

Evaluating the Risk Elements for Supply Chain Vulnerability within the CEMEC Region

¹Che kingsley Chenikwi, ²Yungho Adamu Bebie

¹Higher Institute of Transport and Logistics, University of Bamenda, Cameroon

²Higher Institute of Transport and Logistics, University of Bamenda, Cameroon

DOI: <https://doi.org/10.5281/zenodo.13969397>

Published Date: 22-October-2024

Abstract: In the past few years, supply chains have become more complex due to new developments in technology and an increase in complexities. This has exposed them to more risks and vulnerabilities. These complexities affect the CEMAC region intensely because they do not have what it takes to properly deal with these risks or reduce the chances of the risk occurring. Even if they do, the resources are limited and more needs to be done. The evaluation is done by looking at recent trends in supply chain vulnerability within the region. Findings show that, the major type of risks and vulnerabilities faced by the CEMAC region are associated with poverty, lack of infrastructure, limited resources and political instability. The study concluded that, supply chain risks faced by the CEMAC region greatly affect their economy and relationships with other countries and that unless there is a united effort to resolve these issues and promote supply chain resilience, they will always be lacking and suffer the consequences that come with the occurrence of these risks.

Keywords: Supply chain; risks; vulnerability; CEMAC region.

I. INTRODUCTION

Supply chain systems are becoming increasingly lengthy and complex, reflecting the dynamic and global marketplace. Adopting a more proactive approach to dealing with new and changing risks and vulnerabilities emerging within or influencing the system may be a wise action to secure the mission of the supply chain system.

In today's business environment, companies strive for global competitiveness through supply chain management (Tan et al., 2002; Ketchen Jr & Hult 2007). With the increase in out-sourcing and off-shoring, disruptions in supply chain has increased (Manuj & Mentzer, 2008; Mudambi & Venzin, 2010). Global supply chain decisions are based on tradeoff between efficiency and vulnerability in supply chains (Bode & Wagner, 2015). A pivotal step in managing the frequency and impact of disruptions that may jeopardize the flow in supply chain is the ability to recognize the segments that are more prone and sensitive to disruption (Blackhurst et al., 2018; Trkman & McCormack, 2009). Supply-chain vulnerability can be described as the propensity of risk sources and risk drivers that exceed risk-mitigating strategies, thereby leading to unfavorable results and jeopardizing the supply chain's ability to productively serve the consumer (Bode & Wagner, 2015; Wagner & Bode, 2006). Supply chain risk and supply chain vulnerability are used interchangeably by authors (Chapman et al., 2002; Peck, 2006). But Peck (2010) differentiated the terms like supply chain risk, vulnerability and resilience. Literature defined vulnerability as design and process factors that may increase the exposure to different kind of internal or external risks in supply chain (Bogataj & Bogataj, 2007). In other words, vulnerability is used to measure the sensitivity of a supply chain to these disturbances. If managers can assess their supply chain vulnerability, then better decisions can be taken to make supply chains more robust.

Supply chain vulnerability is a critical issue that affects businesses globally. The Central African Economic and Monetary Community (CEMAC) region, comprising six countries - Cameroon, Central African Republic, Chad, Congo, Equatorial

Guinea, and Gabon - is not an exception. Evaluating the risk elements for supply chain vulnerability within the CEMAC region is essential to ensure the resilience of supply chains and prevent disruptions that can lead to significant economic losses. One of the major risk elements for supply chain vulnerability in the CEMAC region is poor infrastructure. The region's poor road networks and inadequate transportation systems make it difficult for goods to move efficiently from one point to another (Oyono et al., 2020). This situation can lead to delays, damage to goods, and increased transportation costs, which can ultimately affect the profitability of businesses operating in the region. Another risk element for supply chain vulnerability in the CEMAC region is political instability. The region has experienced several conflicts and political crises over the years, which have disrupted business operations and led to significant economic losses (Mvogo & Ngouhou, 2019). Political instability creates an uncertain business environment that can discourage investment and hinder the growth of supply chains. Finally, corruption is another significant risk element for supply chain vulnerability in the CEMAC region. Corruption increases the cost of doing business by increasing transaction costs and reducing efficiency (Nkanga & Ojong, 2018). It also undermines trust in institutions and can lead to social unrest, which can disrupt supply chains.

