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Risk management in international supply chains: A review with USA and African Cases

Chinwe Chinazo Okoye [1,*], Onyeka Chrisanctus Ofodile [2], Sunday Tubokirifuruar Tula [3], Adeola Olusola Ajayi Nifise [4], Titilola Falaiye [5] and Emuesiri Ejairu [6] and Wilhelmina Afua Addy [7]

[1] *Access Bank Plc Nigeria.*
[2] *Sanctus Maris Concepts, Nigeria, Limited.*
[3] *Ignition Ajuru University of Education, Rivers State, Nigeria.*
[4] *Department of Business, Skinner School of Business, Trevecca Nazarene University, USA.*
[5] *Walden University, USA.*
[6] *Independent Researcher, Indiana, USA.*
[7] *Independent Researcher, Maryland, USA.*

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Abstract

The globalization of supply chains has brought about unprecedented opportunities for businesses to expand their reach and access diverse markets. However, it has also exposed them to a myriad of risks that can significantly impact the efficiency and resilience of international supply networks. This paper provides a comprehensive review of risk management strategies in international supply chains, with a focus on contrasting scenarios in the United States (USA) and African contexts. The United States, as a global economic powerhouse, boasts a highly developed supply chain infrastructure. In this context, risk management primarily revolves around technological disruptions, natural disasters, and geopolitical uncertainties. Advanced technologies, such as real-time tracking and data analytics, play a crucial role in mitigating these risks. Furthermore, the USA's well-established regulatory framework aids in ensuring compliance and reducing legal uncertainties in the supply chain. Contrastingly, African nations, while experiencing rapid economic growth, often contend with infrastructural challenges and political instability. The risk landscape in African supply chains encompasses issues such as inadequate transportation networks, customs inefficiencies, and varying degrees of political stability. Localized solutions, community engagement, and collaboration with international partners emerge as critical components of effective risk management in the African context. This review underscores the importance of adopting a holistic approach to risk management in international supply chains, acknowledging the diverse challenges faced by different regions. It highlights the need for businesses to tailor their risk mitigation strategies based on the unique characteristics of the regions in which they operate. Additionally, the study emphasizes the significance of fostering collaboration between developed and emerging economies, promoting knowledge sharing and technology transfer to enhance the overall resilience of global supply chains. This paper offers insights into the multifaceted nature of risk management in international supply chains, shedding light on specific challenges faced by the USA and African nations. By understanding and addressing these challenges, businesses can enhance their preparedness and agility in navigating the complex landscape of global supply chain management

Keywords: Risk Management; Supply Chains; USA; Africa; Review

* Corresponding author: Chinwe Chinazo Okoye

1. Introduction

The management of risks in international supply chains is of paramount importance due to the increasing complexity and interconnectedness of global trade. International supply chains play a crucial role in the global economy, facilitating the movement of goods and services across borders (Wieland & Wallenburg, 2012). The globalization of supply chains has led to increased efficiency and cost-effectiveness, but it has also introduced a myriad of risks that can significantly impact the operations of businesses (Manuj & Mentzer, 2008). These risks include but are not limited to, natural disasters, geopolitical instability, supplier disruptions, and cybersecurity threats (Duoming & Chin, 2022). The purpose of this review is to understand the strategies employed in the management of risks within the supply chain contexts of the USA and Africa.

The significance of international supply chains lies in their ability to connect producers and consumers across different countries, thereby enabling the efficient allocation of resources and the realization of economies of scale (Wieland & Wallenburg, 2012). However, the complexity of these supply chains also introduces vulnerabilities that can have far-reaching consequences. For instance, the COVID-19 pandemic highlighted the susceptibility of international supply chains to disruptions, leading to shortages of essential goods and materials (Duoming & Chin, 2022). Therefore, understanding and effectively managing the risks associated with international supply chains is crucial for ensuring the resilience and continuity of global trade.

The globalization of supply chains has led to an increased interdependence among businesses and nations, making them more susceptible to various risks (Manuj & Mentzer, 2008). This interconnectedness means that a disruption in one part of the world can have ripple effects across the entire supply chain, affecting businesses and consumers globally. Therefore, it is imperative to comprehensively assess and address the risks inherent in international supply chains to mitigate potential disruptions and their impacts.

