

A Study of Corporate Supply Chain Choices and Geopolitical Interactions

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ABSTRACT

With the advancement of economic globalization, cross-border layout of supply chains has become the new normal of trade. The study theoretically explores the adaptive changes in corporate supply chain selection strategies under global economic integration and complex geopolitical environments. It analyzes the wide-ranging impacts of geopolitical events such as international conflicts and economic sanctions on corporate supply chains, and emphasizes the centrality of risk assessment in supply chain strategic decision-making. It is proposed that firms should adopt supply chain diversification, localization and strategic alliance building to manage risks and enhance supply chain resilience and flexibility. The study helps firms and policy makers to formulate more informed strategies and decisions in response to the changing geopolitical environment in order to cope with geopolitical risks and protect the robustness of supply chains.

KEYWORDS

Economic globalization; Geopolitical risk; Supply chain management; Risk assessment; Supply chain strategy

1. INTRODUCTION

Against the backdrop of economic globalization, geopolitical factors have become a key variable influencing enterprises' supply chain choices and global trade flows. International conflicts, political unrest, economic sanctions and the establishment of trade barriers have not only profoundly shaped political and economic relations among countries, but also posed unprecedented challenges to the security and stability of global supply chain networks. In the face of such challenges, how enterprises can make flexible supply chain choices in a geopolitically unpredictable environment has become a question worth exploring. This study aims to explore in depth the strategies of enterprises' supply chain choices in geopolitical environments from the theoretical level, and put forward supply chain management suggestions adapted to geopolitical changes, with a view to providing theoretical support and references for decision-making of multinational enterprises and governments.

The study firstly emphasizes the importance of geopolitical risk assessment, pointing out that enterprises and governments need to comprehensively consider the current political and economic situation and the potential changes in the future. By identifying and predicting potential risk factors such as international sanctions, regime change, and military conflicts, it provides the first step for

enterprises to cope with uncertainty [1]. Meanwhile, the possible impacts of geopolitical events on companies' supply chains and global trade are further analyzed in depth from multiple perspectives, including economic, political, social, and financial. In terms of risk management strategies, this study explores a series of effective management measures that enterprises can take in the face of geopolitical risks, including policy adjustments, strengthening multilateral cooperation, and coordination and cooperation with international organizations. Meanwhile, for supply chain strategies, it is recommended that enterprises implement supply chain diversification, localization and building strategic alliances in order to improve the risk-resistant ability and flexibility of the supply chain. Through the theoretical analysis of geopolitical risks, this study provides a comprehensive set of strategic frameworks for adjusting supply chains to geopolitical changes. Diversification of the supply chain can help enterprises reduce their dependence on specific markets and reduce the impact of geopolitical conflicts [2]; while localization strategies and the establishment of enhanced partnerships can help enterprises better cope with changes in the external environment and ensure the stability and continuity of the supply chain [3].

The impact of geopolitics plays a decisive role in corporate supply chain strategy. In response to the increasingly complex geopolitical environment, enterprises must continuously improve the risk assessment model and adjust the supply chain management strategy to ensure their competitiveness and sustainable development. Considering the important impact of geopolitics on firms' supply chain management, flexible and effective supply chain strategies can help firms to maintain competitiveness and sustainable development in the challenging globalized environment.

2. LITERATURE REVIEW

2.1. Geopolitics and International Trade

Geopolitics and international trade has been an evolving research theme within the field of international business and policy. Since the late twentieth century, the topic has attracted considerable academic attention and has become increasingly important in the context of globalization. Exploration of the impact of geopolitics on international trade began with studies such as that of Radcliffe (1976), whose early work identified how the international political landscape could potentially influence global trade trends [4]. Since then, Barbieri's (2024) research has focused on the direct effects of specific geopolitical events on international trade flows and their policy making [5].

With the rise of global supply chains, the interaction between firms' supply chain choices and geopolitics has gradually become a hot research topic. Moradlou et al. (2021) pointed out that supply chain decisions should take into account geopolitical stability and changes in international relations in order to minimize potential supply risks [6]. Recently, Baldwin and Freeman (2022) also emphasized the necessity of diversified supply sources to cope with the impact of geopolitical instability on firms' supply chains [7].