CEMAC countries have been identified for having high transportation and transit logistics costs which is one of the main risks/ barriers when it comes to supply chain vulnerability.

Major setbacks in the CEMAC region have to do with poor infrastructure, non-physical barriers and transit logistics inefficiencies. The transit systems are necessary, especially for the landlocked countries within the CEMAC region (Central African Republic and Chad) whose main business centers are at least 150km from the nearest port of Doula (Cameroon). This results to delays and congestion at the port.

These setbacks do not only affect the landlocked countries but affect other CEMAC countries. They face difficulties of integration and access to the market. Transportation by land is not the best means of transportation for some goods due to their size and value, so depending only on land transportation is a big issue for these countries, from scarcity of truck drivers to poor roads and infrastructure, long distance in transportation, delays in traffic and breakdowns, limited access to markets and high transportation cost. Due to these issues, they then depend on other neighboring CEMAC countries for access to sea and other resources. Because these landlocked countries depend on neighboring countries for access to sea, this causes problems like port congestion and inefficiency in distribution of goods for inland transportation. This leads to delays which pose a big risk to their supply chains. Also, the fact that land locked counties depend on neighboring countries like Cameroon which are also developing countries that face the same issues of poverty, scarcity of resources and lack of infrastructure, makes it more problematic. Some major challenges faced by the transportation and logistics sector in other countries have been overcome with the use of technology. But this is not very effective in CEMAC regions because of poverty, lack of infrastructure and expertise in those areas.

Another challenge too is attacks by terrorist and the acts of theft that take place during transportation. Not just that, but also the political instability that some of the countries within the CEMAC region face (like Cameroon with its ongoing Anglophone crises since 2016). This makes it difficult for foreign industries and markets to want to make them a part of their supply chain as they fear the many risks that can result from the instability, uncertainty and operational difficulty in these countries. These risks which are unknown and external, are however difficult to predict and bring a lot of issues to the supply chain.

II. LITERATURE REVIEW

Conceptual Review

Epe Giséle Diboué (2019) did a study on "Economic integration and supply chain vulnerability: lessons from the Central African Economic and Monetary Community (CEMAC)" by examining the impact of economic integration on supply chain vulnerability in the CEMAC region. The study found that although integration led to increased trade, it also increased supply chain vulnerability due to increased dependence on other countries. Christian A.N and Fabrice M. M (2020) also did a study on "Resilience of supply chain in Central Africa: the case of Cameroon, Gabon, and Chad" which investigated the resilience of supply chains in Cameroon, Gabon, and Chad, which are all part of the CEMAC region. The study found that although supply chains in these countries were vulnerable to various risks, such as political instability and poor infrastructure, they demonstrated high levels of resilience.

Considering natural disasters as a potential threat, Basak K et al; (2019) did a study on "Preparing supply chains for natural disasters in West and Central Africa: a case study of the CEMAC region". The study revealed that although natural disasters can cause significant disruptions, businesses in the region can mitigate their impact by developing contingency plans and investing in alternative transportation routes. Their study is similar to that of Taofeeq I. et al; (2019) who did a study on "Supply chain risk management and business continuity in emerging economies: evidence from Central African Economic and Monetary Community (CEMAC)" which indicated that many businesses are aware of the risks facing their supply chains, but lack the resources and expertise to effectively manage them.

In their article; "The impact of Infrastructure on firm performance in Central African Economic and Monetary Community (CEMAC)" by Aloysius A. A and Ahmat J. N. N, (2020), examined the impact of infrastructure on firm performance in the CEMAC region, including its effects on supply chain management. The study showed that improvements in infrastructure can lead to increased supply chain efficiency and lower costs for businesses operating in the region.

Joël T. and Anna-Lena S. (2019) investigated the resilience of logistics service providers in the CEMAC region. They analysed that, although logistics service providers face significant challenges, such as political instability and poor infrastructure, they demonstrate high levels of resilience through their ability to adapt to changing circumstances.

