Global Business and Management Research: An International Journal
Vol. 16, No. 4s (2024)

People, profit, product, and planet: A review of supply chain resilience in the logistics sector

S. Maryam Mufidah
School of Management, Universiti Sains Malaysia, Malaysia
Email: maryammufidah@student.usm.my

Noorliza Karia*
School of Management, Universiti Sains Malaysia, Malaysia
Email: noorliza@usm.my

* *Corresponding Author*

Abstract
Purpose: This paper reviews how supply chains stay resilient when facing disruptions, using the 4P framework, People, Planet, Profit, and Product. It aims to summarize existing research and offer insights into how businesses can better handle supply chain challenges in an unpredictable world.
Design/methodology/approach: This study uses a qualitative approach, focusing on a thorough review of existing literature from databases like Scopus and software such as Publish or Perish. It examines how disruptions are managed within the scope of the 4P framework.
Findings: The review identifies important trends in supply chain resilience and shows how the 4P framework can guide strategies for adapting to disruptions. Common themes across different definitions of resilience were found, giving a clearer picture of how businesses can stay flexible and sustainable when disruptions occur.
Research limitations/implications: This review is based on the literature available at the time. Future research could dive deeper into real-world case studies and explore how these disruptions impact supply chains over the long term.
Practical implications: The paper offers practical takeaways for supply chain managers looking to strengthen their systems. The focus on sustainable practices and recovery strategies, framed around the 4P model, is particularly useful for addressing future disruptions.
Originality/value: This paper provides simple dimensions at Supply Chain Resilience, which is already complex, by combining a comprehensive literature review with the 4P framework. It gives useful insights for both academics and professionals on how to improve resilience strategies in today's complex environment in more approachable way. Also, emphasizing the role of Artificial Intelligence (AI), which has been widely discussed in recent research. With AI mentioned in over 1,200 studies, its relevance in strengthening supply chain strategies is undeniable. By highlighting AI alongside traditional methods like empirical research and theoretical approaches, this paper provides a meaningful contribution to both academic discussions and practical applications in the field.

Keywords:
Supply Chain Resilience, 4P Framework, Disruptions, Literature Review, Logistics

Introduction

In the world of business supply chains are expanding to reach far and wide becoming longer more intricate and spanning across different regions. This increased complexity makes them susceptible, to disruptions caused by disasters, political instability, economic downturns,

supplier insolvency and other human driven factors (Hendricks & Singhal, 2005). Ever since the first case was detected COVID 19 has spread across, than 200 countries. As of October 25, 2022 it has caused almost 6 million deaths and affected around 600 million people worldwide (Cascella et al., 2023). The rapid and extensive spread of the virus has caused disruptions to supply chains leading to impacts on the global economy. In fact, the World Bank stated that the global GDP growth rate for 2020 was 3.27% reflecting the recession since 1961 (Kose & Sugawara, 2020). Initially efforts to control the epidemic involved imposing travel restrictions and limiting the movement of materials and labour across borders (Espinoza et al., 2020). This resulted in supply disruptions and labour shortages for companies triggering a chain reaction of disruptions in supply chains (McKay, 2022). A report by Fortune in February 2020 revealed that as 94% of Fortune 1000 companies had experienced disruptions in their supply chains due to COVID 19 (Sherman, 2020). Additionally, according to a survey conducted by the Institute for Supply Management (ISM) three quarters of companies reported some form of supply chain disruption due, to transportation restrictions linked to coronavirus (ISM, 2020). Another survey conducted by the National Association of Manufacturers found that 78.3% of manufacturers believed that COVID 19 had significantly impacted their performance with approximately 35.5% experiencing various types of supply chain disruptions (X. Li et al., 2023). The COVID-19 pandemic has had a significant ripple effect on global supply chains, causing disruptions and challenges across various industries. The disruptions in supply chains have been attributed to factors such as lockdown measures, travel restrictions, labour shortages, and increased demand for certain products (Ivanov & Dolgui, 2020; Fasan et al., 2021; Farooq et al., 2022).
Supply chain disruptions, in Malaysia have become a pressing issue costing around RM8.7 billion annually. The reasons behind these disruptions are multifaceted, including factors like the reopening of Chinas borders, labour shortages, climate change and global tensions (NST Business, 2023). The economic impact of disruptions such, as the Ukraine war and local flooding has been felt in Malaysia resulting in a decline of 1.8% in exports during the fourth quarter of 2022. The semiconductor industry, which plays a role in Malaysia's economy has been particularly affected by the chip shortage (Reuters, 2021). The implementation of lockdown measures and travel restrictions, due to the Covid 19 pandemic has had an impact on the mobility of workers in the logistics industry in Malaysia. While it is true that the pandemic has posed challenges for managing labour in this industry it is important to recognize that these challenges are not unique to logistics (Lim, 2022). Based on the World Bank Logistic Performance Index 2016 report by Doktoralina & Apollo (2019) the performance of Malaysias logistics industry has declined in years. The COVID 19 pandemic has had an impact on labor within the logistics management sector in Malaysia. Congestion and delays at ports, airports and highways have disrupted logistics operations (Khoo, 2020). Led to increased costs due to fuel consumption and extended working hours for drivers. Moreover, government regulations, like import/export restrictions have added to demand and supply instability in the industry. Consequently managing logistics and supply chains has become critical during these times as lockdown measures have severely affected operations (Menhat et al., 2021)
The labour related issues in logistics management in Malaysia have been significantly affected by the Covid 19 pandemic (International Labour Organization, 2020). Throughout this crisis numerous challenges have emerged within the logistics industry especially concerning labor management. These challenges can be attributed to factors such as lockdown measures travel restrictions and social distancing protocols (Rasul et al., 2021). As a consequence of the pandemics impact on supply chains there has been a shortage of labor and increased demands placed on logistics workers. Professionals in logistics management have faced difficulties in sourcing and managing labor due to restrictions imposed by the pandemic (World Economic Forum, 2020). Additionally pre-existing labor concerns within Malaysias logistics industry

