



Midocean University

College of Management

Graduation Project

The Impact of the Pandemic on Global Supply Chains: A Case Study on ROSHN Real Estate

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Introduction

At the end of 2019, the COVID-19 pandemic began to spread rapidly across the globe, creating profound and unprecedented disruptions in global supply chains. The heavy reliance on complex global networks revealed significant vulnerabilities in supply chains, making them susceptible to major crises like the pandemic. Within a short period, movement restrictions and complete border closures disrupted logistical and production operations, leading to shortages of many basic commodities and increased operational costs (Ivanov & Dolgui, 2020).

ROSHN Real Estate, a prominent Saudi company, faced significant challenges in securing raw materials and essential components, affecting its capacity for construction and housing development. The pandemic underscored vulnerabilities within the real estate sector's supply chains, impacting project timelines and budget allocations. For instance, the sudden halt in international shipping and transportation severely delayed the delivery of construction materials, leading to project delays and cost overruns (Sharma, *et al.*, 2020).

The pandemic has highlighted the importance of sustainability and resilience in supply chains, forcing companies like ROSHN Real Estate to rethink their strategies to ensure business continuity under unforeseen circumstances. To adapt to these challenges, ROSHN has had to explore new strategies such as digital transformation,

diversifying their supplier base, and increasing investment in risk management and transparency technologies (Queiroz, *et al.*, 2020). For example, the adoption of digital tools for supply chain management has enabled ROSHN to enhance real-time tracking and improve decision-making processes, thereby mitigating some of the disruptions caused by the pandemic (Xu, *et al.*, 2021).

Moreover, the crisis has accelerated the need for sustainable supply chain practices. Companies are now more focused on creating resilient supply chains that can withstand future disruptions. ROSHN's efforts to diversify its supplier base have not only reduced dependence on single-source suppliers but also improved supply chain agility and responsiveness (Chowdhury, *et al.*, 2021). Additionally, investment in transparency technologies, such as blockchain, has enhanced the traceability and accountability of supply chain operations, further contributing to resilience (Saber, *et al.*, 2019).

In this context, the importance of research into supply chain resilience and sustainability becomes evident. Such research provides in-depth insights into the challenges faced by companies like ROSHN and strives to find sustainable solutions to enhance supply chain resilience. By addressing these issues, the expected outcomes contribute to improving the ability to face future crises and ensure business continuity effectively and efficiently (Ivanov, 2021). This study aims to explore the strategies that ROSHN Real Estate has implemented in response to the COVID-19

pandemic and to evaluate their effectiveness in enhancing supply chain resilience and sustainability.

Research Problem

ROSHN Real Estate, a prominent Saudi company, faced significant challenges in securing raw materials and essential components, greatly impacting its ability to develop construction and housing projects. This problem highlights several critical points, including supply shortages due to the pandemic, where companies struggled to obtain necessary inputs for production, leading to delays and halts in manufacturing processes. Additionally, supply chain disruptions forced companies to seek alternative suppliers, often at higher costs, significantly increasing operational expenses and straining financial resources. Furthermore, movement restrictions and border closures affected transportation networks, causing shipping and delivery delays, further exacerbating supply chain efficiency. The pandemic also altered consumer behavior and demand patterns, with companies experiencing sudden spikes or drops in demand for various products, challenging their ability to adjust supply chain operations accordingly. Finally, health concerns and lockdown measures impacted workforce availability and productivity, adding another layer of complexity to supply chain management.

Research Importance

Theoretical Importance

1. Understanding Supply Chain Vulnerabilities:

- **Theoretical Basis:** Analyzing the impact of the COVID-19 pandemic on supply chains provides insights into their vulnerabilities, based on supply chain resilience theory.
- **Expected Impact:** Contributes to developing theoretical models that explain how supply chains can be more resilient to unexpected crises and disruptions.

2. Enhancing Crisis Management Models:

- **Theoretical Basis:** Studying the effects of the pandemic on supply chains helps in refining risk management and crisis response strategies, grounded in risk management theory.
- **Expected Impact:** Helps in formulating theoretical models for managing supply chain risks effectively during global crises, enhancing the academic discourse on crisis management.