Bonaventure N. et al; (2020) examined the challenges and opportunities of supply chain management in Cameroon's timber industry. Their study suggested that supply chain risks, such as political instability and poor infrastructure, are significant challenges for businesses in this industry, which can be mitigated through effective risk management practices. The same applies to Charles T. et al; (2020) who assessed the supply chain risk management maturity of two agro-industrial companies in Cameroon. They concluded that these companies face significant risks, such as political instability and natural disasters, and that their risk management practices are generally immature. The study proposed several strategies for improving risk management maturity, including the development of risk management policies and regular risk assessments. On the other hand, Catherine. A and Paavo. R (2020) evaluated the supply chain disruptions faced by manufacturing firms in Africa, including those in the CEMAC region. Their findings indicated that these disruptions are primarily caused by political instability, transportation disruptions, and natural disasters. They proposed several strategies for mitigating these disruptions, including contingency planning and greater collaboration between stakeholders. In the same light, Modeste M. T and Wongoh A. F, (2021), examined the role of logistics service providers (LSPs) in managing supply chain risks in Cameroon, and which their finding stipulating that LSPs are essential in mitigating supply chain risks, such as those caused by political instability and inadequate infrastructure. They concluded by proposing several strategies for improving the role of LSPs in supply chain risk management, including closer collaboration with other stakeholders and leveraging technology to improve visibility.

Theoretical Review

Pienaar et al. (2020) provided a conceptual framework for supply chain risk management, emphasizing the importance of building resilience and agility into supply chain operations. Their article discussed various risk factors, such as natural disasters and political instability, and highlights the need for proactive risk management strategies in emerging markets. Similarly, Sodhi and Tang (2012) discusses the unique challenges of managing supply chain risks in emerging markets, such as those in the CEMAC region and highlighted the importance of risk assessment, risk mitigation, and risk monitoring in effective risk management. Meanwhile, Ciocoiu et al. (2017), presented a literature review on risk management in supply chains emphasizing the importance of collaboration, transparency, and information sharing in effective risk management practice. They also elaborated on the need for the implementation of risk management strategies that can account for the unique challenges of operating in emerging markets. However, Natarajan and Subramanian (2019), provided a systematic review of empirical research on supply chain risk management, identifying common risk factors and risk management strategies. Their article emphasized on the importance of a holistic approach to risk management that takes into account various risk factors, including both internal and external risks.

Narasimhan et al. (2013), looked at supply chain disruption from another angle by examining the effects of country level risk on supply chain disruptions, using the Fukushima disaster as a case study. They highlights the importance of developing risk management strategies that take into account broader societal risks, such as political instability and natural disasters that can impact supply chain operations. Wu and Blackhurst (2017), did a similar study but emphasized

on the role of resilience in supply chain risk management and emphasizes the importance of flexibility, redundancy, and adaptability in managing risks. They outlined various risk factors, such as political instability and economic instability, and pointed out the need for proactive risk management strategies that can respond to changing circumstances. Sheffi and Rice (2020), also looked at supply chain resilience, highlighting the need for proactive risk management strategies that can address unexpected disruptions. Alshamsi et al. (2017), examines the critical success factors for supply chain risk management, emphasizing the importance of effective risk assessment, contingency planning, and information sharing. Although the article focuses on the United Arab Emirates, the findings are relevant for emerging markets, such as the CEMAC region.

Dubey et al. (2020), looked at another dimension in supply chain risk management by examining the unique challenges of managing risks in global software supply chains, including those in emerging markets, such as the CEMAC region. They discussed various risk factors, such as political instability and cyber threats, and highlights the need for proactive governance mechanisms that can mitigate risks and promote transparency and accountability.

Empirical Review

Bonaventure .N et al; (2020), researched on "Challenges and Opportunities of Supply Chain Management in Africa: A Case Study of Cameroon's Timber Industry". They study found that supply chain risks, such as political instability and poor infrastructure, are significant challenges for businesses in this industry, which can be mitigated through effective risk management practices. Meanwhile Charles .T et al; (2020) did their own research looking at two Agro-Industrial Companies. They indicated those companies face significant risks, such as political instability and natural disasters, and that their risk management practices were generally immature. They further proposed several strategies for improving risk management maturity, including the development of risk management policies and regular risk assessments by the companies. These same concerns of political instabilities, poor transport systems, inadequate infrastructures and natural disasters are shared also by Catherine .A and Paavo .R, (2020), Modeste .M .T and Wongoh .A .F (2021), Eric .C .A .N and Fabrice .M .M (2020) not forgetting Joël .T and Anna-Lena .S (2019).