have been further exacerbated by Covid 19. These concerns encompass worker safety and well being employee morale and mental health as the necessity, for additional training and upskilling to adapt to evolving industry demands (The Star, 2022). Based on a survey conducted by Bastian Consulting, among supply chain executives in Malaysia from December 2020 to February 2021 it was found that 39 percent of the executives acknowledged that their supply chains were negatively impacted by the COVID 19. On the hand 18 percent of these executives reported that their companies experienced an increase, in revenue during this period. The global supply chain was significantly affected by disruptions caused by travel restrictions imposed as a result of the pandemic (Statista, 2023).

Literature Review

Definitions and Components of Supply Chain Resilience

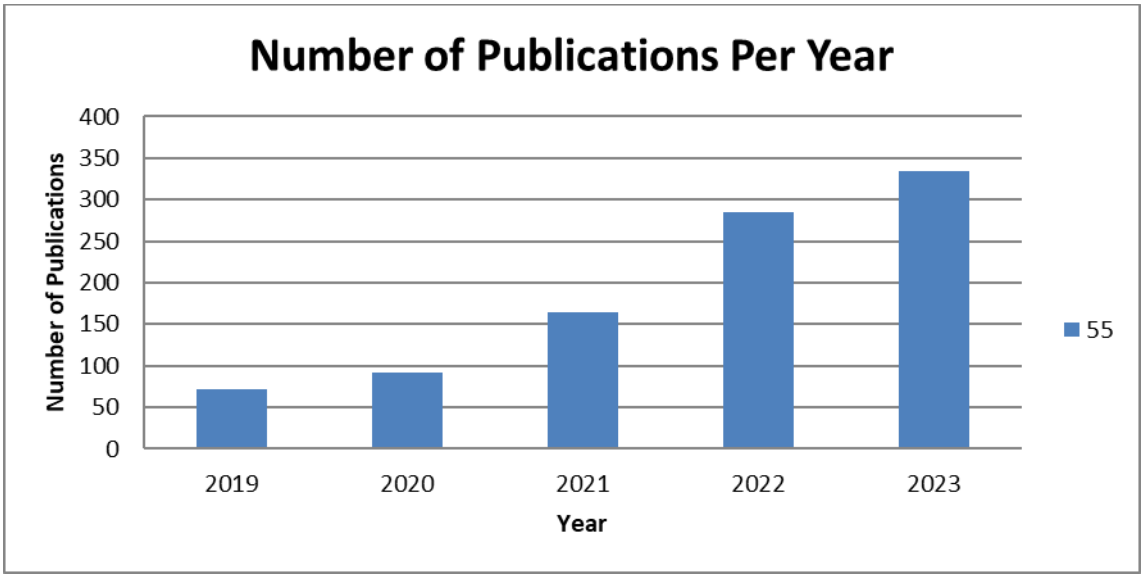
Scholars have put forth interpretations of supply chain resilience. Pettit et al. (2010) describe it as the ability of a supply chain to endure disruptions and bounce back highlighting two aspects: vulnerabilities and capabilities. Christopher & Peck (2004) on the hand emphasize the systems ability to restore or transition to a favourable state, after disturbances. Ponomarov & Holcomb (2009) and Ponis & Koronis (2012) build upon this by discussing the supply chains capacity to anticipate, respond and recover from disruptions while maintaining operations.
Over time the concept of supply chain resilience has become more complex. Recent definitions incorporate elements from definitions. Also include both the ability to absorb shocks and adapt to new situations (Brusset & Teller 2017; Pires Ribeiro & Barbosa Povoa, 2018). When it comes to boosting supply chain resilience there are two approaches; proactive and reactive. The proactive approach involves a focus on preparedness and its impact on a companys performance has been found to be significant (Li et al., 2017). On the hand the reactive approach emphasizes being alert and agile in responding to disruptions (Li et al., 2017).