In addition, the economic effects of geopolitical behaviors, such as economic sanctions and trade wars, have been demonstrated by Nguyen and Do (2021) in their study of influencing international trade patterns and firm behavior [8]. In a recent development, Wang et al. (2022) elucidated through a case study how firms can maintain supply chain stability under political tensions through long-term cooperation and strategic alliances [9].

In summary, the interaction between geopolitics and international trade has a profound impact on firms' global supply chain choices. The extant literature establishes the direct and indirect impacts of geopolitical factors on international trade decisions, as well as the multiple strategies that firms adopt to cope with geopolitical changes. Despite the fruitful results of existing research, the field still needs to delve deeper into how geopolitics will shape firms' supply chain decisions in the future, given the increasing complexity of international relations.

2.2. Geopolitical Dimensions of Supply Chain Management

In the context of globalization, the geopolitical dimension of supply chain management has become a non-negligible part of international trade and business strategy. In recent years, with the changes in international relations, the impact of geopolitical factors on supply chains has become more and more significant. Maihold (2022) proposed the concept of geopolitical factors in supply chain management, pointing out that geopolitical stability is an important factor that cannot be ignored in supply chain layout decisions of multinational enterprises [10]. Subsequently, Bednarski et al. (2024) further elucidated how geopolitical risk directly affects the logistics and supply chain costs of multinational enterprises through their research, emphasizing that enterprises need to comprehensively consider political stability in global supply chain selection [11].

Current research focuses more on the specific impact of geopolitical interactions on supply chain strategies. For example, Ali et al. (2024) pointed out that geopolitical events, such as trade wars and sanctions, have substantial impacts on global supply chain layout and management, and these events may lead to supply chain disruptions and force firms to reconsider their geographical distribution [12]. Meanwhile, Patel (2023) found that geopolitical uncertainty requires firms to consider diversified sources and alternatives in supply chain design in order to reduce dependence on a single market and improve supply chain flexibility and risk resilience [13].

On the other hand, in recent years, some scholars have also explored how geopolitics indirectly acts on supply chain management by affecting trade policies and relations between countries. Moradlou et al. (2021) showed that trade policy adjustments under geopolitical tensions affect supply chain's global layout decisions by altering trade costs and market access conditions [14]. In addition, Wang et al. (2024) found through a case study that firms can utilize international multilateral mechanisms to mitigate potential risks arising from geopolitics and enhance supply chain stability by strengthening cooperative relationships with different countries [15].

In summary, research on the geopolitical dimension of supply chain management shows that geopolitics not only directly affects multinational enterprises' supply chain layout and operating costs, but also indirectly influences supply chain decisions through trade policies and international relations. Although existing studies have provided important insights into understanding geopolitical factors in supply chain management, more in-depth exploration and research are still needed in the context of the rapidly changing global political and economic landscape.

3. RESEARCH AND ANALYSIS

3.1. Geopolitical Risk Assessment

Against the backdrop of deepening economic globalization and the internationalization of supply chains, geopolitical risks have become a key factor affecting the stability of global trade and supply chains. In recent years, frequent fluctuations in geopolitical tensions have posed direct challenges to the stability of the international trade environment and have had a profound impact on the supply chain strategy choices of multinational enterprises. We emphasize the key role of geopolitical risk assessment in future international trade and global supply chain strategy selection, and encourage multinational enterprises and governments to continuously update and improve the relevant theoretical models and strategy options, so as to better respond to the challenges of global economic integration and contribute to the realization of a coherent and mutually beneficial global trading system and supply chain network [16].

3.1.1. Risk Identification

Geopolitical risk identification is the first step in geopolitical risk management, which includes anticipating and identifying those geopolitical events that may pose a threat to the stability and

development of a country or region. It begins with the need to systematically analyze the dynamics of global and regional international relations and to identify the core factors of geopolitical tension and conflict. Points of concern include, but are not limited to, international sanctions, territorial disputes, regime change, terrorist activities and the international dynamics behind them. This process requires the comprehensive use of multidisciplinary knowledge in international political economy, conflict theory and international relations theory to categorize and evaluate potential risks geographically, temporally and in terms of intensity through qualitative and quantitative methods.