3. Promoting Sustainable Practices:

- **Theoretical Basis:** Examining the need for sustainability in supply chains during the pandemic is linked to sustainability theory.

- **Expected Impact:** Aids in developing theories that balance economic, social, and environmental factors, providing a framework for sustainable supply chain management.

Practical Importance

1. Improving Supply Chain Resilience:

- **Practical Basis:** Implementing strategies such as digital transformation, diversifying suppliers, and investing in transparency technologies can enhance supply chain resilience.
- **Expected Impact:** Increases the ability of companies like ROSHN to withstand future crises, ensuring business continuity and operational efficiency.

2. Enhancing Operational Efficiency:

- **Practical Basis:** Using digital tools and advanced technologies (e.g., AI, blockchain) to manage supply chains can streamline operations and improve efficiency.
- **Expected Impact:** Reduces delays, minimizes costs, and improves the accuracy and reliability of supply chain operations, benefiting both companies and their customers.

3. Developing Strategic Adaptability:

- **Practical Basis:** Adapting to challenges by exploring new strategies and technologies helps companies to remain competitive in the market.
- **Expected Impact:** Enables companies to quickly adjust to market changes and disruptions, maintaining their competitive edge and market presence.

Through this division, ROSHN and similar companies can achieve valuable theoretical and practical benefits that enhance their position in the market, enabling them to meet customer expectations and adapt to modern technological transformations effectively.

Research Objectives

- Analyze the specific impacts of the COVID-19 pandemic on ROSHN Real Estate's global supply chains.
- Investigate the strategies implemented by ROSHN Real Estate to navigate and mitigate disruptions caused by the pandemic.
- Evaluate the effectiveness of these strategies in maintaining operational continuity and financial stability.
- Formulate actionable recommendations to enhance ROSHN Real Estate's supply chain resilience and sustainability in preparation for future global crises.

Research Questions

1. What were the specific disruptions experienced by ROSHN Real Estate's global supply chains due to the COVID-19 pandemic?
2. How did ROSHN Real Estate respond to these disruptions, and what strategies did they employ to mitigate the challenges?
3. To what extent were ROSHN Real Estate's adaptation strategies successful in maintaining operational continuity and financial stability during the pandemic?
4. Based on ROSHN Real Estate's experience, what actionable recommendations can be proposed to improve the resilience and sustainability of their supply chains for future global crises?

Hypotheses

1. There is a significant statistical correlation between the COVID-19 pandemic and increased disruptions in ROSHN's global supply chains.
2. There is a statistically significant correlation between the application of mitigation strategies and the reduction of the pandemic's impacts on ROSHN's supply chains.
3. There are significant differences in the effectiveness of ROSHN's mitigation strategies in maintaining operational continuity and financial stability before and during the pandemic.

Review of Literature

(Uchegara *et al.*, 2020) conducted a study titled "**Understanding the impact of COVID-19 on the real estate sector in the United Kingdom.**" The study aimed to assess the pandemic's impact and mitigation strategies within the real estate sector, focusing on tenants and the supply chain. Using a qualitative descriptive research design, data was gathered primarily from secondary sources, including the Occupiers' Sentiment Index and past recessionary financial performance. The study analyzed various economic recovery scenarios (V, U, W, L shapes) and legal frameworks to mitigate pandemic risks across the sector. Findings highlighted emerging trends such as contract clause revisions as industry mitigation strategies. This study provides insights crucial for developing long-term responses to future pandemics within the real estate sector, emphasizing resilience and preparedness strategies.

Acharya, & Bengui, (2021) conducted a study titled "**Global supply chains and export dynamics in developing countries: The role of COVID-19 shocks**" examining the impact of COVID-19 disruptions on global supply chains and export dynamics in developing countries. The study highlights the vulnerabilities of firms in these countries to disruptions in global value chains, resulting in significant declines in export sales and increased likelihood of market exit, especially for those reliant on specific supply chains. To address these challenges, the study emphasizes

the importance of resilience-building strategies, such as diversifying supply sources and adopting digital technologies. Firms that diversified their key inputs by sourcing from multiple countries were better able to withstand the shocks, while digital tools improved transparency and efficiency in managing supply chain operations. The study suggests that firms should adopt strategies to improve their resilience and rapid response capabilities, focusing on supply diversification, transparency, and collaboration across global value chains. These findings underscore the need for firms in developing countries to strengthen their supply chain strategies to better handle unforeseen events and prepare for future challenges in global trade dynamics.

