

Editorial Message

Revisiting Supply Chain Design Amid Polycrisis: A Critical Debate

ABSTRACT

This article aims to create an awareness among the operations and supply chain management scholars to undertake research on supply chains, which have evolved into a multi-disciplinary field that requires a critical understanding of the global economy, climate economy, war economics, terrorism and their impact on supply chains, as well as supply chain politics, and most important the international trade relationships and diplomacy. These areas have, unfortunately not been covered in sufficient depth to inform managers about how to deal with such polycrisis events and in such scenarios how the form supply chain design must evolve in the highly dynamic, highly uncertain, and complex environment. The article adopts by Melnyk et al. (2014) to develop a supply chain design framework to propose a theoretical understanding of supply chain design for the polycrisis. This draft concludes with several optimistic thoughts, anticipating that future scholars will pursue in-depth, rigorous empirical research to advance the field's theoretical understanding.

Keywords: Supply Chain Design, Polycrisis, Trade Tariffs, Geopolitical Conflicts, Climate Change, Supply Chain Politics

Introduction

The polycrisis is emerging as the current norm that has attracted significant attention from political scientists, economists, supply chain scholars, industrialists, policymakers, and the parliamentarians (Homer-Dixon & Rockström, 2022; Kwamie et al., 2024). which has existed for sometimes but following the Covid-19 pandemic, climate change, Russia-Ukraine ongoing geopolitical tension, the Middle East crisis and most importantly the Trump regime has impose significant amount of trade tariffs on many countries based on perceived notions have impacted the world trade and further disrupted the supply chains of necessary and critical items that are the most important for the livelihoods of the citizens (Mark et al., 2025; Rakowski et al., 2025).

The term polycrisis has been used extensively and, in some cases, as a “buzzword” (Mark et al., 2025). However, its definition of polycrisis still remains inconsistent, carrying different notions (Lawrence et al., 2024). In this draft, I have adopted the definition presented by Lawrence et al. (2024, p. 2) as “*the causal entanglement of crises in multiple global systems in ways that significantly degrade humanity's prospects*”. Before understanding the polycrisis, I present an overview of crises and then the complex interactions among these various forms of crises that lead to the polycrisis. Homer-Dixon et al. (2015) argue that the “*crisis*” is a term often associated with a sudden, non-linear event or series of events that can cause short-term harm to people and their lives. A crisis is harmful because it leaves victims no time to prepare for its serious impact on people and their well-being (Lawrence, 2024).

In one of their studies, Rakowski et al. (2025) classified twenty-four major crises into three clusters: environmental, sociopolitical, and economic. These crises are primarily caused by rapid climate change, leading to biodiversity loss,

water crises, pollution, shrinking land, and resource scarcity (Rakowski et al., 2025, p. 168). Similarly, the sociopolitical crises resulting from the geopolitical conflicts, poor governance, and deep corruption in the society are causing severe human rights violations, a crisis of social reproduction, a human health crisis, food insecurity, conflicts and wars, a migration crisis, and compromised democracy (Rakowski et al., 2025, p. 168). The economic crises include the financial crisis, the energy crisis, the crisis of global capitalism, the technology crisis, and the crisis of meaning (Rakowski et al., 2025, p. 168).

These crises have existed simultaneously, and in recent times, we have witnessed the health crisis resulting from the COVID-19 pandemic, the Russia-Ukraine prolonged war since early 2022, the US trade policies with the rest of the world, the middle east crisis, and the rapid change in climate causing global warming, intense heat wave, the rise in sea level, the flood and draught in most parts of the world has not only affected the lives of the people but also impacted the livelihood in a significant (Helleiner et al., 2024; Rakowski et al., 2025; Liu & Renn, 2025; Schindler & Rolf, 2025). In addition, the rapid rise of AI has affected the livelihoods of a significant segment of society (Bales, 2025). These crises interact in complex ways, producing short- and long-term impacts on the lives of people around the world, leading to the debate over “polycrisis” (Gatto & Magazzino, 2026).