3.1.2. Risk impact analysis

An in-depth analysis of the possible impacts of geopolitical events must be considered in multiple economic, political, social and financial dimensions. At the economic level, the focus is on assessing the direct and indirect impacts of specific geopolitical events, such as international sanctions and trade wars, on the country's GDP, export imports, foreign exchange reserves and investment flows. The political dimension analyzes changes in regime stability and policy coherence, as well as possible adjustments in international image and foreign relations. The social dimension, explore the impact of conflicts and tensions on the mentality of the population, the social order and the security environment. In the financial sphere, the volatility of geopolitical risks on global financial markets is taken into account, especially the impact on currency exchange rates, stock and bond markets. This analysis process requires the use of economic models, political risk analysis models and other tools for comprehensive impact prediction and assessment.

3.1.3. Risk Management Strategies

The management strategy of geopolitical risk involves not only the policy adjustment and the construction of coping mechanisms within a single country or region, but also the mediation and coordination role of multilateral cooperation mechanisms and international organizations on a global scale. From a theoretical point of view, policy adjustment should be based on the dynamic monitoring of the domestic and international economic and political environments, and timely adjustments should be made to foreign trade, foreign affairs and security policies in order to minimize adverse impacts. At the same time, communication and cooperation with relevant countries and international organizations should be strengthened, and the improvement and implementation of international laws and rules should be promoted through multilateral mechanisms, such as the United Nations, the G20, and the WTO, so as to jointly address the challenges posed by geopolitical risks. In addition, international economic and political theories point out that utilizing mechanisms such as international arbitration and third-party mediation is also one of the ways to effectively manage geopolitical risks.

In order to cope with the increasingly complex geopolitical environment, both countries and enterprises need to establish a comprehensive and dynamic geopolitical risk assessment and management system, and effectively respond to geopolitical risks through risk identification, impact analysis and strategy formulation, so as to ensure the stability and sustainable development of the global economy.

3.2. Adapting Supply Chains to Geopolitical Changes

As geopolitical tensions increase, their impact on the international trading environment and on firms' supply chain choices becomes particularly important. Geopolitical risks may not only lead to higher trade barriers and increase the cost and complexity of cross-border supply chains, but may also threaten the stability and sustainability of supply chains. Therefore, firms must respond to these challenges through strategic supply chain adjustments.

3.2.1. Supply chain diversification strategy

Supply chain diversification is one of the primary strategies for companies to cope with geopolitical changes. By establishing supply networks in different countries and regions, firms are able to reduce their dependence on a single market, thereby reducing the risk of supply disruptions due to

geopolitical conflicts [17]. In addition, diversification can help firms capitalize on competitive advantages in different markets, such as cost, technology, or resources, in order to improve overall supply chain efficiency and competitiveness. Adopting a supply chain diversification strategy does not only mean increasing the number of supply sources, but also assessing and selecting strategically important diversification locations. For enterprises, this includes a comprehensive assessment of the political stability, economic openness, trade policies and regulatory environment of the countries where potential suppliers are located. On this basis, enterprises need to optimize their supply chain design through, for example, the establishment of geographically dispersed production bases, multi-channel logistics systems, and flexible storage and distribution solutions to ensure supply chain continuity and flexibility in the face of geopolitical tensions.

3.2.2. Localization Strategy

Increasing the localization component of the supply chain is another effective strategic option in specific contexts. By sourcing and manufacturing locally, firms are able to reduce cross-border transportation costs and time, as well as mitigate uncertainty due to changes in international trade policies. A localization strategy not only promotes cooperation with local suppliers and enhances the flexibility of the supply chain, but also improves to some extent the firm's adaptability in the face of geopolitical risks. In addition to simplifying supply chain management and reducing cross-border transportation risks, the implementation of localization strategy should be integrated with the long-term development strategy of enterprises. Enterprises can accelerate the construction of local production capacity and technological capabilities by interfacing with local industrial policies and development plans, and utilizing local government support policies, such as tax incentives and preferential land use rights. In addition, by participating in the construction of local communities and industrial clusters, they can effectively integrate local resources and promote close cooperation with local suppliers, customers, and R&D organizations, thus enhancing the competitiveness of enterprises in the global supply chain system.

