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Integrating Resource-Based Theory and Contingency Theory for Enhancing Supply Chain Resilience in Malaysia: A Post-Pandemic Analysis

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Abstract: The COVID-19 pandemic has significantly disrupted global supply chains, exposed their vulnerabilities and underscored the urgent need for enhanced resilience. In Malaysia, the pandemic's impact on supply chains has been profound, prompting a re-evaluation of existing strategies and frameworks. This study explores the integration of Resource-Based Theory (RBT) and Contingency Theory (CT) to enhance supply chain resilience in Malaysia. Through in-depth case studies and semi-structured interviews with senior managers and supply chain professionals, this research identifies key factors contributing to the successful implementation of an integrated resilience framework. The findings reveal that firms leveraging advanced technology, skilled workforce, and strategic partnerships can maintain operational efficiency and adaptability. Context-specific strategies such as diversifying suppliers, local sourcing, strategic stockpiling, and flexible logistics solutions are essential in responding to disruptions. Common challenges include high initial costs, coordination issues, regulatory hurdles, and cultural resistance to change. The integration of RBT and CT results in improved supply chain visibility, flexibility, robustness, and stakeholder collaboration. This study contributes to the academic discourse by offering practical insights for firms seeking to enhance supply chain resilience. It underscores the importance of combining internal strengths with adaptive strategies tailored to the external environment. The findings provide valuable guidance for both academia and industry in developing more robust and adaptive supply chain strategies in the post-pandemic landscape. Future research should explore the integration of RBT and CT across different contexts and industries and investigate the role of emerging technologies in enhancing supply chain resilience.

Keywords: *Resource Based Theory, Contingency Theory, Supply Chain Resilience, Post-Pandemic*

1. Introduction

The COVID-19 pandemic has fundamentally disrupted global supply chains, exposed their vulnerabilities and highlighted the urgent need for greater resilience. In Malaysia, the pandemic's impact on the supply chain has been profound, affecting various industries and prompting a re-evaluation of existing strategies and frameworks (Chowdhury et al., 2021; Sundram et al., 2018; Selvaraju et al., 2017). Supply chain resilience-the ability to anticipate, prepare for, respond to, and recover from disruptive events—has become a critical focus for both practitioners and scholars (Narayanan, Ghapar, Chew, Sundram, Jayamani & Muhammad, 2024a).

Resource-Based Theory (RBT) and Contingency Theory (CT) are two prominent theoretical frameworks that offer valuable insights into building resilient supply chains. RBT posits that firms can achieve sustained competitive advantage by effectively leveraging their unique resources and capabilities (Barney, 1991). In contrast, CT emphasizes the importance of aligning organizational strategies with specific environmental conditions to enhance performance (Donaldson, 2001; Mkumbo et al 2019). Integrating these two theories provides a robust approach to developing supply chain strategies that are both resource-efficient and contextually adaptive (Sundram, Ghapar, Osman, Chew, and Muhammad, 2023).

The post-pandemic landscape presents an opportunity to apply this integrated theoretical framework to enhance supply chain resilience in Malaysia. As businesses navigate the complexities of a rapidly changing

global environment, understanding how to effectively combine RBT and CT can offer critical insights for sustaining operational continuity and achieving long-term success (Sundram, Ghapar, Chew & Muhammad, 2023).

Despite the extensive research on supply chain resilience, there remains a gap in understanding how to effectively integrate RBT and CT to address the unique challenges posed by the COVID-19 pandemic, particularly within the Malaysian context. Existing studies predominantly focus on either resource-based strategies or contingency planning in isolation, without considering the potential synergies between these approaches (Kaufmann & Roesch, 2012; Pettit, Croxton, & Fiksel, 2013).

This research aims to fill this gap by exploring how the integration of RBT and CT can enhance supply chain resilience in Malaysia during the post-pandemic period. Specifically, this study seeks to answer the following questions: How can Malaysian firms strategically align their resources and contingency plans to mitigate supply chain disruptions? What are the key factors that contribute to the successful implementation of an integrated resilience framework? By addressing these questions, this research will provide valuable insights for both academia and industry, contributing to the development of more robust and adaptive supply chain strategies.