(Sun *et al.*, 2022) conducted a study entitled "**Evaluating COVID-19 Impact on the Future of the Electric Vehicles Supply Chain**". In this study, the aim was to explore the effects of the COVID-19 pandemic on the stability of the global electric vehicles (EVs) supply chain and the subsequent impact on climate ambitions. Using an integrated model framework, the research assessed supply risks of 17 selected core commodities throughout the EV supply chain, applying supply constraints to project future EV sales until 2030. The study, which analyzed three pandemic development scenarios, revealed that if the pandemic is effectively contained before 2024, the global EV industry will recover without fundamental damage and can maintain the same growth trend as in the no-pandemic scenario by 2030. The findings underscore the importance of fiscal stimulus in the post-

pandemic era, suggesting that it should be directed more toward upgrading the quality of battery products rather than expanding production capacity. Based on these findings, it is recommended that stakeholders focus on improving the resilience of the EV supply chain and ensure robust strategies for rapid response to unforeseen events, which includes prioritizing quality enhancements over mere capacity expansion.

(Lebastard & Serafini, 2023) conducted a study entitled "**Understanding the impact of COVID-19 supply disruptions on exporters in global value chains**" in this study, where the impact of the COVID-19 pandemic on exporting companies was assessed by analyzing disruptions in global value chains (GVCs), using a comprehensive dataset that includes company information, products and partner countries in international trade. The study, conducted from January 2020 to December 2021, revealed that participation in global value chains increased firms' vulnerability to the shock of the pandemic, as evidenced by the negative effects on export sales and the likelihood of remaining in export markets, especially amid supply bottlenecks. Moreover, it turned out that companies with a relatively final position in global value chains were more negatively affected by supply disruptions, underscoring the importance of enhancing supply chain resilience. Conversely, the results indicated that exporting firms benefited from diversifying their key inputs by sourcing from multiple countries, supporting the hypothesis that diversifying global

value chains enhances supply chain resilience in the face of global challenges. Based on these findings, it is critical that companies strengthen their strategies to improve resilience and rapid response capabilities in dealing with unforeseen events. This included a focus on diversifying sources of supply, enhancing transparency, and enhancing collaboration across global value chains.

Study Definitions

- **Pandemic:** A pandemic is an outbreak of a widespread infectious disease, spreading across several countries or continents, affecting a large proportion of the population. A pandemic is defined as an outbreak of a new disease that people do not have immunity to, and that is easily transmitted from person to person, leading to a significant increase in the number of cases and deaths within a short period.

WHO - Pandemic Definition

- **Supply chains:** The complex networks of suppliers, manufacturers, distributors, and consumers that are involved in the production and distribution of goods and services (Lebastard, 2023).

- **Adaptation:** Actions taken by companies to adjust their processes and procedures to meet challenges (McKinsey & Company, 2023).

- **Sustainability:** The ability to maintain long-term functionality and effectiveness, while minimizing environmental and social damage (Springer, 2023).

Theoretical Premises of the Study

1. Supply Chain Resilience Theory:

- **Overview:** Supply Chain Resilience Theory emphasizes the capacity of supply chains to adapt and recover from unexpected disruptions. This theory has gained prominence particularly in light of crises such as the COVID-19 pandemic.
- **Application:** The focus is on developing supply chains that are not only robust but also flexible enough to withstand shocks and continue operating under adverse conditions. Techniques include diversifying supply sources, enhancing transparency, and leveraging technology for real-time monitoring and response.
- **Key Insights:** According to Christopher and Peck (2004), resilient supply chains are those that can anticipate potential disruptions and rapidly adjust to minimize their impact, ensuring continuity and reliability in the supply chain operations.