In this editorial, prepared for the *Journal of Supply Chain Management Systems* (JSCMS), which was founded in 2012, whose inaugural issue featured eight articles by diverse scholars, setting a strong roadmap for the Journal. Since then, the Journal has spanned almost 14 years, publishing articles on diverse areas that define supply chain management and its important role in shaping developing economies. The Journal has attracted articles by scholars, especially from developing economies, focusing on challenges in South Asia and Africa across sectors such as agriculture, manufacturing, minerals and mining, transportation, and services. However, in recent times, the supply chain field has undergone a significant transformation due to various internal and external factors (Bouguerra et al., 2024), necessitating research that addresses grand societal challenges (George et al., 2016; Rosca et al., 2022) and helps respond to the effects of the political crisis (Docherty & Marsden, 2025).

In this editorial note, Section 2 presents the definition of polycrisis, its drivers, and its impact on supply chain design. Section 3 provides a critical overview of supply chain design and an overview of “*supply chain design*” in the context of the polycrisis. Section 4 synthesises potential research gaps and outlines how future studies can address them to understand how supply chain design in the context of the polycrisis differs from existing supply chains with respect to a given risk. Finally, the editorial concludes the study with optimistic remarks that motivate scholars, managers, and policymakers alike.

Definition of Polycrisis, the Drivers of the Polycrisis, and Supply Chain Designs for Polycrisis

The concept of polycrisis has attracted significant attention in recent years; however, the term is not new, as it was first discussed in the article by Morin & Kern (1994). Morin and Kern, two reputable complexity theorists, coined the term “polycrisis” (c.f. Lawrence et al., 2024). Swilling (2013) argues that a polycrisis is an event, not an accident. Rather than following long-wave theory, the polycrisis is deeply embedded in their long historical trajectories that produce cumulative effects, and it can also help predict future polycrisis events. The polycrisis can be understood as complex interactions among crises in the global political economy that produce a multiplier effect on those crises (Albert, 2026). However, aside from these few works, the notion of “polycrisis” has not received significant attention from the academic community (Mark et al., 2025), as critics have often dismissed it as a political gimmick of the capitalist economy (Kelecha, 2026). Rakowski et al. (2025) attempt to revisit existing theoretical debates surrounding the “polycrisis”; however, there is a lack of consistency in its operational definition. The existing definitions refer to the complex interactions among crises that negatively impact human well-being. However, the definition offered by Lawrence et al. (2024) and Rakowski et al. (2025) shares a lot of similarities with each other; the only question that

remains unresolved is how many crises contribute to the “polycrisis” event, as in the absence of any specific threshold, the definition remains vague and inconsistent. For instance, Rakowski et al. (2025) identified twenty-four different types of crisis classified into three clusters, namely, environmental, sociopolitical, and economic, that contribute to the polycrisis. However, it is not necessary for all these crises coexist at the same time, as most of them are interlinked and complex interactions.

Rakowski et al. (2025) refer to the drivers as the factors that fuel the polycrisis. Although there is no consensus in the existing research on the drivers of the polycrisis, the crisis itself sometimes drives it (Brosig, 2025). For instance, the global financial crisis in 2008 had fueled significant short-term and long-term impacts on the livelihood of the ordinary people (Ruel et al., 2010), and it also impacted the nation’s or region’s investment in other sustainable development goals (Te Velde et al., 2008; Hickel, 2019), aiming at reducing inequality by gender, improving health standards (Mcnamara & Bamba, 2025), and providing access to safe drinking water, and other goals are impacted indirectly.

Similarly, the COVID-19 crisis has not only impacted the nation’s productivity but also the entire regional supply chain, the livelihoods of many labourers working as daily wage workers or domestic help in most South East Asian countries (Rasul et al., 2021) and the Middle East, which have also been significantly affected by strict lockdowns (Upadhaya et al., 2020). In addition, patients with health problems were significantly affected (Tiwari et al., 2025; Tiwari, 2026). Hence, the global pandemic has not only impacted overall national productivity (Ivanov, 2020, 2024) but also the livelihoods of many individuals working in the restaurant and tourism sectors (Adams et al., 2021).