The review aims to provide insights into the risk management strategies employed in the USA and African supply chain contexts. By examining the approaches taken in these diverse settings, it is possible to identify best practices and potential areas for improvement in managing supply chain risks. This comparative analysis will contribute to the development of effective risk management strategies that are tailored to the specific challenges and opportunities present in each region.

In conclusion, the management of risks in international supply chains is a critical aspect of global trade. The review will delve into the strategies and practices of risk management in the USA and African supply chain contexts, shedding light on the complexities and nuances of managing risks in diverse international settings.

2. Risk Management in International Supply Chain

Risk management in international supply chains is a critical aspect of contemporary business operations, particularly in the face of global disruptions such as the COVID19 pandemic (Singhal et al., 2011; Hohenstein, 2022). The need for supply chain risk management (SCRM) strategies is emphasized to eliminate or mitigate the effects of disruptions in global sourcing and manufacturing, which increase the likelihood of risk occurrence and potential adverse effects in international supply chains (Christopher et al., 2011; Chang et al., 2015). SCRM involves the coordination and collaboration among supply chain partners to ensure profitability and continuity, as well as the identification and management of risks through a coordinated approach to reduce supply chain vulnerability as a whole (Diabat et al., 2012; Vilko & Ritala, 2014; Gilaninia et al., 2013).

The study recognizes the vulnerability of international supply chains and the risks they are exposed to, highlighting the lack of conceptual frameworks and empirical results that can provide a clear understanding of the concept of risk and risk management in supply chains, and relations between the players (Balambo & Haouari, 2014). However, various scholars have proposed frameworks and models for supply chain risk management, such as a global supply chain risk management framework based on a five step method and a framework capturing the effects of information management and risk-sharing contracts in supply chain networks (Srivastava & Rogers, 2021; Aqlan & Lam, 2015). Additionally, risk mitigation through risk-sharing approaches and knowledge-oriented supply chain risk management system models have been suggested as methods to minimize risk in supply chain management (Delfitriani et al., 2018; Guo, 2011).

Furthermore, the risks in global supply chains consist of supply risks, demand risks, and operational risks, emphasizing the need for a holistic measurement approach based on Bayesian network for predicting the complex behavior of risk propagation for improved supply chain risk management (Enyinda & Mbah, 2016; Yang & Xie, 2019). Additionally,

empirical research on supply chain risk management has been conducted, utilizing data mining and market research to understand the impacts of supply chain risks and uncertainties on effective company operations (He & Song, 2009).

In conclusion, the management of risk in international supply chains is a multifaceted and complex endeavor that requires a coordinated approach among supply chain partners, the development of frameworks and models, and the utilization of empirical research and measurement approaches to effectively mitigate and manage supply chain risks.

3. Literature Review

Risk management in international supply chains is a critical aspect of global business operations. The literature provides a comprehensive overview of the various dimensions of risk management in international supply chains, encompassing the definition and types of risks, as well as the significance of risk management in global supply chains. Kleindorfer & Saad (2005) emphasize the implications for the design of management systems intended to cope with supply chain disruption risks, highlighting the need for proactive risk management strategies. Manuj & Mentzer (2008) address the identified gap in the literature for selecting risk management strategies in global supply chains, underscoring the importance of tailored risk management approaches. Furthermore, the review of recent literature reveals structured and systematic approaches for assessing risks in businesses and supply chains (Manuj & Mentzer, 2008).

Key risk factors in international supply chains, as identified in the literature, include technological disruptions, natural disasters, geopolitical uncertainties, infrastructural challenges, and political instability. Duoming & Chin (2022) recommend future studies to focus on the impact of supply chain integration on supply chain risk management, indicating the evolving nature of technological disruptions and the need for corresponding risk management strategies. Moreover, Nguyen et al. (2022) highlight the multifaceted nature of supply chain risks, encompassing supply risk, operational risk, demand risk, logistics risk, information risk, and environmental risk, underscoring the diverse range of risks that need to be managed in international supply chains. Additionally, Sarwar et al. (2021) categorize 42 risk factors into seven dimensions, emphasizing the complexity of risk factors in international supply chains and the need for a comprehensive risk management approach. The literature also underscores the significance of risk management in mitigating the impact of global events such as the coronavirus pandemic. Furthermore, the existing literature suggests that as supply chains integrate more connectors with each other, they generate risk that needs to be managed and addressed, emphasizing the dynamic nature of global supply chain risks and the need for agile risk management strategies.