2. Literature Review

The need for enhanced supply chain resilience has gained unprecedented attention in the wake of the COVID-19 pandemic. This literature review explores the integration of Resource-Based Theory (RBT) and Contingency Theory (CT) as frameworks to develop resilient supply chains, with a specific focus on the Malaysian context. The review synthesizes existing research on supply chain resilience, RBT, and CT, and identifies gaps in the literature that this study aims to address.

Supply Chain Resilience

Supply chain resilience is defined as the capacity of a supply chain to prepare for, respond to, and recover from disruptions while maintaining its operational capabilities (Ponomarov & Holcomb, 2009; Vatumalae et al., 2020; Sundram et al., 2018). The concept has evolved over the past two decades, driven by an increasing frequency of disruptions, including natural disasters, geopolitical events, and most recently, the COVID-19 pandemic (Ivanov & Dolgui, 2020). Scholars identify several key elements that contribute to supply chain resilience, including flexibility, redundancy, visibility, collaboration, and agility (Christopher & Peck, 2004). Flexibility refers to the ability of supply chain components to adapt to changes, while redundancy involves maintaining excess capacity or inventory to cushion against disruptions. Visibility and collaboration emphasize real-time information sharing and coordination among supply chain partners, and agility focuses on the speed of response to disruptions (Vatumalae et al., 2022; Sundram et al., 2020).

Resource-Based Theory (RBT)

Resource-based theory (RBT) posits that a firm's competitive advantage is derived from its unique resources and capabilities that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). In the context of supply chains, RBT suggests that firms with superior resources—such as advanced technology, skilled labor, and robust infrastructure—are better positioned to withstand and recover from disruptions (Wernerfelt, 1984). RBT has been widely applied in supply chain management to explain how firms can leverage their internal resources to achieve resilience. For instance, firms that invest in advanced information technology systems can improve supply chain visibility and coordination, thereby enhancing their ability to anticipate and respond to disruptions (Wang, Jie, & Abareshi, 2015).

Contingency Theory (CT)

Contingency Theory (CT) asserts that there is no one-size-fits-all approach to management; instead, effective management strategies depend on the specific context or environment in which an organization operates (Donaldson, 2001). In supply chain management, CT emphasizes the need for adaptive strategies that align with the external environment, such as market volatility, technological changes, and regulatory requirements. CT has been used to highlight the importance of context-specific strategies in achieving supply chain resilience. For example, firms operating in highly volatile markets may benefit from flexible and adaptive supply chain designs that can quickly respond to changes in demand or supply conditions (Sousa & Voss, 2008).

Integration of RBT and CT

The integration of RBT and CT offers a comprehensive approach to building resilient supply chains by combining the internal strengths of a firm with context-specific adaptive strategies. This integrated approach recognizes that while unique resources and capabilities are essential for resilience, their effectiveness is contingent upon the external environment (Eisenhardt & Martin, 2000). Studies have shown that firms that successfully integrate RBT and CT are better equipped to handle disruptions. For instance, a study by Brandon-Jones et al. (2014) found that firms that leveraged their unique resources (RBT) and adapted their supply chain strategies to market conditions (CT) were more resilient during the 2008 financial crisis.

Supply Chain Resilience in Malaysia

Malaysia's strategic location and diversified economy make it a critical player in global supply chains. However, the COVID-19 pandemic exposed significant vulnerabilities in Malaysia's supply chains, particularly in sectors such as electronics, automotive, and pharmaceuticals (Yong, Haron, & Li, 2021). The integration of RBT and CT can provide valuable insights into enhancing the resilience of Malaysian supply chains. Malaysian firms face several challenges, including limited access to advanced technology, dependency on global supply chains, and regulatory constraints. However, there are also opportunities to enhance resilience through strategic investments in technology, fostering collaboration among supply chain partners, and adopting adaptive strategies tailored to the local context (Narayanan, Ghapar, Chew, Sundram, Jayamani & Muhammad, 2024b; Omar et al., 2020).