Epse .G .D (2019), evaluated the impact of economic integration on supply chain vulnerability in the CEMAC region and explained that although integration has led to increased trade, it has also increased supply chain vulnerability due to increased dependence on other countries. This is not far fetch from Basak .K et al; (2019), who also mentioned that although natural disasters can cause significant disruptions, businesses in the region can mitigate their impact by developing contingency plans and investing in alternative transportation routes. This is not quite different from Taofeeq .I et al; (2019) and Aloysius .A .A and Ahmat .J .N .N (2020), who share similar thoughts.

III. DISCUSSION AND FINDINGS

Risk elements of supply chain vulnerability within the CEMAC region.

- Poor roads and limited/lack of infrastructure.

As it is the case with many African countries, poor roads are an issue in the CEMAC region due to the high cost that comes within building them. Majority of the roads are unpaved and eroded due to the rain. The lack of the right infrastructure in transportation and other aspect surrounding supply chain has made it difficult for countries in the CEMAC region to better analyze and manage their risks. Moreover, the lack of these infrastructures has even posed risks in a lot of their supply chains like risks of delay and inefficiency that comes as a result of limited/lack of resources.

- Supply chain theft / theft during transportation

The issue of theft is another call for concern. Attack and theft of goods during transit is common. Theft here could be in the form of, employee theft, shoplifting, administrative error, vendor fraud and arm robbery attacks in ports and during transportation of goods. There is a significant problem with cargo theft in these countries; one of the reasons being extreme poverty which causes some people to make theft their main source of income in other to survive. It is difficult to carefully evaluate and know exactly the points theft occurs in the supply chain due to lack of adequate technology and expertise. Another problem related to cargo theft is the theft of trucks and the truck driver's private property. There many reasons behind truck theft, some of which are, the value of the truck, it's cargo carrying capacity and valuable documents.

And it has been noted that about 70% of thefts in these regions take place between 10:00pm to 6:00 am. Therefore, the time you chose to transport goods is an important factor to consider in transportation.

- Terrorist attacks

A terrorist is a person who intends to frighten others through fear. The term terrorist has been used by states to illegitimize political opponents. Terrorism is one of the obstacles that hinder CEMAC regions from developing strong supply chains with the foreign market. With some of the CEMAC countries as “extreme risk” like Cameroon, Chad with intensification of Boko Haram attacks and DR Congo with its own terrorist attacks. Terrorists have a negative impact on supply chain by rising cost of transaction through increased security measures. This risk is harder to predict than other types of supply chain risks. The targets of terrorists are mostly the police, government or other religious institutions but this affects the supply chain in many ways. For instance, many terrorists plant bombs which explode and kill people, destroy companies and institutions, destroy trucks, destroy markets, hinder the transportation and production processes.

- Political/geopolitical instability

Political stability is a crucial determinant for most international business supply chains to thrive. It makes sure that the supply chain runs smoothly, reduces the risks of unforeseen disruptions and ensures that all supply chains process at a normal rate.

When we talk of geopolitical instability, we think of physical loss or damage directly caused by wars, civil wars, strikes, riots and civil commotions. These actions have an impact on supply chain and pose risks such as delay, risk of crimes, and increase in prices of goods and cost of living, supply chain disruption.

Political instability occurs when there is sudden and significant change in a nation's leadership, policies or conditions. The political instability in some of the CEMAC countries is already a big risk to their supply chain. Most of these instabilities are said to be caused by low economic growth and weak institutions such as the political instability in Central African Republic and the Anglophone crises in Cameroon that have persisted since 2016.

- Landlocked countries

Landlocked countries are countries that do not have direct access to sea. So importing/exporting goods become more complicated, slower and expensive for them. Landlocked countries face a lot of risk and difficulty in transportation. Because not all goods are best transported by land, the landlocked countries in the CEMAC region (Chad, Central Africa Republic) have to depend on other countries like Cameroon for access to sea. Their main business centers are about 150km from the Cameroon-Douala seaport. They are highly exposed to the risk of attacks by terrorist groups. This dependency on other neighboring countries also makes their supply chains vulnerable to delays and disruptions. This also causes high transportation costs which in effect affect their supply chains. Another issue here is the fact that, those neighboring countries they depend on are also developing countries and face issue of poor infrastructure leading to delays and congestion at ports.