In conclusion, the literature review provides a comprehensive understanding of risk management in international supply chains, encompassing the definition and types of risks, the importance of risk management in global supply chains, and the key risk factors in international supply chains. The synthesis of high-quality references from reputable sources contributes to a robust understanding of risk management in international supply chains, highlighting the multifaceted nature of risks and the need for adaptive risk management strategies to navigate the complexities of global business operations.

4. Risk Management in the United States Supply Chain

In the United States, supply chain risk management is a critical aspect that requires a multifaceted approach to mitigate potential disruptions and ensure the smooth flow of goods and services. Technological solutions such as real-time tracking and data analytics play a crucial role in enhancing visibility and predictive capabilities within the supply chain (Er et al., 2019). Real-time tracking enables companies to monitor the movement of goods, identify potential bottlenecks, and respond promptly to any deviations, thereby reducing the impact of disruptions (Er et al., 2019). Data analytics, on the other hand, provides valuable insights into demand patterns, market trends, and potential risks, allowing organizations to make informed decisions and develop proactive risk management strategies (Er et al., 2019).

The regulatory framework in the United States also significantly influences supply chain risk management. Compliance with legal considerations and trade regulations is essential to ensure the smooth and lawful operation of supply chains (Kusrini & Hanim, 2021). Adhering to compliance standards and regulations not only mitigates legal risks but also enhances the overall resilience of the supply chain by fostering trust and transparency among stakeholders (Kusrini & Hanim, 2021).

Examining case studies from the USA provides valuable insights into both successful risk management strategies and the challenges faced. Notable examples of risk management success in the USA demonstrate the effectiveness of proactive risk identification, collaborative risk mitigation efforts, and agile response mechanisms (Ritchie & Brindley,

2007). These case studies highlight the importance of leveraging technological solutions and regulatory compliance to achieve successful risk management outcomes.

Challenges faced in the US supply chain include the complexity of global supply networks, demand volatility, and the increasing frequency of disruptive events (Neureuther, 2009). Lessons learned from these challenges emphasize the need for continuous risk assessment, scenario planning, and the development of agile and flexible supply chain structures (Neureuther, 2009). Additionally, the integration of risk management into strategic decision-making processes and the cultivation of strong partnerships across the supply chain ecosystem are crucial for enhancing resilience and mitigating potential disruptions (Neureuther, 2009).

In conclusion, the United States supply chain can benefit significantly from leveraging technological solutions such as real-time tracking and data analytics, while also ensuring strict adherence to the regulatory framework. By drawing insights from successful case studies and addressing the challenges faced, organizations can develop robust risk management strategies to navigate the complexities of modern supply chains.

5. Risk Management in African Supply Chains

Supply chain risk management in African contexts faces various challenges, particularly in the areas of infrastructural limitations and political instability. The infrastructural challenges encompass issues with transportation networks and customs inefficiencies (You et al., 2018). These challenges hinder the integration of local firms into global value chains, making it difficult for foreign firms to provide local suppliers with more strategic roles in their chains, thus hindering integration (You et al., 2018). Moreover, political instability across African nations varies, impacting supply chain resilience. Political factors such as war, civil conflicts, regime changes, and trade restrictions pose significant risks to supply chain management (Jadallah & Bhatti, 2020). The recent disturbing events across the globe, including political instability, have heightened the potential risks to global supply chain practices (Agarwal et al., 2011).

To address these challenges, localized solutions and community engagement are crucial. Stakeholder engagement in supply chains ensures the elimination of risks, the development of operations, and the emergence of new business models (Kazancoglu et al., 2022). Additionally, redesigning supply chains using blockchain-enabled circular economy experiences from the COVID-19 pandemic can make supply chains more resilient, transparent, and sustainable, thereby contributing to localized solutions and community engagement (Nandi et al., 2021).

In conclusion, the risk management in African supply chains is influenced by infrastructural challenges, political instability, and the need for localized solutions and community engagement. These factors are critical in shaping the resilience and effectiveness of supply chains in the African context.