2. Risk Management Theory:

- **Overview:** Risk Management Theory involves the systematic process of identifying, evaluating, and mitigating risks that could negatively impact the supply chain.

- **Application:** In the context of the COVID-19 pandemic, this theory is applied to assess the vulnerabilities within logistics operations and implement strategies to manage these risks effectively. This might include creating contingency plans, diversifying logistics routes, and adopting flexible inventory management practices.
- **Key Insights:** Jüttner, *et al.* (2003) highlight that effective risk management can significantly reduce the adverse impacts of disruptions by proactively addressing potential issues before they escalate, thereby maintaining the stability and efficiency of the supply chain.

3. Sustainability Theory:

- **Overview:** Sustainability Theory seeks to balance the economic, social, and environmental dimensions of organizational performance. It advocates for sustainable practices that ensure long-term viability and minimal negative impact on society and the environment.
- **Application:** During the pandemic, sustainability in supply chain management becomes crucial as organizations strive to maintain operations without compromising on social responsibilities or environmental standards. This involves adopting eco-friendly logistics solutions, ensuring fair labor practices, and promoting resource efficiency.

- **Key Insights:** Elkington (1998) introduced the triple bottom line concept, which emphasizes that companies should commit to sustainable development by equally valuing people, planet, and profit. This approach helps organizations remain resilient and responsible even in challenging times like a global pandemic.

4. Strategic Management Theory:

- **Overview:** Strategic Management Theory focuses on the formulation and implementation of strategies that enable organizations to achieve their objectives and maintain a competitive edge.
- **Application:** In response to the COVID-19 pandemic, strategic management involves developing adaptive strategies that mitigate the impact of the crisis on logistics operations. This includes re-evaluating supply chain strategies, enhancing digital capabilities, and fostering innovation.
- **Key Insights:** Porter (1980) suggests that strategic planning is critical for navigating turbulent environments. By employing strategic management principles, organizations can devise comprehensive plans that enhance their resilience, optimize logistics efficiency, and ensure sustainable growth despite external disruptions.

Methodology and Research Methods

Methodology:

The study uses a descriptive-analytical approach to examine the impact of the COVID-19 pandemic on global supply chains, focusing on ROSHN Real Estate. This method enables a detailed description and analysis of how the pandemic affects logistics operations and supply chains.

Research Methods:

1. Data Sources:

- **Primary Data:** Collected through surveys and interviews with ROSHN Real Estate employees, managers, suppliers, and partners in the supply chains.
- **Secondary Data:** Includes annual reports, internal documents, academic studies, and news articles related to the pandemic's impact on supply chains.

2. Research Instruments:

- **Survey:** Divided into sections to cover the pandemic's impact, mitigation strategies, and their effectiveness.
- **Personal Interviews:** Conducted with ROSHN Real Estate employees, managers, suppliers, and partners for in-depth insights.

3. Statistical Analysis:

- **Descriptive Analysis:** Used to describe demographic data and survey responses.

- **Inferential Analysis:** Employs regression analysis, T-tests, and ANOVA to test hypotheses and analyze relationships between pandemic impacts and mitigation strategies.

Study tool

The questionnaire will be the main tool for data collection, as it will be distributed to ROSHN employees, suppliers and key partners in the supply chain.

Limitations of the study

- **Time limits:** The study runs from the beginning of the COVID-19 pandemic in 2020 until the end of 2023.
- **Spatial boundaries:** The study focuses on ROSHN's global operations and supply chains.
- **Objective limits:** The study includes the effects of the pandemic, strategies used to mitigate disruptions, and evaluation of the effectiveness of these strategies.

Conclusion

In conclusion, the COVID-19 pandemic has served as a stark reminder of the imperative for companies to revamp and strengthen their supply chains to withstand future disruptions. The unprecedented challenges highlighted the vulnerabilities in global supply networks, prompting a critical reassessment of traditional practices. Embracing digital technologies, such as advanced analytics and artificial intelligence, is pivotal in enhancing real-time visibility and predictive capabilities across supply chains. These technologies facilitate agile decision-making and enable companies like ROSHN Real Estate to swiftly respond to evolving market dynamics and operational disruptions.

