the significance of public-private collaboration between institutions and businesses may help identify additional strategies to facilitate trade. At the micro level, studies exploring how firms may develop different capabilities to sustain competitive advantage in vulnerable markets and adopt emergent technologies, and digital twins will support the risk management implications of global trade. Consequently, future research may focus on the interaction among macro-level policy innovation, meso-level increased cooperation, and micro-level technology implementation to enhance the resilience frequently required in trade exchanges. On the other hand, additional research delving into different points of view is essential. For example, future investigations could explore the effects of leadership across generations and cross-cultural relations, as well as scenario planning analysis in promoting innovation and avoiding working in isolated siloes.

Firms do not evolve in bubbles and should be considered complex adaptive systems. Therefore, global trade requires multidisciplinary collaboration and striving for operational strategies that keep firms going rather than simply surviving in a world where agility and flexibility are key components of business performance.

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