Shared Aspects Among Definitions

A significant number of authors agree that supply chain resilience fundamentally revolves around the "capability" to "recover" or "withstand" disruptions (ZavalaAlcvar et al. 2023; Gollapudi, 2022; Kovacic et al., 2022). This emphasis on "capability" forms the foundation for definitions highlighting the abilities that enable resilience (Negri et al., 2023; Krykavskyy et al., 2022). The term "disruptions" is another recurring theme emphasizing the challenges that supply chains often face (ZavalaAlcvar et al., 2023; Gollapudi, 2022). These shared themes suggest an understanding among scholars regarding the elements that constitute supply chain resilience.

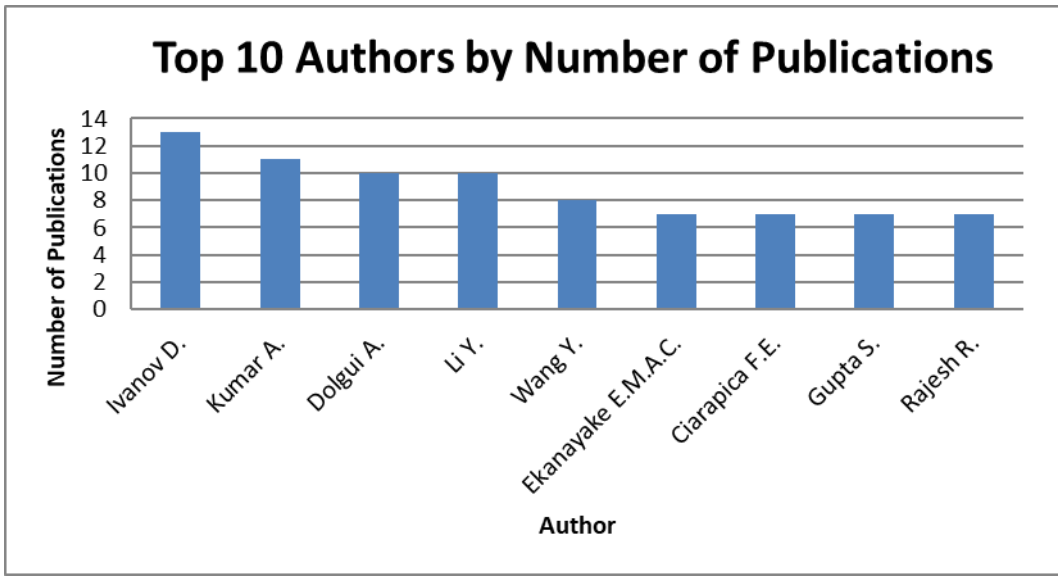
Supply Chain Resilience SCOPUS DATABASE

Word cloud 1: Supply Chain Resilience SCOPUS DATABASE



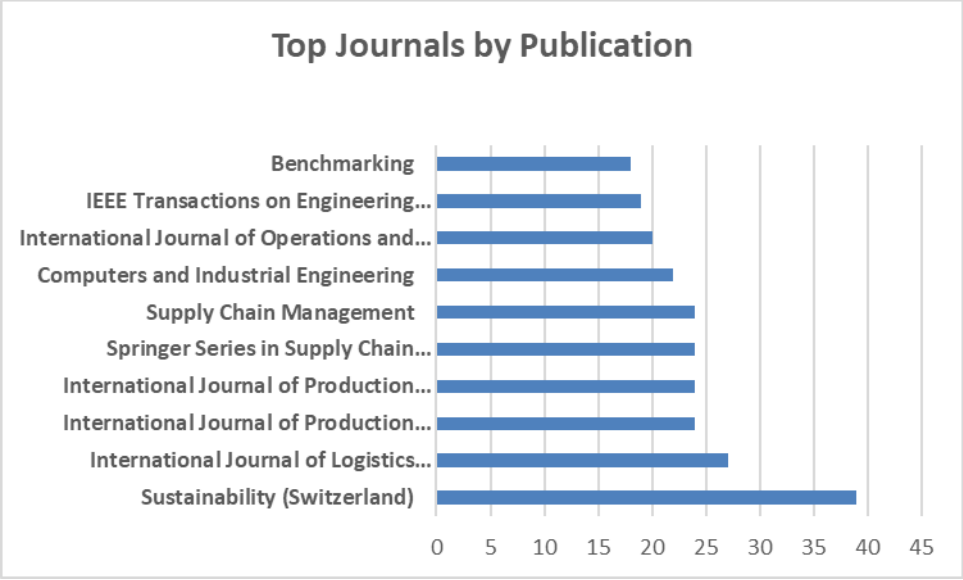
Graph 1: Number of Publications Per Year

The quantity of publications has been notably rising from 2006, to 2023 pointing towards an increasing interest and research output in this field. The substantial surge in publications took place between 2020 and 2023 possibly influenced by global events like the COVID 19 pandemic impacting supply chains. As of now the year 2023 exhibits the volume of publications indicating a peak in research activity or potentially an incomplete dataset, for that year.