Gaps in the Literature

Despite the extensive research on supply chain resilience, there is a lack of studies that explicitly integrate RBT and CT within the Malaysian context. Most existing research focuses on either RBT or CT in isolation, without exploring the potential synergies between these frameworks (Kaufmann & Roesch, 2012; Pettit, Croxton, & Fiksel, 2013). Additionally, there is limited empirical evidence on how Malaysian firms can apply these integrated strategies to enhance supply chain resilience in the post-pandemic landscape. As such, this underscores the importance of integrating Resource-Based Theory and Contingency Theory to develop resilient supply chains. By combining the internal strengths of a firm with adaptive strategies tailored to the external environment, this integrated approach provides a robust framework for addressing supply chain disruptions. The review identifies significant gaps in the existing literature, particularly within the Malaysian context, and sets the stage for the current study to explore how Malaysian firms can enhance their supply chain resilience in the post-pandemic era.

3. Research Methodology

The methodology for this study involves a qualitative approach, focusing on in-depth case study analysis to explore how Malaysian firms integrate Resource-Based Theory (RBT) and Contingency Theory (CT) to enhance supply chain resilience. The study examines three key industries: electronics, automotive, and pharmaceuticals.

Conceptual Framework

The conceptual framework integrates RBT and CT to provide a comprehensive approach to supply chain resilience. RBT focuses on leveraging a firm's unique resources and capabilities, while CT emphasizes the need for adaptive strategies that align with the external environment. The framework aims to understand how these theories can be combined to mitigate supply chain disruptions and sustain operational continuity (Barney, 1991; Donaldson, 2001; Sivan, Anuar, Krishnasamy, Bahrin, Narayanan & Sundram, 2024b).

Sampling

Purposive sampling is used to select firms from the electronics, automotive, and pharmaceutical industries in Malaysia (Zetty et al., 2020) This method ensures the inclusion of information-rich cases that provide valuable insights into supply chain resilience practices (Patton, 2015). Approximately three firms, one from each industry, will be selected for detailed case study analysis. The inclusion criteria for these firms are as follows: they must have been significantly impacted by the COVID-19 pandemic, have implemented strategies to enhance supply chain resilience, and have senior managers or supply chain professionals available and willing to participate in in-depth interviews.

Data Collection

Data will be collected through semi-structured interviews with senior managers and supply chain professionals from the selected firms, exploring the integration of RBT and CT in enhancing supply chain resilience (Creswell & Poth, 2017). Participants will first be contacted and briefed on the study's purpose, confidentiality, and consent procedures. Each interview, lasting approximately 60-90 minutes, will be audio-recorded with the participant's consent, and detailed notes will be taken to capture non-verbal cues and contextual information. After the interviews, the recordings will be transcribed verbatim, and participants will be allowed to review and verify the accuracy of their transcripts.

4. Data Analysis

The qualitative data collected from the interviews will be analyzed using thematic analysis. This method involves identifying, analyzing, and reporting patterns (themes) within the data (Braun & Clarke, 2006; Sivan, Anuar, Krishnasamy, Bahrin, Narayanan & Sundram, 2024a).

Steps in Thematic Analysis:

Data Familiarization: Immersing in the data by reading and re-reading the interview transcripts and listening to the audio recordings.

Initial Coding: Generating initial codes from the data by labelling segments of text that are relevant to the research questions.

Theme Development: Examining the codes to identify broader patterns or themes.

Reviewing Themes: Reviewing and refining the themes to ensure they accurately represent the data.

Defining and Naming Themes: Assigning clear definitions and names to each theme.

Reporting: Presenting the themes in a coherent and compelling narrative, supported by quotes from the data.

The analysis will focus on identifying how firms in the electronics, automotive, and pharmaceutical industries integrate RBT and CT to enhance supply chain resilience, the challenges they face, and the outcomes of these efforts. The findings will be presented in detailed case study analyses, highlighting the unique resources, adaptive strategies, integration challenges, and resilience outcomes for each firm.