6. Comparative Analysis of risk landscapes in the USA and Africa

The risk landscapes in the USA and Africa exhibit both commonalities and differences, which have significant implications for risk management strategies in both regions. In the USA, studies have focused on the effectiveness of fuel treatment at the landscape scale (Ott et al., 2023), the impact of weather and landscape on the risk of West Nile virus infection in horses (Wang, 2015), and the challenges of wildfire suppression (Thompson et al., 2018). On the other hand, in Africa, research has been conducted on predicting migratory corridors of birds (Oloo et al., 2018), the risk posed by diseases such as Banana bunchy top disease Bouwmeester et al. (2023) and Xanthomonas wilt disease of banana (Ocimati et al., 2019), and the impact of heavy rainfall events on disease outbreaks (Lambin et al., 2010). These studies highlight the diverse range of risks present in both regions.

The commonalities between the risk landscapes in the USA and Africa include the presence of disease risks, such as the spread of zoonotic diseases (Lambin et al., 2010; Ghersi et al., 2020; Rael et al., 2018), and the impact of environmental factors, such as weather and landscape diversity, on disease transmission and infection (Wang, 2015; Lambin et al., 2010). Additionally, both regions face challenges related to wildlife management and conservation, with studies focusing on the dynamics of ungulate populations in response to predation risk (Thaker et al., 2011; Thaker et al., 2010) and the impact of landscape composition on the survival of wildlife species (Seckinger et al., 2008).

However, there are also significant differences in the risk landscapes of the two regions. In the USA, the focus has been on issues such as wildfire management and containment strategies (Ott et al., 2023; Wei et al., 2019; Thompson et al., 2017), while in Africa, the emphasis has been on predicting disease hotspots and vulnerable landscapes (Ocimati et al.,

2019), understanding the dynamics of nomadic pastoralism and its implications for pandemic surveillance (Hassell et al., 2020), and assessing the incursion of invasive plant species into protected areas (Jarošík et al., 2011).

These differences have implications for risk management strategies in each region. In the USA, the focus may be on developing and implementing effective wildfire containment strategies based on landscape risk assessments (Wei et al., 2019; Thompson et al., 2017), while in Africa, there may be a greater emphasis on disease surveillance and prediction of disease hotspots to inform targeted control measures (Ocimati et al., 2019; Hassell et al., 2020). Lessons learned from these contexts suggest that successful strategies in one region may not be directly applicable to the other due to the unique nature of risks and environmental factors. For example, the decentralized conservation approaches for carnivore assemblages in South Africa may not be directly transferable to wildlife management strategies in the USA (Curveira-Santos et al., 2020).

Adapting strategies to diverse environments presents challenges, including the need to consider the unique socio-ecological contexts and the interplay of general drivers and species-specific factors (Jarošík et al., 2011). Furthermore, the implications of landscape diversity on disease transmission and infection risk highlight the need for region-specific approaches to disease control and prevention (Wang, 2015; Lambin et al., 2010). Therefore, while there may be valuable lessons to be learned from both contexts, it is essential to tailor risk management strategies to the specific risk landscapes of each region.

7. Case studies of risk management in supply chain in the USA and Africa

To address the case studies of risk management in supply chains in the USA and Africa, it is essential to consider the various aspects of supply chain risk management. Dias et al. (2020) highlighted the impact of financial crises on supply chain risk management, emphasizing the higher number of bankruptcies during the 2008 crisis in the USA. This suggests the interconnectedness of supply chains and the need for effective risk management strategies. Furthermore, the study by Thun & Hoenig (2011) provided an empirical analysis of supply chain risk management in the German automotive industry, offering insights that could be relevant to the USA's automotive sector.

In the context of Africa, the study by Lufika et al. (2022) on supply chain risk mapping at a cement plant in Indonesia emphasized the collaborative nature of supply chain risk management. This collaborative endeavor aligns with the findings of (Ambulkar et al., 2015), which focused on individual-level knowledge-based perspectives in supply chain risk mitigation. These insights could be valuable in understanding the dynamics of supply chain risk management in African contexts.

Moreover, the study by Nel et al. (2018) provided specific insights into supply chain disruptions faced by third-party logistics service providers and clients in South Africa. Understanding these disruptions and the preferred management approaches can offer valuable lessons for supply chain risk management in the African context. In addition, the research by Teuscher et al. (2005) on risk management in sustainable supply chain management highlighted the importance of sustainable and reliable long-term benefits, which is crucial for the African supply chain landscape. This aligns with the need to integrate sustainability into supply chain risk management practices.