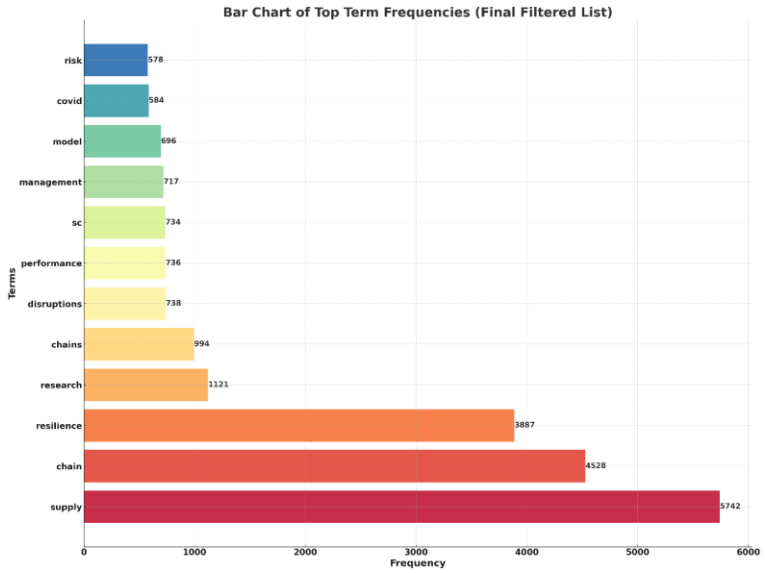
Graph 2: Top Supply Chain Resilience Authors

The dataset uncovers a group of authors who have an impact, in the field as shown by their publication records. Leading the pack is Ivanov D., who has contributed to the research area with 13 publications demonstrating his involvement. Following is Kumar A., whose 11 publications establish a presence. Dolgui A. Also stands out with 10 contributions emphasizing their importance in the literature. Collaborative elements are noteworthy well with joint publications from Vugrin E.D., Warren D.E. And Ehlen M.A. Totalling 4 while another set by Meyer M.M., Glas A.H. And Eßig M. Matches that count underscoring the nature of research in this domain. The duo of Ivanov D. And Dolgui A. Emerges with 3 publications indicating a partnership. Other contributors with 3 publications each include Das K., Palin P.J. And a collaborative group consisting of Yaroson E.V. Breen L., Hou J. And Sowter J. This demonstrates their involvement, in the topic. These statistics highlight both efforts and collective scholarly contributions showcasing the collaborative landscape within this field.



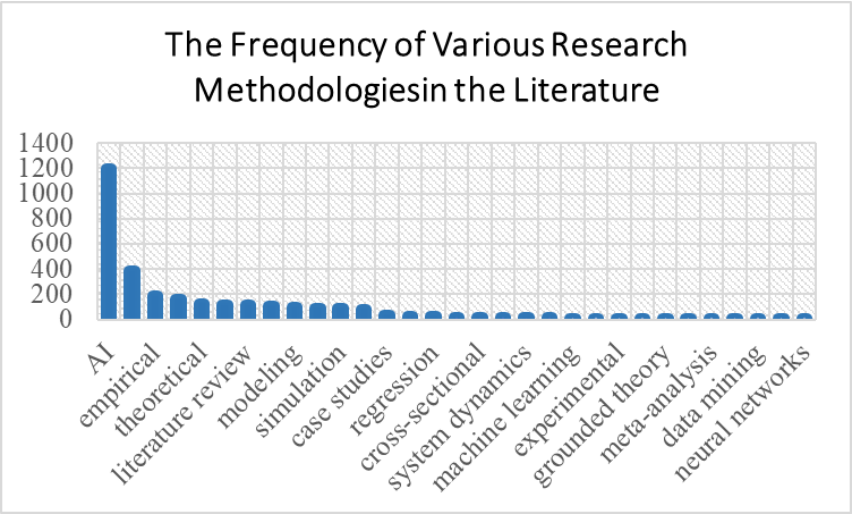
Graph 3: Supply Chain Resilience Top Journals

The journal "Sustainability (Switzerland)" stands out as the source of publications, on the subject signifying its significance as a primary platform for research in this field. Additionally, "Supply Chain Management" and the "International Journal of Production Research" are publications underscoring their importance in sharing research related to supply chain resilience. The compilation of journals showcases a range of publications that contribute to the body of knowledge on supply chain resilience encompassing areas such, as production, logistics and engineering management.