Optimizing planning and inventory management practices is equally crucial. Companies can mitigate risks by adopting lean principles, diversifying supplier networks, and implementing robust contingency plans. This proactive approach not only enhances operational efficiency but also minimizes the impact of unforeseen disruptions on production schedules and customer satisfaction.

Moreover, fostering transparency and collaboration among supply chain stakeholders is essential for building resilience. Enhanced communication channels and data-sharing platforms enable seamless coordination and information exchange, fostering trust and enabling swift resolution of supply chain challenges.

In tandem with operational enhancements, prioritizing environmental and social sustainability initiatives is imperative. Companies must embrace ethical practices, promote resource efficiency, and advocate for a circular economy model that minimizes waste and promotes responsible consumption. By integrating sustainability into their core strategies, companies can mitigate environmental impacts, strengthen community relationships, and future-proof their operations against regulatory changes and societal expectations.

In essence, the lessons learned from the pandemic underscore the need for proactive and holistic approaches to supply chain management. By embracing technological innovation, optimizing operational practices, and prioritizing sustainability, companies like ROSHN Real Estate can build more resilient and sustainable supply chains capable of thriving in an increasingly complex and unpredictable global landscape.

Results

The study expects to find a significant statistical correlation between the COVID-19 pandemic and increased disruptions in ROSHN's global supply chains. These disruptions may involve delays in procuring raw materials, logistical bottlenecks, and rising costs due to fluctuating supply and demand dynamics during the pandemic. These challenges underscore the vulnerability of supply chains to external shocks and emphasize the urgent need for resilient strategies capable of withstanding unforeseen disruptions.

Additionally, the research aims to assess the effectiveness of mitigation strategies adopted by ROSHN during the pandemic. It anticipates identifying a statistically significant correlation between the implementation of these strategies—such as digital transformation initiatives, diversification of suppliers, and enhanced risk management protocols—and the reduction of supply chain disruptions. By evaluating these strategies, the study aims to determine which measures were most successful in maintaining operational continuity and ensuring financial stability amid the crisis.

Furthermore, the study seeks to provide a comprehensive understanding of the broader impacts experienced by supply chains during the pandemic. This includes examining logistical, operational, and financial challenges faced by ROSHN and

similar companies. By exploring these impacts, the research aims to offer valuable insights into effective coping strategies that can enhance the resilience and sustainability of supply chains during future crises. The findings are expected to result in practical recommendations aimed at strengthening supply chain resilience, thereby equipping companies like ROSHN Real Estate with strategies to effectively navigate and mitigate the impacts of future global disruptions.

Recommendations

Based on the study's hypotheses, the following comprehensive recommendations are proposed for enhancing the resilience and sustainability of ROSHN Real Estate's supply chains in the face of future crises:

- 1. Promote Diversification in Supply Sources:** ROSHN should enhance diversification in its supply sources to mitigate risks associated with dependency on specific suppliers. By expanding its supplier base, ROSHN can minimize disruptions caused by emergencies such as pandemics and economic crises, thereby enhancing supply chain resilience.
- 2. Adopt Advanced Digital Technologies:** Embracing advanced digital technologies is crucial for improving transparency and visibility across ROSHN's supply chains. For instance, leveraging blockchain technology can enhance

shipment tracking and transparency in supply operations, reducing risks and enhancing emergency response capabilities.

3. Enhance Collaboration Across Stakeholders: Collaboration among companies, suppliers, and governments is essential to develop policies that support sustainable and resilient supply chains. Through information and experience sharing, strategic planning can be enhanced, better preparing ROSHN for future challenges and fostering an environment that supports environmental and social sustainability in supply chains.

4. Develop Training Programs for Supply Chain Management: ROSHN should develop specialized training programs for supply chain management staff to enhance their capabilities in adapting to future crises effectively. These programs could include training on new technologies, risk management, and developing strategies for rapid response, thereby bolstering preparedness and adaptive capacity in the face of future disruptions.