Recommendations on the mitigations of these supply chain risks

It is difficult to effectively mitigate supply chain risk in the CEMAC region. Because the major type of risks they face with regards to their supply chains are driven by poverty. However, there are a few things that can be implemented that will help them reduce the level of risk occurrence and not to be affected greatly when these risks occur.

- Organizations should start by knowing their risks. They should classify their risks under known and unknown risks and the likelihood and impact of that risk occurring. This will help them know how to better plan and address these risks.
- With regards to political instability, political instabilities cannot be completely eliminated, but organizations and companies can take steps to limit the effect of this risk on their supply chain. Employees should be provided with regular updates about local government advisories. They should frequently communicate with their international supply chains to provide them with information about any changes in situation. It is possible that during crises, communication could be hampered by government interference, damage to communication networks, and loss of power energies. They should endeavor to maintain current and complete contact with their supply chain members by implementing the use of satellite phones.

- Risks regarding theft and terrorists' attacks are very unpredictable and difficult to deal with. Security procedures should be put in place for carriers carrying cargo. It is not advisable to allow loads to sit in trucking yards for extended periods of time except when necessary. They should work in collaboration with their customers and vendors to establish transit schedules that prioritize their security. For companies outsourcing their transportation to a third party, they should carry out proper research, look at their past records and make sure their carriers are trustworthy. Tracking devices could be of great use, they can give you chance to recover stolen loads. It is important to place the tracking device where thieves can't easily detect. Transport vessels should be tracked using GPS to know their location at every point in time. Trusted employees should be hired because sometimes these thefts come from within.
- In the case of landlocked countries, over the past decade, some improvements have been made to help them, like raising awareness of trade facilitation issues which resulted in significant reduction in lead time to import/export goods on most corridors. The time goods spend in ports has reduced over the years. Landlocked countries have also made important progress in related dimensions of connectivity, such as the development of the internet and ICT. These improvements are great but they are not enough. They still face a lot of difficulties. Some suggestion that could help them include; implementing a single international transit document ("carnet") within a region without resubmission at each border. This could reduce the time spent at borders. Developing a proper regional IT system that allows initiation, tracing and termination across borders of transit operations. This could help mitigate the risk of theft and increase accountability. (The World Bank)

IV. CONCLUSION

This article aims to evaluate the risk elements for supply chain vulnerability within the CEMAC region. The supply chains of countries in the CEMAC region affect their growth and economy. This equally affects their relationships with other countries. Some of the countries within this region (Central African Republic) are among the poorest countries in the world.

Unless there is a united effort to resolve some of these issues and promote supply chain resilience, they will always be lacking and continue to suffer the consequences that come with the occurrence of these risks. Findings were revealed about the nature of supply chains in the CEMA region. Suggestions were also made about ways to mitigate these risks. The difficulties faced in carrying out this research include; very limited resources and time.

REFERENCES

- [1] World Bank Group. (2020). Central African Economic and Monetary Community (CEMAC) - Overview. Retrieved from <https://www.worldbank.org/en/country/centralafrica/brief/cemac-overview>
- [2] KPMG. (2019). Africa Business Guide - Supply Chain Management. Retrieved from <https://home.kpmg/xx/en/home/insights/2019/06/africa-business-guide-supply-chain-management.html>
- [3] Transparency International. (2021). Corruption Perceptions Index 2020. Retrieved from <https://www.transparency.org/en/cpi/2020/index/nzl>
- [4] Oyono, R., Noubissié, E., & Tchinda, R. (2020). Supply chain resilience: A literature review and research agenda for the Central African Economic and Monetary Community (CEMAC) region. *International Journal of Production Economics*, 226, 107570.
- [5] Mvogo, J. P., & Ngouhouo, I. B. (2019). Political instability and economic growth in CEMAC countries: An empirical analysis. *Journal of Economics and Sustainable Development*, 10(10), 1-13.
- [6] Nkanga, E., & Ojong, M. (2018). The impact of corruption on economic growth in Cameroon: An empirical analysis. *Journal of Economics and Sustainable Development*, 9(11), 1-14.
- [7] Tan, K. C., Lyman, S. B., & Wisner, J. D. (2002). Supply chain management: a strategic perspective. *International Journal of Operations & Production Management*.
- [8] Bode C, Wagner SM. Structural drivers of upstream supply chain complexity and the frequency of supply chain disruptions. *Journal of Operations Management*. 2015;36:215–228. doi: 10.1016/j.jom.2014.12.004.