Graph 4: Top Term

The table, for trend analysis presents the distribution of terms across the dataset categorized by year. Here are some key observations based on the trend data; Over time the term "supply" has experienced a surge in frequency particularly in recent years. This indicates a growing emphasis on supply chain topics within literature. Likewise, both "chain" and "resilience" have shown increases aligning with the heightened discussions surrounding supply chain resilience. From 2020 there is a spike in term frequencies. This could be attributed to increased research activity during and following the COVID 19 pandemic. It suggests that the pandemic might have served as a catalyst for research, in these areas.



Graph 5: Methodologies on Supply Chain Resilience Papers from SCOPUS

The bar chart provides an overview of the research methods mentioned in literature. Artificial Intelligence (AI) appears as the method with 1202 abstracts mentioning it reflecting its prominence, in current research trends. General analytical. Empirical research follow suit with 388 and 191 citations respectively indicating their significance in the field. Survey based research and theoretical approaches also show usage with 164 and 131 mentions solidifying their roles in data collection and theory driven exploration. Qualitative methods such as case studies and literature reviews are equally important supported by their counts of 119 and 118.
Interviews and modelling are both prominently featured with over 100 mentions each highlighting the importance of data collection and the application of models in research. The representation of qualitative methods is nearly balanced indicating a methodological landscape. Although frequent simulations, statistical analysis regression analysis along with methods underline the varied approaches employed by researchers to address their questions.
This visualization highlights the range of research methodologies used across disciplines. It emphasizes AI as an area of focus while emphasizing that traditional methods, like surveys and interviews remain essential to research practices.

Hypothesis Development

This research posits that logistics companies can enhance their resilience by focusing on four key dimensions: Profit, People, Product, and Planet. These dimensions, collectively known as the 4P framework, offer a well-rounded approach to managing disruptions in the supply chain. While some may view the framework as straightforward, its simplicity does not undermine its effectiveness. In an increasingly complex global market, the 4P model remains relevant, providing practical guidance for companies navigating uncertainty.

Methods

In the methodology of the thesis, extensive use of secondary data was made, primarily sourced from the Scopus database and other databases extracted using the Publish or Perish software. This approach enabled a comprehensive aggregation of relevant literature. The data was then manually analyzed using Excel, employing various visualization tools to effectively identify and categorize thematic elements within the literature. The accumulated research was systematically summarized in Excel, facilitating the development of a holistic 4P model. Additionally, preliminary studies were conducted through interviews with logistics service providers, which served to validate and enrich the findings derived from the secondary data.

Findings

To develop a framework, on supply chain resilience the research process starts by selecting databases that specifically address the topic. These databases should provide information on aspects of supply chain resilience. Once the data is gathered it needs to be analysed and summarized into literature matrix. The goal of this summarization is not to condense the information but to understand and interpret the key elements in relation to supply chain resilience. After summarizing the data, a mind map is created as an organizational tool. This mind map helps structure the summarized information in a way that highlights connections and relationships between data points. Through mind mapping, patterns, trends and gaps in the data can be identified, which are crucial for stages of research. The next phase involves categorizing variables into four interconnected categories known as "the 4Ps"; Profit, People, Product and Planet. This strategic approach allows for dissecting information, into these four pillars that represent aspects of supply chain resilience.
'Profit' focuses on the aspects while 'People' emphasizes human resource management and engaging stakeholders. 'Product' centers, around the goods or services being. Planet' highlights

the impact and sustainability practices. Ultimately by utilizing the insights gained from steps a comprehensive framework called 4P is developed to enhance supply chain resilience. This framework integrates categorized variables into a model that captures the nature of supply chain resilience. It serves as a guiding structure for businesses and organizations to evaluate, enhance and innovate their supply chain practices in order to ensure resilience in the face of challenges and disruptions. Not does this framework help comprehend the state of supply chain resilience but it also offers a roadmap, for future improvements and strategic planning. When it comes to the 4P approach there are dimensions that need to be taken into account.