3.2.3. Strategic alliances and partnerships

Under the highly tense geopolitical background, establishing strategic alliances and concluding partnerships have become an effective way for enterprises to guarantee supply chain continuity. By establishing long-term and stable relationships with reliable partners, enterprises are able to ensure the supply of key resources, share market risks, and increase their resilience to external shocks. To a certain extent, in-depth partnerships help enterprises better implement diversification and localization strategies and further consolidate supply chain stability [18]. When establishing strategic alliances, enterprises not only need to ensure the credibility, capability and fit with corporate strategy of the selected partners through a strict partner selection mechanism, but also deepen the cooperative relationship through co-investment, sharing of technology, and building of platforms. At the same time, multinational enterprises should emphasize the establishment of information sharing and communication mechanisms with their partners, and jointly respond to the challenges brought by changes in the market and political environment through regular collaborative planning and review meetings. Such in-depth cooperation can help build a closer and more efficient supply chain network and enhance the ability of the whole supply chain system to withstand geopolitical risks.

3.2.4. Dynamic monitoring and response to external environment

In the face of the changing geopolitical environment, enterprises need to continuously assess the effectiveness of their supply chain strategies and flexibly adjust their response measures. This includes regular review of potential risks in the supply chain, predicting the impact of political changes on the supply chain through dynamic simulation and risk assessment tools, and developing contingency plans to ensure continuity of critical operations. In the context of globalization, companies not only need to proactively adjust their supply chain strategies, but also need to establish an effective monitoring mechanism for the external environment. This involves keeping a constant watch on the global and regional political and economic situation and regularly assessing the potential

impact of geopolitical changes on an organization's supply chain. To this end, companies can adopt big data and artificial intelligence technologies to establish a sensitive market information tracking system and a risk warning mechanism. By identifying potential geopolitical risks in advance and formulating corresponding response strategies and plans, enterprises can take action in the first instance to minimize adverse impacts.

As geopolitical tensions continue to evolve, companies must enhance the adaptability and resilience of their supply chains by adopting measures such as diversification, localization, and the establishment of strategic alliances. Through these strategic adjustments, enterprises will not only be able to effectively respond to the challenges posed by geopolitical changes, but will also be able to remain competitive and sustainable in global trade.

4. CONCLUSION AND SUGGESTIONS

This study examines how firms can adapt their supply chain strategies to address the challenges and risks associated with global economic integration and geopolitical complexity. The study finds that geopolitical events such as international conflicts, political unrest, economic sanctions and trade barriers have a wide and far-reaching impact on firms' supply chain management, pointing to the need for firms to adopt a more flexible and prudent approach to supply chain selection and management. The importance of geopolitical risk assessment is obvious, emphasizing the need for enterprises to identify and analyze potential political and economic changes in their strategic planning. By implementing effective risk management strategies such as supply chain diversification, localization and strategic alliances, companies can effectively diversify risks, improve supply chain resilience and adaptability, and ensure business continuity and sustainable development.

The study also emphasizes that it is crucial for policymakers to understand how geopolitics affects international trade and corporate supply chains, and to adopt effective policies to mitigate these impacts in order to safeguard national economic interests and global trade stability. Cooperation between countries and international organizations play an important role in geopolitical risk management and can provide support and mitigation options at the macro level. Ultimately, the study concludes that conducting comprehensive risk assessments and adopting flexible supply chain strategies are extremely important for firms to maintain global competitiveness. In the ever-changing international environment, firms must adjust their supply chain management programs in real time to effectively respond to geopolitical uncertainties and challenges. The theoretical analysis and strategic recommendations in this study provide new perspectives and approaches for firms and policymakers to identify, predict and manage geopolitical risks, as well as to make more informed decisions in the complex international arena.

AUTHOR CONTRIBUTIONS

H-N X: access to funds, formal analysis, data collation and writing - original manuscript. Z-H X: writing - review and editing, methods. J-W Y: conceptualization, writing - review. S L: software and validation. X Y: conceptualization, methodology, resources. All authors contributed to the article and approved the submitted version.