Similarly, the Russian-Ukraine war has not only caused a severe crisis in most developed European economies but has also disrupted gas supplies to many European nations, including Germany, France, Italy, and other Eastern European countries that heavily rely on Russian gas (Sampedro et al., 2024; Di Bella et al., 2024; Bednarski et al., 2025). The war has not only caused inflation but also eroded the marginal cost advantage European manufacturers once had (Roscoe et al., 2022), while giving Chinese manufacturers a competitive advantage (Gugushvili, 2025; Bednarski et al., 2026). Climate change has not only affected existing automotive sectors but also led to significant shifts in market share, as Chinese companies, such as BYD, were far better prepared for electric-car manufacturing (Hao & Hao, 2026).

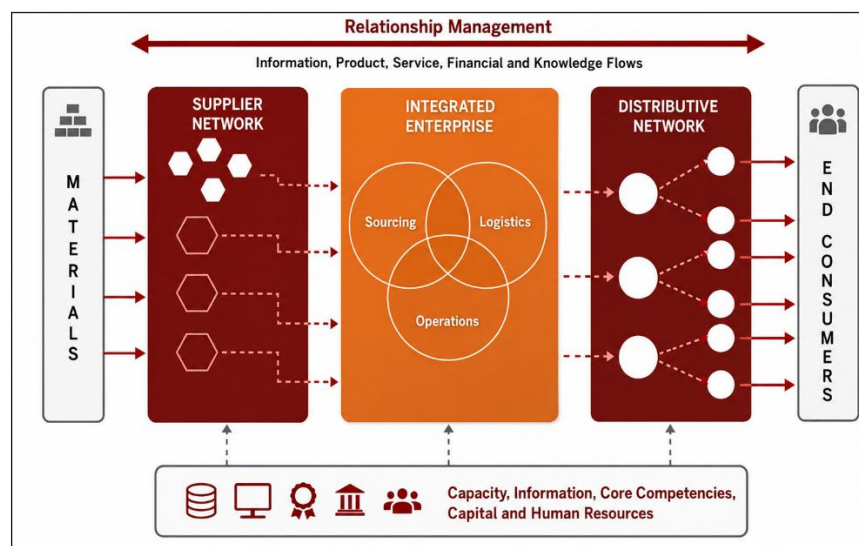
In addition to these crises, the policy of the country such as USA under the leadership of Mr. Trump, the president of the United States of America, that imposes differential trade tariffs based on the importance of the nation to the USA (Park & Kinne, 2026), current interest in terms of strengthening and reviving almost lost manufacturing capabilities and create more job opportunities for the American’s (Bacchus), has not only disrupted China, India, Japan, South Korea, Canada, and many European nations but also has impacted the GDP of many countries and the most impacted countries are China and India (Kim, 2025). The USA’s trade policy with other countries is not new. In the past, the USA has leveraged it to balance geopolitical equations (Feng et al., 2022). The policy not only affected economic conditions but also led to the Sustainable Development Goal initiatives, as the USA has stopped funding many such organisations engaged in These Initiatives. All these crises and policy changes have led to the polycrisis (Rakowski et al., 2025).

In this study, I propose how the supply chain design needs to be aligned to tackle such a polycrisis event. Supply chain design is essential for managing the key inflows: information, funds, and raw materials (Melnik et al., 2014). Supply chain design has attracted significant attention in the last three decades. Fisher (1997) proposes two supply chains for different product types. Fisher proposes two supply chain designs in this article: an efficient supply chain for the functional product and a responsive supply chain for the innovative product. However, the Fisher framework does not account for environmental uncertainties arising from fluctuations in supply and demand. To address this gap, Lee (2002) developed four supply chain designs to handle demand and supply uncertainties. For instance, the efficient supply chain is for low-demand and low-supply uncertainty. Similarly, the responsive supply chain design is proposed for the high demand uncertainty and low-supply uncertainty. The risk-hedging supply chain design for situations facing high supply uncertainty and low-demand uncertainty.