Table 1: Respondent Demographics for Case Study Organization

Characteristic	Company A	Company B	Company C
Industry	Electronics	Automotive	Pharmaceuticals
Years of Operations	7 years	10 years	14 years
Respondent's Designation and Identification Code	Supply Chain Manager (A1) Operations Director (A2) Procurement Manager (A3	Supply Chain Manager (B1) Operations Director (B2) Logistics Coordinator (B3)	Supply Chain Manager (C1) Operations Director (C2) Procurement Manager (C3) Chief Operating Officer (C4)

Table 1 provides an overview of the demographics of respondents from three companies in different industries: electronics (Company A), automotive (Company B), and pharmaceuticals (Company C). This diversity ensures the study covers a wide range of supply chain dynamics and challenges, each with unique characteristics and requirements. The years of operation vary among the companies, with Company A having 7 years, Company B with 10 years, and Company C with 14 years. This variation indicates that the study includes organizations at different stages of maturity, providing insights into how supply chain resilience practices evolve.

The respondents hold senior and strategic positions within their organizations. Company A includes a Supply Chain Manager, Operations Director, and Procurement Manager; Company B includes a Supply Chain Manager, Operations Director, and Logistics Coordinator; and Company C includes a Supply Chain Manager, Operations Director, Procurement Manager, and Chief Operating Officer. This ensures that the insights provided are

reflective of both operational and strategic perspectives, given the seniority and roles of the participants.

Overall, the respondent demographics highlight the diverse industry representation, varied years of operation, and senior-level designations of the participants. This diversity is beneficial for the study as it provides a comprehensive view of supply chain resilience practices across different sectors and organizational stages. The inclusion of high-level executives ensures that the insights and strategies discussed are robust and applicable to a wide range of supply chain contexts.

Case Study 1: Electronics Industry

Company A is a leading electronics manufacturer in Malaysia, specializing in semiconductor production. The COVID-19 pandemic disrupted its supply chain, causing delays in raw material supplies and impacting production schedules.

Table 2: Case Study Analysis of Company A

No	Aspect	Description
1	Unique Resources (RBT)	Advanced manufacturing technology, skilled workforce, strategic partnerships ("Our cutting-edge technology and highly skilled staff were pivotal in maintaining operations during the pandemic." - Respondent A1) ("Strategic partnerships helped us secure critical supplies." - Respondent A2) ("The expertise of our workforce allowed us to quickly adapt to new processes." - Respondent A3)
2	Adaptive Strategies (CT)	Diversification of suppliers, real-time monitoring systems, flexible production processes ("We diversified our supplier base and implemented real-time monitoring to swiftly adapt to supply chain changes." - Respondent A1) ("Flexible production processes enabled us to switch between products based on the availability of materials." - Respondent A2) ("Real-time monitoring helped us anticipate and mitigate disruptions." - Respondent A3)
3	Integration Challenges	High dependency on global suppliers, and cultural resistance to change. ("One of our biggest challenges was our reliance on international suppliers and resistance to changing established practices." - Respondent A1) ("Transitioning to new suppliers was costly and time-consuming." - Respondent A2) ("There was significant resistance from some departments to adopt new strategies." - Respondent A3)
4	Resilience Outcomes	Improved supply chain visibility, enhanced flexibility in production, and faster recovery times. ("These strategies significantly improved our visibility and flexibility, allowing us to recover more quickly from disruptions." - Respondent A1) ("We are now able to respond to supply chain disruptions more effectively." - Respondent A2) ("Our recovery times have shortened due to better coordination and flexibility." - Respondent A3)

Company A leveraged its advanced manufacturing technology and skilled workforce to maintain operational efficiency. By diversifying suppliers and implementing real-time monitoring systems, the company adapted to the pandemic's disruptions. Despite facing challenges such as dependency on global suppliers and cultural resistance, the integration of RBT and CT resulted in improved visibility, flexibility, and recovery times.

Case Study 2: Automotive Industry

Company B is a major automotive parts supplier in Malaysia. The pandemic severely disrupted its supply chain, particularly in the procurement of essential components from international suppliers.