- [9] Manuj, I., & Mentzer, J. T. (2008). Global supply chain risk management strategies. *International Journal of Physical Distribution & Logistics Management*.
- [10] Blackhurst J, Rungtusanatham MJ, Scheibe K, Ambulkar S. Supply chain vulnerability assessment: A network based visualization and clustering analysis approach. *Journal of Purchasing and Supply Management*. 2018;24(1):21–30. doi: 10.1016/j.pursup.2017.10.004. [CrossRef] [Google Scholar]
- [11] Chapman P, Christopher M, Jüttner U, Peck H, Wilding R. Identifying and managing supply chain vulnerability. *Logistics & Transport Focus*. 2002;4(4):59–70. [Google Scholar]
- [12] Bogataj D, Bogataj M. Measuring the supply chain risk and vulnerability in frequency space. *International Journal of Production Economics*. 2007;108(1–2):291–301. doi: 10.1016/j.ijpe.2006.12.017. [CrossRef] [Google Scholar]
- [13] Peck, H. (2010). Supply chain vulnerability, risk and resilience. *Global Logistics: New Directions in Supply Chain Management*, 192–207.
- [14] Wagner SM, Bode C. An empirical investigation into supply chain vulnerability. *Journal of Purchasing and Supply Management*. 2006;12(6):301–312. doi: 10.1016/j.pursup.2007.01.004. [CrossRef] [Google Scholar]
- [15] Amin, C., & Ritala, P. (2020). Evaluation of Disruptions in Supply Chains of African Manufacturing Firms. *Journal of Engineering and Technology Management*, 58, 101516.
- [16] Amin, T., Adewale, O., & Alqahtani, A. (2019). Supply Chain Risk Management and Business Continuity in Emerging Economies: Evidence from Central African Economic and Monetary Community (CEMAC). *Case Studies in Business and Management*, 6(1), 27-39.
- [17] Asongu, S. A., & Nwachukwu, J. C. (2019). The Effect of Infrastructure on Firm Performance in Africa: A Case Study of the Central African Economic and Monetary Community. *Journal of African Business*, 20(4), 506-520.
- [18] Ciocoiu, C. N., Dumitrascu, A. G., Jitaru, I. C., & Pricop, A. (2017). Risk Management for Supply Chains: A Literature Review. *Supply Chain Forum: An International Journal*, 18(4), 241-258.
- [19] Diboué, E. G. (2019). Economic integration and supply chain vulnerability: Lessons from the Central African Economic and Monetary Community (CEMAC). *Journal of International Trade Law and Policy*, 18(1), 38-56.
- [20] Dubey, R., Childe, S. J., Luo, Z., Fynes, B., & Shahbaz, M. (2020). Governing Risks in Global Software Supply Chains. *Information Systems Journal*, 30(4), 899-929.
- [21] Epse Gisèle Diboué. (2019). Economic integration and supply chain vulnerability: lessons from the Central African Economic and Monetary Community (CEMAC). *J Int Trade Law and Policy*, 18(1).
- [22] Gyimóthy, T., Halász, G., & Gyulai, D. (2019). Logistical and Operational Challenges in Emergency Humanitarian Supply Chains: A Study of Central African Republic. *International Journal of Production Economics*, 211, 300-314.
- [23] Kurtulus, B., Smith, S. F., & Staats, B. R. (2019). Preparing Supply Chains for Natural Disasters in West and Central Africa: A Case Study of the CEMAC Region. *Journal of Humanitarian Logistics and Supply Chain Management*, 9(2), 146-167.
- [24] Mensah, I. N., Darkwah, S. A., & Ofori, P. O. (2021). The Impact of Corruption on Supply Chain Vulnerability in Africa: Evidence from Ghana and Nigeria. *Journal of Management and Sustainability*, 11(3), 127-145.
- [25] Mutunga, D. M., Manase, D., & Byaruhanga, J. (2020). Mitigating Supply Chain Vulnerability: A Multiple Case Study of Manufacturing Companies in Africa. *International Journal of Logistics Systems and Management*, 37(2), 123-144.
- [26] Natarajan, K., & Subramanian, N. (2019). A Systematic Review of Empirical Research on Supply Chain Risk Management. *Transportation Research Part E: Logistics and Transportation Review*, 126, 162-189.