Finally, the agile supply chain design is for both high demand and high supply uncertainties. However, over time, especially as the supply chain crossed geographical boundaries connecting multiple countries with different cultural backgrounds, beliefs, systems, faiths, and values, agile supply chain design proved insufficient to tackle global complexities. Hence, Lee (2004) proposes the Triple A-supply Chain Design framework, which assumes that the supply chain in the current context needs to be agile, adaptable, and aligned, thereby providing the competitive advantage for organisations navigating global complexities (Whitten et al., 2012; Marin-Garcia et al., 2018; Daneshvar Kakhki et al., 2023). However, to meet the supply chain complexity of the base of the pyramid (BOP) or marginalised societies, being agile, adaptable, and aligned is not sufficient (Tate et al., 2019; Escamilla et al., 2021). The supply chain design must address two other aspects: accessibility and affordability (Escamilla et al., 2021). In fact, during the COVID-19 pandemic, most nations could not provide vaccines to their citizens because vaccines were inaccessible due to poor logistics infrastructure, such as insufficient cold storage and supply chain facilities, and, in some cases, affordability was an issue (Dagovetz et al., 2025). Hence, it is clear that supply chain design has evolved over time to address the polycrisis. There is a need to understand various influencers and identify the building blocks that define the supply chain for a given situation (Melnik et al., 2014; Dubey et al., 2024a). Various factors influence supply chain design, especially when addressing the polycrisis (Xu et al., 2023; Lofti et al., 2025). These factors include geopolitical conflicts, trade relationships, cultural differences, internal politics, production capabilities, access to raw materials, and collaborative partnerships (Moradlou et al., 2025; Al-Shwaf & Bell, 2025; Bednarski et al., 2026). Additionally, climate change and public health issues play significant roles in shaping supply chain strategies (Xiong et al., 2025).

Supply Chain Design for Polycrisis

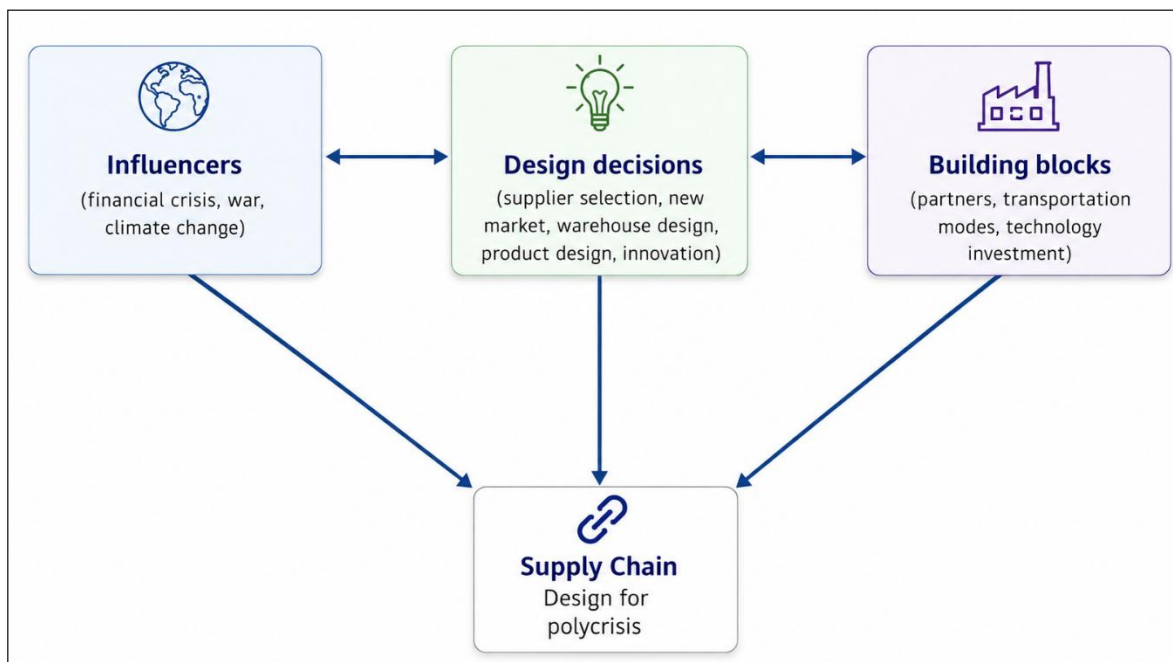
In this section, I present an overview of supply chain design for the polycrisis. I adopt the Melnyk et al. (2014) framework to understand how to shape the supply chain in the wake of a polycrisis situation. *“Supply chain design shapes the nature of the supply chain (see Figure 1) and ultimately comprises the decisions that influence the firm’s investment patterns across its various supply chains”* (Melnik et al., 2014, p. 1888).