Table 3: Case Study Analysis of Company B

No	Aspect	Description
1	Unique Resources (RBT)	Extensive distribution network, strong brand reputation, skilled engineering team. ("Our extensive distribution network allowed us to quickly reroute supplies." - Respondent B1) ("Our strong brand reputation helped us maintain supplier relationships." - Respondent B2) ("The expertise of our engineering team was crucial in adapting our processes." - Respondent B3)
2	Adaptive Strategies (CT)	Local sourcing initiatives, inventory optimization, strategic alliances with local firms ("We initiated local sourcing to reduce dependency on international suppliers." - Respondent B1) ("Optimizing our inventory helped us manage supply chain disruptions more effectively." - Respondent B2) ("Forming strategic alliances with local firms strengthened our supply chain." - Respondent B3)
3	Integration Challenges	High initial costs for local sourcing and coordination issues with new suppliers. ("The shift to local sourcing incurred high initial costs." - Respondent B1) ("Coordinating with new suppliers was a significant challenge." - Respondent B2) ("We faced difficulties in aligning our processes with new suppliers." - Respondent B3)
4	Resilience Outcomes	Reduced dependency on international suppliers and increased supply chain robustness. ("Our dependency on international suppliers has significantly decreased." - Respondent B1) ("Our supply chain is now more robust and capable of handling disruptions." - Respondent B2) ("We have seen a marked improvement in supply chain stability." - Respondent B3)

Company B utilized its extensive distribution network and strong brand reputation to navigate the supply chain disruptions caused by the pandemic. By initiating local sourcing and optimizing inventory, the company reduced its dependency on international suppliers. Although the shift to local sourcing incurred high initial costs and coordination issues, the integration of RBT and CT enhanced the supply chain's robustness.

Case Study 3: Pharmaceuticals Industry

Company C is a pharmaceutical company in Malaysia that faced significant challenges during the pandemic, particularly in sourcing raw materials and ensuring timely delivery of products.

Table 3: Case Study Analysis of Company C

No	Aspect	Description
1	Unique Resources (RBT)	Advanced research and development (R&D) capabilities, and robust distribution channels. ("Our advanced R&D capabilities were crucial in developing new products quickly." - Respondent C1) ("Robust distribution channels ensured continuous supply of products." - Respondent C2) ("Our strong R&D team helped us innovate and adapt rapidly." - Respondent C3) ("Effective distribution networks were vital in maintaining supply chain continuity." - Respondent C4)

2	Adaptive Strategies (CT)	Strategic stockpiling, collaboration with government agencies, and flexible logistics solutions. ("Strategic stockpiling helped us manage supply shortages." - Respondent C1) ("Collaboration with government agencies facilitated smoother operations." - Respondent C2) ("Flexible logistics solutions allowed us to adapt to transportation challenges." - Respondent C3) ("Working with government agencies was key in overcoming regulatory hurdles." - Respondent C4)
3	Integration Challenges	Regulatory hurdles, logistical constraints in stockpiling ("Regulatory hurdles were a major challenge in our operations." - Respondent C1) ("Stockpiling posed logistical constraints that we had to manage." - Respondent C2) ("Navigating complex regulations was difficult and time-consuming." - Respondent C3) ("Logistical challenges in stockpiling were significant." - Respondent C4)
4	Resilience Outcomes	Ensured continuous supply of critical medicines, and enhanced collaboration with stakeholders. ("We ensured a continuous supply of critical medicines despite the disruptions." - Respondent C1) ("Collaboration with stakeholders improved significantly." - Respondent C2) ("Our ability to supply critical medicines remained uninterrupted." - Respondent C3) ("Stakeholder collaboration was greatly enhanced, improving overall resilience." - Respondent C4)

Company C capitalized on its advanced R&D capabilities and robust distribution channels to mitigate supply chain disruptions. By strategically stockpiling critical raw materials and collaborating with government agencies, the company ensured a continuous supply of essential medicines. Despite facing regulatory hurdles and logistical constraints, the integration of RBT and CT improved the company's ability to maintain supply chain continuity and enhanced collaboration with stakeholders.