CONFLICTS OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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REFERENCES

- [1] Bouoiyour, J., Selmi, R., Hammoudeh, S., & Wohar, M. E. (2019). What are the categories of geopolitical risks that could drive oil prices higher? Acts or threats?. *Energy Economics*, 84, 104523.
- [2] Baldwin, R., & Freeman, R. (2022). Risks and global supply chains: What we know and what we need to know. *Annual Review of Economics*, 14, 153-180.
- [3] Azadegan, A., & Dooley, K. (2021). A typology of supply network resilience strategies: complex collaborations in a complex world. *Journal of Supply Chain Management*, 57(1), 17-26.
- [4] Radcliffe, S. V. (1976). World Changes and Chances: Some New Perspectives for Materials: Trends in use, world trade, and international politics define issues and research directions. *Science*, 191(4228), 700-707.
- [5] Barbieri, K. (2024). Geopolitics and International Trade. In *The Palgrave Handbook of Contemporary Geopolitics* (pp. 1-23). Cham: Springer Nature Switzerland.
- [6] Moradlou, H., Reefke, H., Skipworth, H., & Roscoe, S. (2021). Geopolitical disruptions and the manufacturing location decision in multinational company supply chains: a Delphi study on Brexit. *International Journal of Operations & Production Management*, 41(2), 102-130.
- [7] Baldwin, R., & Freeman, R. (2022). Risks and global supply chains: What we know and what we need to know. *Annual Review of Economics*, 14, 153-180.
- [8] Nguyen, T. T., & Do, M. H. (2021). Impact of economic sanctions and counter-sanctions on the Russian Federation's trade. *Economic Analysis and Policy*, 71, 267-278.
- [9] Wang, J., Hu, Y., Qu, W., & Ma, L. (2022). Research on emergency supply chain collaboration based on tripartite evolutionary game. *Sustainability*, 14(19), 11893.
- [10] Maihold, G. (2022). A new geopolitics of supply chains: the rise of friend-shoring.
- [11] Bednarski, L., Roscoe, S., Blome, C., & Schleper, M. C. (2024). Geopolitical disruptions in global supply chains: a state-of-the-art literature review. *Production Planning & Control*, 1-27.
- [12] Ali, I., Gligor, D., Balta, M., Bozkurt, S., & Papadopoulos, T. (2024). From disruption to innovation: The importance of the supply chain leadership style for driving logistics innovation in the face of geopolitical disruptions. *Transportation Research Part E: Logistics and Transportation Review*, 187, 103583.
- [13] Patel, K. R. (2023). Enhancing Global Supply Chain Resilience: Effective Strategies for Mitigating Disruptions in an Interconnected World. *BULLET: Jurnal Multidisiplin Ilmu*, 2(1), 257-264.
- [14] Moradlou, H., Reefke, H., Skipworth, H., & Roscoe, S. (2021). Geopolitical disruptions and the manufacturing location decision in multinational company supply chains: a Delphi study on Brexit. *International Journal of Operations & Production Management*, 41(2), 102-130.
- [15] Wang, Q., Ren, F., & Li, R. (2024). Does geopolitical risk impact sustainable development? A perspective on linkage between geopolitical risk and sustainable development research. *Journal of Cleaner Production*, 451, 141980.
- [16] Gemechu, E. D., Helbig, C., Sonnemann, G., Thorenz, A., & Tuma, A. (2016). Import-based indicator for the geopolitical supply risk of raw materials in life cycle sustainability assessments. *Journal of Industrial Ecology*, 20(1), 154-165.
- [17] Smorodinskaya, N. V., Katukov, D. D., & Malygin, V. E. (2021). Global value chains in the age of uncertainty: advantages, vulnerabilities, and ways for enhancing resilience. *Baltic Region*, 13(3), 78-107.
- [18] Panigrahi, S. S., Bahinipati, B., & Jain, V. (2019). Sustainable supply chain management: A review of literature and implications for future research. *Management of Environmental Quality: An International Journal*, 30(5), 1001-1049.