Source: Fig. 1 has been polished using ChatGPT.

Fig. 1: Supply Chain Network (Adapted from Melnyk et al., 2014, p. 1889)

Hence, inspired by the Melnyk et al. (2014, p. 1889) supply chain design definition, I define supply chain design for the polycrisis as, the supply design for the polycrisis is understanding the strategic outcomes for the organisation and developing a strategy to plan, implement and control the flow of materials including the raw materials, the materials for the production and the finished goods for the final delivery and the flow of materials which involves managing collaborative relationship among the partners involved in every stage of the supply chain network. The supply chain design for polycrisis is dynamic, agile, and adaptable, and it must align the goals of each partner in the supply chain network; for this, transparency and supply chain visibility are essential. In addition, the supply chain design should also help meet the needs of the marginalised section, for which affordability and accessibility are equally important. In addition, the supply chain design for the polycrisis should be able to sense the dynamic changes in the environment, be flexible to respond to the needs of the consumer, and the speed with which it responds is equally important and must be able to adapt to the situation, for which trust and credibility play a significant role. Hence, the proposed definition for the supply chain design for the polycrisis is, *”supply chain design for a polycrisis is the strategic configuration and management of material, information, and relationship flows across a supply network to ensure resilience, agility, adaptability, and inclusiveness in the face of multiple, interconnected, and evolving disruptions. It seeks to align the objectives of supply chain partners through transparency, visibility, and collaboration while ensuring the efficient, affordable, and accessible delivery of goods and services to diverse stakeholder groups”*. Hence, I propose Fig. 2 to illustrate how to design a supply chain for the polycrisis.



Source: Author’s own conceptualisation, and the Figure has been polished using ChatGPT to enhance the presentability.

Fig. 2: Supply Chain Design for Polycrisis

Inspired by Melnyk (2014), there are three important components for the supply chain design for the polycrisis:

Influencers

These include various crises that influence the design of the polycrisis supply chain, such as financial crises, ongoing wars and geopolitical conflicts, trade tariffs, economic sanctions, climate change, and health crises, all of which play a significant role in setting strategic objectives for supply chain design (Durugbo & Al-Balushi, 2023; López et al.,

2025). For instance, following the USA trade tariff on Indian manufactured goods or Chinese-manufactured goods (Ma & Ning, 2024; Luo, 2026), the firms have found or identified alternative markets so that the firm can manufacture their products without suffering, as they have invested in procuring raw materials, supply chain network, workers' wages, technological infrastructure and other forms of expenses that are essential for producing goods and services to meet the USA clients (Wicaksana et al., 2025). Secondly, the Russia-Ukraine war has created enormous pressure on German manufacturers, as they have relied on Russian gas for years (Chyong & Henderson, 2024). Due to European Union economic sanctions on Russia, Russia has cut energy supplies, causing enormous challenges for these manufacturers, as alternative energy sources are highly costly (Chen et al., 2023). Thirdly, during the pandemic caused by COVID-19, the pharmaceutical companies have started exploring other strategic manufacturing locations, as over-reliance on a few manufacturing locations has increased the risk of delay and impacted the lives of the COVID-19-affected patients due to delay (Li et al., 2023), as these manufacturing firms have enormous pressure for meeting their own local demand as well as global demands (Ayati et al., 2020; Tirivangani et al., 2021). Fourthly, the commitment of many countries to protect the environment has led to countries redesigning their manufacturing plants or supply chain design to achieve carbon-neutral goals (Malehmirchegini & Chapman, 2025), that include electric vehicles, redesigning the steel melting furnace to achieve carbon neutrality, a zero-carbon emissions-led transportation system, which led to the closure of traditional automotive plants (Zhao et al., 2022) or old steel melting furnaces and investment in modern steel furnaces to produce steel without carbon emissions (Rumsa et al., 2025) or conventional transportation systems relying on gasoline or oil (Gupta & Garg, 2020). These are some examples of how supply chain design in response to polycrisis has evolved.