By implementing these recommendations, ROSHN Real Estate and similar companies can strengthen their ability to manage crises, improve supply chain sustainability, and sustain operational continuity, thereby maintaining long-term competitiveness in the market.

References

- Acharya, V. V., & Bengui, J. (2021). **Global supply chains and export dynamics in developing countries: The role of COVID-19 shocks.** *Journal of International Economics*, 133, 103433. <https://doi.10.1016/j.jinteco.2020.103433>
- Chowdhury, P., Paul, S. K., Kaisar, S., & Moktadir, M. A. (2021). **COVID-19 pandemic related supply chain studies: A systematic review.** *Transportation Research Part E: Logistics and Transportation Review*, 145, 102198. <https://doi.org/10.1016/j.tre.2020.102198>
- Christopher, M., & Peck, H. (2004). **Building the Resilient Supply Chain.** *The International Journal of Logistics Management*.
- Elkington, J. (1998). **Cannibals with Forks: The Triple Bottom Line of 21st Century Business.** New Society Publishers.
- Ivanov, D. (2021). **Supply chain viability and the COVID-19 pandemic: A conceptual and formal generalization of four major adaptation strategies.** *International Journal of Production Research*, 59(12), P. 3535-3552. <https://doi.org/10.1080/00207543.2021.1890852>
- Ivanov, D., & Dolgui, A. (2020). **Viability of intertwined supply networks: Extending the supply chain resilience angles towards survivability.** *International*

Journal of Production Research, 58(10), 2904-2915.

<https://doi.org/10.1080/00207543.2020.1750727>

Jüttner, U., Peck, H., & Christopher, M. (2003). **Supply chain risk management: Outlining an agenda for future research.** *International Journal of Logistics Research and Applications*.

Lebastard, Laura & Serafini, Roberta (2023). **Understanding the impact of COVID-19 supply disruptions on exporters in global value chains.** 105.

available at: <https://www.ecb.europa.eu/pub/economic-research/resbull/2023/html/ecb.rb230322~5c08629152.en.htm>

McKinsey & Company. (2023). **How COVID-19 is reshaping supply chains.**

Porter, M. E. (1980). **Competitive Strategy: Techniques for Analyzing Industries and Competitors.** The Free Press.

Queiroz, M. M., Ivanov, D., Dolgui, A., & Fosso Wamba, S. (2020). **Impacts of epidemic outbreaks on supply chains: Mapping a research agenda amid the COVID-19 pandemic through a structured literature review.** *Annals of Operations Research*, P. 1-38. <https://doi.org/10.1007/s10479-020-03685-7>

Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). **Blockchain technology and its relationships to sustainable supply chain management.** *International*

Journal of Production Research, 57(7), P. 2117-2135.

<https://doi.org/10.1080/00207543.2018.1533261>

Sharma, A., Adhikary, A., & Borah, S. B. (2020). **Covid-19's impact on supply chain decisions: Strategic insights from NASDAQ 100 firms using Twitter data.**

Journal of Business Research, 117, P. 443-449.

<https://doi.org/10.1016/j.jbusres.2020.05.035>

Springer. (2023). **The impact of COVID-19 on supply chains: Systematic review.**

Sun, X., Liu, G., Hao, H., Liu, Z. and Zhao, F. (2022). **Modeling potential impact of COVID-19 pandemic on global electric vehicle supply chain.** *iScience* 25,

<https://doi.org/10.1016/j.isci.2022.103903>

Uchegara, I., Hamma-adama, M., Obiri, K. A., Jafarifar, N., & Moore, D. (2020).

Understanding the impact of COVID-19 on the real estate sector in the United Kingdom. *International Journal of Real Estate Studies*, 41-53.

Xu, L., Ivanov, D., & Dolgui, A. (2021). **Digital Supply Chain Twins: Managing the Ripple Effect, Resilience, and Disruption Risks by Data-Driven Optimization, Simulation, and Visibility.** *Transportation Research Part E:*

Logistics and Transportation Review, 146, 102190.

<https://doi.org/10.1016/j.tre.2020.102190>