Cross-Case Analysis

The three case studies illustrate how firms in different industries have successfully integrated RBT and CT to enhance supply chain resilience. Key findings include:

Unique Resources (RBT): Across all case studies, firms leveraged their unique resources, such as advanced technology, skilled workforce, and strong distribution networks, to maintain operational efficiency and adaptability.

Adaptive Strategies (CT): Companies adopted context-specific strategies, such as diversifying suppliers, local sourcing, strategic stockpiling, and flexible logistics solutions, to respond to the pandemic's disruptions.

Integration Challenges: Common challenges included high initial costs, coordination issues, regulatory hurdles, and cultural resistance to change. Addressing these challenges required careful planning and stakeholder engagement.

Resilience Outcomes: The integration of RBT and CT resulted in improved supply chain visibility, flexibility, robustness, and stakeholder collaboration, enabling faster recovery and continuity in operations.

These findings demonstrate the value of integrating Resource-Based Theory and Contingency Theory in developing resilient supply chains, offering practical insights for firms seeking to enhance their supply chain resilience in the post-pandemic landscape.

Discussion

The integration of Resource-Based Theory (RBT) and Contingency Theory (CT) in enhancing supply chain resilience has yielded significant insights, particularly within the context of the post-pandemic landscape in Malaysia. The case studies conducted in the electronics, automotive, and pharmaceutical industries illustrate how firms have successfully navigated the challenges posed by the COVID-19 pandemic by leveraging their

unique resources and adopting context-specific adaptive strategies.

Electronics Industry, Company A is a leading electronics manufacturer specializing in semiconductor production, utilized its advanced manufacturing technology and skilled workforce to maintain operational efficiency amidst the pandemic-induced disruptions. The company's strategic partnerships and diversification of suppliers were crucial in enhancing supply chain resilience. Real-time monitoring systems and flexible production processes enabled Company A to adapt swiftly to changes in raw material supply and production schedules. However, the high dependency on global suppliers and cultural resistance to change were significant challenges. Despite these, the integration of RBT and CT resulted in improved supply chain visibility, enhanced flexibility in production, and faster recovery times (Barney, 1991; Donaldson, 2001).

Automotive Industry, Company B, a major automotive parts supplier, faced severe disruptions in procuring essential components from international suppliers during the pandemic. By leveraging its extensive distribution network, strong brand reputation, and skilled engineering team, the company initiated local sourcing and optimized inventory to reduce dependency on international suppliers. Strategic alliances with local firms further strengthened its supply chain. While high initial costs for local sourcing and coordination issues with new suppliers were challenges, the integration of RBT and CT significantly increased supply chain robustness, demonstrating the value of a combined theoretical approach (Christopher & Peck, 2004; Ivanov & Dolgui, 2020).

Pharmaceuticals Industry, Company C, a pharmaceutical firm, faced significant challenges in sourcing raw materials and ensuring timely product delivery. The company's advanced research and development capabilities and robust distribution channels played a pivotal role in mitigating these disruptions. Strategic stockpiling, collaboration with government agencies, and flexible logistics solutions were key adaptive strategies. Regulatory hurdles and logistical constraints in stockpiling presented challenges, but the integration of RBT and CT improved the company's ability to maintain supply chain continuity and enhanced collaboration with stakeholders (Pettit, Croxton, & Fiksel, 2013).

5. Conclusion, Implication and Recommendation for future research

This study has provided valuable insights into how integrating Resource-Based Theory (RBT) and Contingency Theory (CT) can enhance supply chain resilience in Malaysia, especially in the post-pandemic context. By analyzing case studies from the electronics, automotive, and pharmaceutical industries, the research demonstrates how firms can leverage unique resources and implement adaptive strategies tailored to specific environmental conditions. The findings highlight that firms with advanced technological capabilities, strategic partnerships, and skilled workforces are better positioned to respond to disruptions. However, challenges such as high initial costs, regulatory hurdles, and cultural resistance to change remain significant barriers that need to be addressed.