Design Decisions

The design decisions include supplier selection, market identification, new warehouse location, a suitable transportation mix, and other factors that strongly influence the supply chain design (Beamon, 1998; Lim et al., 2017; Onstein et al., 2020). For instance, economic sanctions imposed by the USA or the European Union on any country create challenges for countries that procure raw materials from those nations to manufacture products (Zhang et al., 2023; Steinberg & Wolff, 2024). For example, Iran was one of the leading suppliers of oil to China, India, and many other nations (Wei et al., 2023). However, the US has imposed economic sanctions on Iran, preventing it from maintaining trade relations with other countries (Ghodsi & Karamelikli, 2022). Hence, any country that maintains trade relations with Iran despite warnings may face the same economic sanctions or higher export tariffs. Under pressure, India had to select another alternative partner for the oil supply. Similarly, in response to trade tariffs imposed by the US on other countries, it has led European countries and other Gulf countries to form a strategic alliance with China, as in recent times, the US way of maintaining relationships is highly unpredictable and unsustainable due to frequent changes in the US stance towards its allies. Hence, in the wake of the polycrisis, firms are adopting flexible, adaptable supply chain strategies to explore new opportunities and leverage existing capabilities to gain a competitive advantage (Holgado et al., 2024; Maalouf et al., 2025; Hong et al., 2025).

Building Blocks

The polycrisis not only demands investment in new and emerging technologies to improve the dynamic sensing capability of the firm, but also helps the firm to process the information in a way to make important decisions related to changing the suppliers or distribution channels or market to adapt to the rapid change in the business environment, which is influenced by multiple crises (López et al., 2025). Secondly, in addition to technology, the firm needs to invest in building alliance management capability, as alliances and strategic relationships provide a strong competitive advantage during crises (Dubey et al., 2024b). Third, the firm needs to invest in building diplomatic channels and strong liaisons with governments to address such a high level of uncertainty. In recent times, we have seen how Gautam Adani, despite facing multiple threats from activists and NGOs, as well as economic sanctions imposed by the United

States of America and other nations, has resolved matters diplomatically to restore normalcy. Similarly, Elon Musk has demonstrated a high level of diplomatic ties with multiple nations, despite attracting severe criticisms over personal remarks, and opinion established that firm investing in strong international relationships with governments, and lobbying with activists, NGOs and judicial bodies has proven a strong element in the supply chain design, which unfortunately has received less attention from academics.

Discussions

The critical review of the existing literature, drawn from multiple outlets, demonstrates that the polycrisis, as a term, remains poorly understood, and that organisational studies are still in the early stages of understanding it as a concept and of developing an appropriate theoretical framework within the organisational context. The current debate attempts to understand how supply chain design can help navigate the polycrisis, as there has been strong reflection around the globe from leaders and policymakers to secure their supply chain design to protect their economy and ensure that the country does not face a prolonged energy crisis, the availability of rare metals and minerals, food grains and other critical healthcare items. The multiple crises in the form of trade tariffs, geopolitical conflicts, health crises, climate change and financial crises have forced the firms to revisit their existing supply chain design strategies to tackle the current polycrisis situation. However, the existing literature offers no answers to most of these questions, as the polycrisis has been used inconsistently across the literature. The polycrisis and supply chain design topic is a new and promising area of debate that requires intellectually rigorous, empirically grounded analysis to advance theoretical understanding.

Conclusions

I conclude this editorial with great optimism. There is an enormous scope for scholars to engage in scholarship that aims to redefine the field of supply chain management in the context of a polycrisis. The supply chain design goes beyond partners, technology, and the distribution network, to relationship management and the flow of materials and information. It includes complex topics such as climate economics, global rise in terrorism, geopolitical conflicts, health risk, diplomatic relationships, information warfare and countering misinformation, cyber security and evolving AI that have created an urge to redefine the supply chain design topic as the future supply chain managers need to build a lot of skills and capabilities that go beyond their technological and managerial skills.

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