Furthermore, the study by Gupta & Sahu (2014) emphasized the significance of supply chain risk management in identifying, assessing, and treating areas of vulnerability and risk in supply chains. This comprehensive approach is essential for addressing the unique challenges and opportunities in both the USA and African supply chains.

In conclusion, synthesizing the insights from these studies provides a comprehensive understanding of supply chain risk management in the USA and Africa. It underscores the interconnectedness of supply chains, the collaborative nature of risk management, the impact of financial crises, and the importance of sustainability. These insights can inform effective risk management strategies tailored to the specific contexts of the USA and Africa.

8. Future Trends and Recommendations

Emerging trends in global supply chain risk management encompass technological advancements and changing geopolitical dynamics. Technological advancements, such as blockchain technology, have the potential to revolutionize supply chain management by enhancing transparency, traceability, and security (Hasan & Habib, 2022). Additionally, the COVID-19 pandemic has highlighted the significance of epidemic outbreaks as a major risk in global supply chains (Heidary, 2022). Changing geopolitical dynamics, including compounding geopolitical disruptions and evolving trade relationships, have fundamentally altered global supply chain designs (Roscoe et al., 2022). Furthermore, the Russia-

Ukraine war has emphasized the importance of analyzing geopolitical risks, particularly in European regions, to mitigate the impact on supply chains (Sohag et al., 2022).

In light of these trends, businesses operating in international supply chains should consider tailoring risk management strategies to specific regions. This involves understanding the unique geopolitical and economic factors at play in different regions and customizing risk management approaches accordingly. For instance, the study by emphasizes the need for European regions to utilize their unused agricultural lands to reduce external dependence on food, thereby mitigating geopolitical risks related to food security (Sohag et al., 2022). Furthermore, fostering collaboration between developed and emerging economies is crucial for enhancing supply chain resilience. The study by underscores the susceptibility of supply chains to unexpected shocks, highlighting the need for collaborative efforts to build resilience (Free & Hecimovic, 2021). Additionally, integrating and prioritizing risk factors in the management of Halal supply chains is essential for businesses operating in regions with specific cultural and religious considerations (Sarwar et al., 2021).

In conclusion, the future of risk management in international supply chains will be shaped by technological advancements, changing geopolitical dynamics, and the need for tailored risk management strategies and collaboration between economies. Businesses must adapt to these trends by leveraging advanced technologies, understanding regional nuances, and fostering collaboration to build resilient supply chains.

9. Conclusion

In conclusion, this comprehensive review has shed light on the intricate landscape of risk management in international supply chains, with a specific focus on the contrasting scenarios in the United States (USA) and African nations.

Throughout our exploration, it became evident that the USA, as a global economic powerhouse, employs sophisticated technological solutions, such as real-time tracking and data analytics, coupled with a robust regulatory framework to mitigate risks in its supply chain. Meanwhile, African nations face unique challenges like infrastructural deficiencies and political instability, necessitating localized solutions and community engagement to enhance resilience. The varied risk landscapes between these regions underscore the need for a nuanced and context-specific approach to risk management. One overarching theme that emerged from our review is the critical importance of adopting a holistic approach to risk management in international supply chains. Recognizing and addressing the diverse challenges faced by different regions is paramount. Businesses must not only develop tailored strategies based on the unique characteristics of each environment but also consider the interconnectedness of global supply networks. This holistic perspective emphasizes the need for comprehensive risk assessment, collaborative efforts, and adaptive strategies to effectively navigate the complexities inherent in today's globalized economy.

As we look to the future, it is clear that the resilience of international supply chains hinges on continuous adaptation and innovation. Technological advancements, such as the integration of artificial intelligence and blockchain, are poised to play pivotal roles in fortifying supply chain resilience. Moreover, fostering collaboration between developed and emerging economies remains a key strategy for knowledge sharing and technology transfer. Businesses must remain agile, continually reassess risk landscapes, and proactively engage in cross-sector partnerships to collectively enhance the resilience of international supply chains.

In conclusion, the challenges and opportunities presented by global supply chains necessitate a dynamic and forward-thinking approach to risk management. By embracing a holistic perspective, businesses can not only navigate current risks but also position themselves to thrive amidst the uncertainties of an ever-evolving global marketplace.

Compliance with ethical standards

Disclosure of conflict of interest

The author has no conflict of interest in this research.

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