The implications of this study are far-reaching for both practitioners and scholars in supply chain management. For practitioners, the research underscores the importance of aligning internal resources with external environmental conditions to build resilient supply chains. Firms are encouraged to invest in advanced technologies, foster strategic partnerships, and enhance workforce capabilities to improve their resilience against future disruptions. Additionally, the findings suggest that addressing cultural resistance and regulatory challenges is critical for the successful implementation of these strategies. For scholars, the study contributes to the academic discourse by offering a nuanced understanding of how RBT and CT can be integrated to develop more robust and adaptive supply chain strategies. It opens up new avenues for research on the synergies between these theories and their application in different contexts.

Future research should explore the integration of RBT and CT across various industries and geographical regions to validate and expand upon the findings of this study. Comparative studies between developed and developing economies could provide additional insights into how different environmental conditions influence the effectiveness of these integrated strategies. Longitudinal studies are also recommended to assess the long-term impact of RBT and CT integration on supply chain resilience, particularly as firms continue to adapt to an increasingly complex global environment. Moreover, the role of emerging technologies such as artificial

intelligence, big data analytics, and blockchain in enhancing the integration of RBT and CT warrants further investigation. These technologies could offer innovative solutions to some of the challenges identified in this study, such as improving data visibility, streamlining regulatory compliance, and fostering a more agile organizational culture. By addressing these research gaps, future studies can contribute to the development of more resilient and adaptive supply chains, better equipped to navigate the uncertainties of the post-pandemic world.

References

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. https://doi.org/10.1177/014920639101700108

Brandon-Jones, E., Squire, B., Autry, C. W., & Petersen, K. J. (2014). A contingent resource-based perspective of supply chain resilience and robustness. *Journal of Supply Chain Management, 50*(3), 55–73. https://doi.org/10.1111/jscm.12050

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

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*, 148, 102271. https://doi.org/10.1016/j.tre.2021.102271

Christopher, M., & Peck, H. (2004). Building the resilient supply chain. *The International Journal of Logistics Management*, 15(2), 1-14. https://doi.org/10.1108/09574090410700275

Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Donaldson, L. (2001). *The contingency theory of organizations*. Sage Publications.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal, 21*(10-11), 1105–1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E

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

Kaufmann, L., & Roesch, J. (2012). Constraints to supply chain integration: The impact of organizational culture. *Journal of Business Logistics*, 33(3), 165-179. https://doi.org/10.1111/j.0000-0000.2012.01045.x

Mkumbo, F. A. E., Ibrahim, A. R., Salleh, A. L., Sundram, V. P. K. & Atikah S. B. (2019). The Influence of Supply Chain Practices and Performance Measurement Practices towards Firm Performance, *International Journal of Supply Chain Management*, 8(3), 809-819.

Narayanan, N. S. P., Ghapar, F., Chew, L. L., Sundram, V. P. K., Jayamani, U., & Muhammad, A. (2024a). Measuring the Unmeasured: Exploring the Concept of "Supply Chain Quotient"[SCQ]. *Information Management and Business Review*, *16*(2 (I) S), 36-43.

Narayanan, N. S. P., Ghapar, F., Chew, L. L., Sundram, V. P. K., Jayamani, U., & Muhammad, A. (2024b). Optimizing Working Capital Management in Supply Chain Finance: A Multi-Dimensional Approach. *Information Management and Business Review*, *16*(2 (I) S), 44-52.

Omar, R., Hassan, N. H., Zawawi, N. F. M., & Syed Azhar, S. N. (2020). Developing supply chain resilience through strategic partnerships: Insights from the Malaysian context. *International Journal of Supply Chain Management, 9*(2), 101–110.

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.

Pettit, T. J., Croxton, K. L., & Fiksel, J. (2013). Ensuring supply chain resilience: Development of a conceptual framework. *Journal of Business Logistics*, 34(1), 1-20. https://doi.org/10.1111/jbl.12009

Ponomarov, S. Y., & Holcomb, M. C. (2009). Understanding the concept of supply chain resilience. *The International Journal of Logistics Management, 20*(1), 124–143. https://doi.org/10.1108/09574090910954873

Selvaraju, M., Beleya, P., & Sundram, V. P. K. (2017). Supply chain cost reduction using mitigation & resilient strategies in the hypermarket retail business. International Journal of Supply Chain Management, 6(2), 116-121.