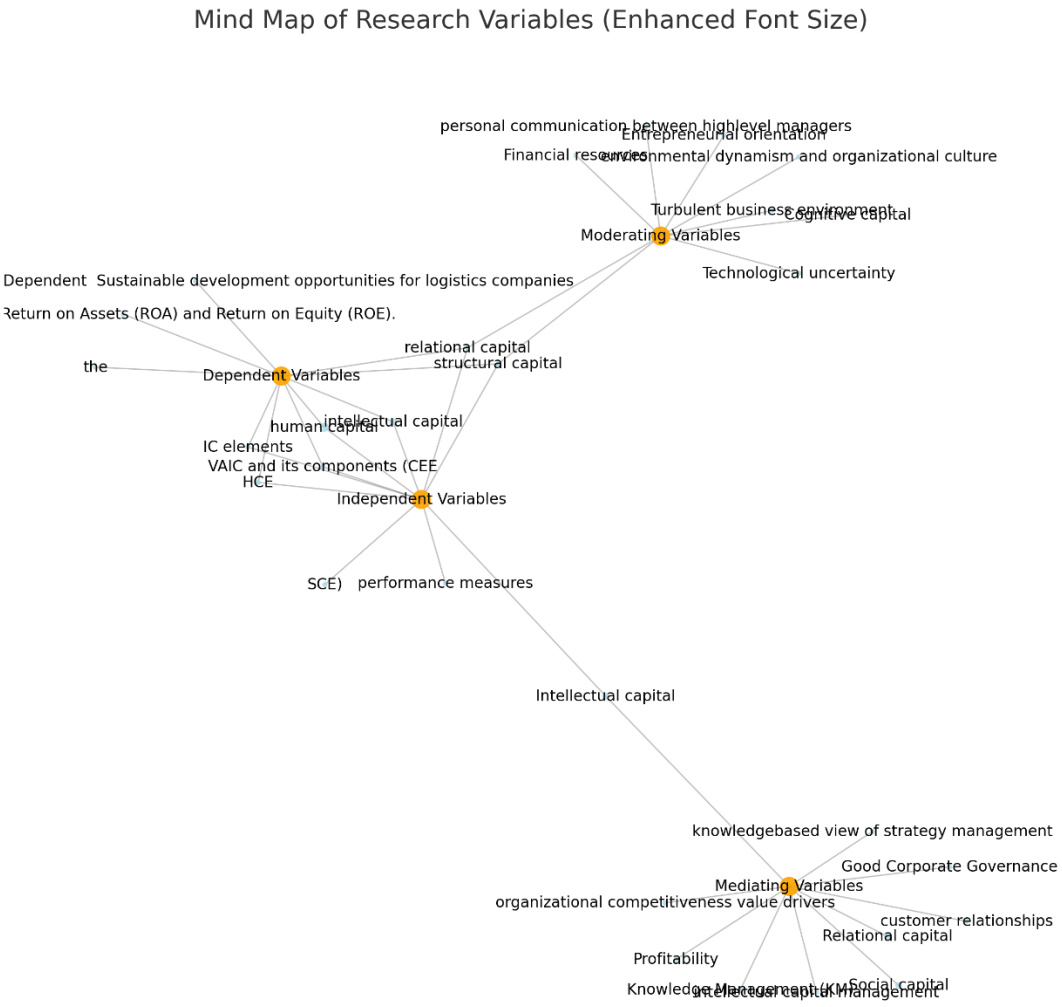


Figure 1: Supply Chain Resilience Literature Mind Map

The "People Factor," is social resilience, which includes Intellectual Capital, Knowledge Management and Culture/Leadership plays a role, in shaping an organizations resilience. This comprehensive review aims to examine these three elements explain how they interact with each other and explore their impact on the resilience of the supply chain. Profit is financial and capability resilience. The pursuit of profitability and gaining an edge remains a focus, for businesses across various industries. This literature review delves into the concept of the "profit factor" by exploring two dimensions; Financial Performance and Competitive Advantage. It is analysed that these dimensions using the VRIO (Value, Rarity, Imitability and Organization)

framework. By synthesizing insights from both contemporary authors we aim to shed light on the interplay between these dimensions and their implications for an organizations success. Product is operational resilience. In today's business world it is crucial for organizations to have resilience. This means being able to handle disruptions adapt to changing conditions and maintain operations. This literature review explores the factors that contribute to resilience including innovation, technological adoption, digital transformation, ethical considerations, value creation and total quality management. By examining existing research this review aims to provide insights, into these contributing factors and their implications for strengthening resilience. Planet is environmental resilience. In an era grappling with climate change, environmental degradation, and global disruptions, understanding the factors that contribute to resilience is paramount. This review delves into the Triple E model the E model (Economy, Environment and Equity), sustainability, customer trust theory, and other relevant frameworks to provide a comprehensive understanding of supply chain resilience.