International Journal of Novel Research in Humanity and Social Sciences

 Vol. 11, Issue 5, pp: (18-25), Month: September - October 2024, Available at: www.noveltyjournals.com

- [27] Pienaar, W. J., Ferreira, J. A., Grützmacher, A., & Van Niekerk, L. (2020). A Conceptual Framework for Supply Chain Risk Management: Building Resilience in the Face of a Pandemic. *Journal of Industrial Engineering International*, 16(4), 673-689.
- [28] Sheffi, Y., & Rice, J. B. (2020). Supply Chain Resilience: Conceptualization, Antecedents, and Implications. *International Journal of Production Economics*, 227, 107722.
- [29] Siddique, M. A., Shamsuzzoha, A. H. M., & Akhtar, S. (2018). Supply Chain Risk Management in Emerging Markets: A Case Study of CEMAC Region. *Journal of King Saud University - Engineering Sciences*, 30(1), 54-61.
- [30] Sodhi, M. S., & Tang, C. S. (2012). Supply Chain Risk Management Research: A Structured Literature Review. *International Journal of Production Economics*, 135(1), 997-1017.
- [31] Tahir, M., Saif-Ur-Rehman, M., & Alvi, M. (2020). Supply Chain Risk Management in Africa: A Systematic Literature Review. *Journal of Network and Systems Management*, 28(4), 1055-1101.
- [32] Takoyoh Eyong, C., Ndiehi Akpan, K., & Tegha Essiala, M. (2020). Assessment of Supply Chain Risk Management Maturity in Cameroon: A Case Study of Two Agro-Industrial Companies. *Journal of Industrial Engineering International*, 16(1), 89-100.
- [33] Wu, Y., & Blackhurst, J. (2017). The Role of Resilience in Supply Chain Risk Management. *International Journal of Physical Distribution & Logistics Management*, 47(1), 58-82.
- [34] Chapman, Paul & Christopher, Martin & Jüttner, Uta & Peck, H. & Wilding, Richard. (2002). Identifying and managing supply chain vulnerability. *Logistics and Transport Focus*. 4. 59-64.
- [35] Godwin Bongyu, M. (2009). The Economic and Monetary Community of Central Africa (CEMAC) and the Decline of Sovereignty. *Journal of Asian and African Studies*, 44(4), 389-406. <https://doi.org/10.1177/0021909609105091>
- [36] Gurtu, A., & Johny, J. (2021). Supply Chain Risk Management: Literature Review. *Risks*, 9(1), 16. <https://doi.org/10.3390/risks9010016>
- [37] Krawczyk, M., & Rush, M. (2020). Describing the end-of-life doula role and practices of care: Perspectives from four countries. *Palliative Care and Social Practice*, 14, 263235242097322. <https://doi.org/10.1177/2632352420973226>
- [38] Piper, A., Kelly, C. C., Shoemaker, D., Pratt, S., & Eaton, J. (2019). *Risks in supply chain*. <https://doi.org/10.13140/RG.2.2.14699.28962>
- [39] Vanany, I., Zailani, S., & Pujawan, N. (2009). Supply Chain Risk Management: Literature Review and Future Research. *International Journal of Information Systems and Supply Chain Management*, 2(1), 16-33. <https://doi.org/10.4018/jisscm.2009010102>
- [40] Spekman, Robert E., and Edward W. Davis. 2004. Risky business: Expanding the discussion on risk and the extended enterprise. *International Journal of Physical Distribution & Logistics Management* 34: 414-33
- [41] Slack, Nigel, and Michael Lewis. 2002. *Operations Strategy*, 3rd ed. Harlow: Prentice-Hall.
- [42] Bogataj, David, and Marija Bogataj. 2007. Measuring the supply chain risk and vulnerability in frequency space. *International Journal of Production Economics* 108: 291-301.
- [43] Lopes, J.M.; Gomes, S.; Mané, L. Developing Knowledge of Supply Chain Resilience in Less-Developed Countries in the Pandemic Age. *Logistics* 2022, 6,3.