Sivan, S., Anuar, R., Krishnasamy, T., Bah rin, A. S., Narayanan, N. S. P., & Sundram, V. P. K. (2024b). Integrating

Safety Practices into the Supply Chain for Sustainable Development in Malaysia's Building Construction Sites. *Information Management and Business Review*, *16*(1 (I) S), 24-32.

Sivan, S., Anuar, R., Krishnasamy, T., Bahrin, A. S., Narayanan, N. S. P., & Sundram, V. P. K. (2024a). Optimizing Safety Practices and Culture: A Comprehensive Examination through Perception Surveys in Malaysia's Logistics Industry. *Information Management and Business Review*, *16*(1 (I) S), 33-38.

Sousa, R., & Voss, C. A. (2008). Contingency research in operations management practices. *Journal of Operations Management, 26*(6), 697–713. https://doi.org/10.1016/j.jom.2008.06.001

Sundram, V. P. K., Rajagopal P., Atikah S. B. & Subramaniam, G. (2018). The Role of Supply Chain Integration on Green Practices and Performance in a Supply Chain Context: A Conceptual Approach to Future Research, *International Journal of Supply Chain Management*, 7(1), 95-104.

Sundram, V. P. K., Rajagopal, P., Nur Atiqah, Z. A., Atikah, S. B., Appasamy, G., & Zarina, A. M. (2018). Supply chain responsiveness in an Asian global electronic manufacturing firm: ABX energy (M). International Journal of Supply Chain Management, 7(2), 23-31.

Sundram, V.P.K., Ghapar, Chew, LL and Muhammad, A. (2023). Engaging Lean Six Sigma Approach Using DMAIC Methodology for Supply Chain Logistics Recruitment Improvement, *Information Management and Business Review* 15 (2), 46-53.

Sundram, V.P.K., Ghapar, F. Osman, MF., Chew, LL and Muhammad, A. (2023). Lean Six-Sigma Approach for Sub-Contract Licensing and its Process Improvement across the Manufacturing Supply Chain using GUT Priority Matrix, *Information Management and Business Review* 15 (2), 1-8.

Sundram, V.P.K., Noor Malinjasari, A., Ibrahim, Irwan., Nazura, M.S., & Atikah, S.B. (2020), *Supply Chain Management: Key Concepts and Case Studies,* MLSCA, Petaling Jaya, Malaysia.

Vatumalae, V., Rajagopal, P., & Sundram, V. P. K. (2020). Warehouse operations measurement in hypermarket retailers: A review of the literature. *International Journal of Supply Chain Management, 9*(5), 1276.

Vatumalae, V., Rajagopal, P., Sundram, V. P. K., & Hua, Z. (2022). A study of retail hypermarket warehouse inventory management in Malaysia. *SMART Journal of Business Management Studies, 18*(1), 71-79.

Wamba, S. F., & Akter, S. (2019). Understanding supply chain analytics capabilities and agility for data-rich environments. *International Journal of Operations & Production Management*, 39(6), 887-912. https://doi.org/10.1108/IJOPM-01-2019-0025

Wang, Y., Jie, F., & Abareshi, A. (2015). The measurement model of supply chain uncertainty and risk in the Australian courier industry. *Operations and Supply Chain Management, 8*(3), 121–130. https://doi.org/10.31387/oscm0240156

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171–180. https://doi.org/10.1002/smj.4250050207

Yong, J., Haron, H., & Li, T. (2021). Managing supply chain disruptions in Malaysia during the COVID-19 pandemic: A case study. *Journal of Business and Management Research, 10*(2), 45–58.

Zetty Zahureen, M.Y., Nur Zahidah, B., Ismadi I., Bujang, I. & Sundram, V.P.K. (2020), *Quantitative Research Methods,* Asian Academy, Petaling Jaya, Malaysia.