Preliminary Studies

During this study interviews were conducted, with six individuals who work in last mile and supply chain startups. The purpose was to explore the challenges they encountered both during and after the COVID 19 pandemic. Through these discussions insights that provide a view of an industry facing immense pressure and going through rapid changes. Throughout the course of the last mile delivery services faced difficulties as highlighted by the participants responses. The crisis led to (1) customer expectations regarding delivery speed and affordability which put strain on the agility and capacity of supply chains. (2) Manpower issues became more critical due to health concerns resulting in increased absenteeism that hiring processes and affected employee motivation. Additionally, there was a surge in (3) e commerce demand that warehouses and delivery systems causing delays and shortages of resources. Many companies were caught unprepared for such a scale of events; they lacked (4) IT capabilities and encountered (5) transportation challenges due to permit restrictions and limited access to vehicles. As the world started recovering from the pandemic the industry experienced a decline in orders which led to a supply of workforce followed by downsizing efforts. This necessitated efficient resource management abilities along, with adaptability to meet market demands. It became clear that achieving a return, on marketing investments is important along with the challenges posed by fixed hiring practices in an unpredictable demand landscape. Additionally, the shift towards an e commerce focus represented a change from logistics models to embracing digital first operations, which brought both challenges and opportunities for innovation and growth. By combining the insights of the participants, with the data presented in the figures this story highlights an industry that has been greatly impacted by the pandemic. It requires adaptation and innovation to navigate the normal and prepare for a dynamic future market.

Product (Operational Resilience)	**Profit (Financial and Capability Factor)**	**Planet (Environmental Resilience)**	**People (Social Resilience)**
Enhancing IT capabilities to meet customer demand for features and seamless integration	Developing dynamic capabilities for better preparedness against unanticipated challenges	Optimizing routes and reverse logistics to improve transportation efficiency and reduce environmental impact	Improving customer support mechanisms to go beyond traditional chatbots for a better user experience
Investing in technology and big data for improved forecasting and operational resilience to handle demand surges	Promoting the development of financial strategies to navigate through fluctuating demand		Investing in employee knowledge and collaborative knowledge to maintain a motivated workforce

Improving tracking and communication systems to manage delivery delays	Tying marketing strategies to financial performance and competitive advantage		Advocating for better resource management and the potential for re-skilling or multi-skilling employees
Emphasizing the importance of technology and innovation in meeting evolving product demands	Re-evaluating resource utilization for cost efficiency		Emphasizing the social responsibility of companies to their employees during and after crises
Promoting adaptability in business models to stay up-to-date with the shift to e-commerce			Promoting flexible employment strategies to adapt to changing demand

Discussion and Conclusion

The results of this study emphasize that logistics firms can successfully navigate the rising intricacies of supply chains by employing the 4Ps framework; Profit, People, Product and Planet. Even though numerous contemporary supply chain models have become more complex, and technology driven, in nature the 4Ps framework continues to be very pertinent due to its simplicity and flexibility. It enables companies to concentrate on aspects of resilience without resorting to convoluted strategies rendering it a handy tool, for enterprises of all scales. The global supply chain vulnerabilities were laid bare during the COVID 19 crisis with a focus, on Malaysia struggles due to labour shortages and supply disruptions caused by lockdowns. Prioritizing profitability can help businesses secure stability. Empower them to invest in innovation while also getting ready, for potential future disruptions. It is crucial for companies to prioritize their workforce's adaptability to effectively manage hurdles. Businesses are supported by the product to stay efficient and innovative, in their operations; meanwhile Planet promotes sustainability by aiding companies in reducing their footprint and meeting the expectations of a society that prioritizes responsibility more and more. This study suggests that businesses can achieve resilience without relying on complicated frameworks all the time. The 4P framework continues to be an simple method, for establishing supply chains even in challenging situations such as the impact of global events like COVID 19.Its straightforward nature makes it especially beneficial for companies looking for practical and adaptable strategies that can adjust to changing conditions. In summary the 4 P framework—emphasizing Profit, People, Product and Planet offers an approach, for logistics firms to strengthen their resilience. While it may be perceived as a model, in some circles its flexibility and emphasis on business aspects keep it current and applicable, in today's context. The challenges brought about by the pandemic have highlighted the significance of these domains in safeguarding businesses from emergencies. Embracing this strategy enables companies not to endure but to flourish, encouraging creativity enhancing employee adaptability ensuring stability and progressing towards sustainable practices. The 4Ps framework provides a basis, for handling unpredictability and intricacies, in supply chains to guarantee both quick adaptability and sustained prosperity.

Theoretical Implications

The 4P framework challenges the assumption that supply chain resilience requires overly complex models. Although advanced frameworks like SCOR and the Triple-A Supply Chain models emphasize intricate processes, metrics, and technologies, the 4P model highlights that focusing on core business elements can be just as effective. Profit ensures financial stability, People emphasizes workforce and stakeholder adaptability, Product drives operational

efficiency and innovation, and Planet ensures a commitment to sustainability. In a theoretical sense, this model supports the idea that resilience stems not only from adopting cutting-edge technology but also from strengthening fundamental business practices. By balancing these four dimensions, logistics companies can maintain their competitive edge while effectively managing disruptions. This theoretical perspective underscores that supply chain resilience can be built through strategic, focused efforts on key areas, rather than through complex frameworks alone (Christopher & Peck, 2004).

Practical and Social Implications

From a practical standpoint, the 4P framework offers logistics companies a clear, actionable pathway to enhance resilience. Profit ensures companies have the financial health to invest in innovations and withstand economic pressures during disruptions. People focuses on cultivating an agile and adaptable workforce, critical for navigating unexpected changes. Product promotes operational efficiency and innovation, including the integration of modern technologies such as AI and blockchain to improve transparency and streamline processes. Finally, Planet ensures that firms remain aligned with sustainability goals, mitigating environmental risks and responding to growing consumer and regulatory demands for corporate responsibility. This whole approach also has significant social implications. By addressing not only financial and operational resilience but also environmental and social responsibility, logistics firms can contribute positively to their communities and the broader global market. The 4P framework helps firms build resilience while ensuring they meet the expectations of sustainability-conscious stakeholders and customers.

Limitations and Suggestions for Future Research

A key limitation of the 4P framework is its perception as an older model. As newer, more complex models like SCOR or the Triple-A Supply Chain frameworks have gained prominence, some have questioned whether the 4P model remains relevant in today's rapidly evolving supply chain landscape. However, this perception often overlooks the adaptability and enduring relevance of the 4P model. Its straightforward structure allows companies to integrate modern advancements such as AI and blockchain within the Product dimension, while evolving the Planet dimension to meet new sustainability standards. Despite the model's simplicity, it remains highly effective for firms of varying sizes and resources. Future research could explore how logistics companies can continue to evolve the 4P framework by integrating emerging digital technologies and addressing new global challenges, such as geopolitical risks. Additionally, empirical studies comparing the performance of firms using the 4P framework versus those using more complex models could provide further insights into its effectiveness in enhancing resilience. By focusing on Profit, People, Product, and Planet, logistics companies can continue to build resilience in a way that is both practical and sustainable. This framework offers a balanced approach to navigating disruptions, making it a valuable tool in today's dynamic global market.

References

Bhattacharjee, R. (2020, August 19). Special Report: Almost out of time. The Edge Malaysia. https://theedgemalaysia.com/article/special-report-almost-out-time

Birruntha, S. (2023, April 26). Malaysia ranks 26 in World Bank Logistics Performance Index 2023. NST Online. https://www.nst.com.my/business/2023/04/903110/malaysia-ranks-26-world-bank-logistics-performance-index-2023

Christopher, M., & Peck, H. (2004). Building the resilient supply chain. The International Journal of Logistics Management, 15(2), 1-13.

Doktoralina, C. M., & Apollo, A. (2019). The contribution of strategic management accounting in supply chain outcomes and logistic firm profitability. Uncertain Supply Chain Management. https://doi.org/10.5267/j.uscm.2018.10.010

Sherman, E. (2020). Coronavirus impact: 94% of the Fortune 1000 are seeing supply chain disruptions | Fortune. Fortune. https://fortune.com/2020/02/21/fortune-1000-coronavirus-china-supply-chain-impact/

International Labour Organization. (2020, May 26). Government, workers and employers discuss COVID-19 impact on Malaysian supply chains [News]. http://www.ilo.org/asia/media-centre/news/WCMS_746339/lang--en/index.htm

Ivanov, D., & Dolgui, A. (2020). Viability of intertwined supply networks: extending the supply chain resilience angles towards survivability. A position paper motivated by COVID-19 outbreak.

ISM, I. F. S. C. M. (2020, April 14). 75% of Companies See Supply Chain Disruptions Due to Coronavirus. Supply & Demand Chain Executive. https://www.sdcexec.com/transportation/press-release/21128379/institute-for-supply-management-ism-75-of-companies-see-supply-chain-disruptions-due-to-coronavirus

Khoo, D. (2020, February 18). Ports face Covid-19 stress | The Star. The Star. https://www.thestar.com.my/business/business-news/2020/02/18/ports-face-covid-19-stress

Kose, M. A., & Sugawara, N. (2020, June 15). Understanding the depth of the 2020 global recession in 5 charts [World Bank]. https://blogs.worldbank.org/opendata/understanding-depth-2020-global-recession-5-charts

Li, X., Zhao, X., Lee, H. L., & Voss, C. (2023). Building responsive and resilient supply chains: Lessons from the COVID-19 disruption. Journal of Operations Management, 69(3), 352–358. https://doi.org/10.1002/joom.1250

Lim, L. L. (2022). Key workers in Malaysia during the pandemic. ILO. https://doi.org/10.54394/SXSA4174

McKay, F. (2022). The Impact of the COVID-19 Supply Chain Disruption | Jabil. Jabil. https://www.jabil.com/blog/covid-19-supply-chain-impact.html

Menhat, M., Mohd Zaideen, I. M., Yusuf, Y., Salleh, N. H. M., Zamri, M. A., & Jeevan, J. (2021). The impact of Covid-19 pandemic: A review on maritime sectors in Malaysia. Ocean & Coastal Management, 209, 105638. https://doi.org/10.1016/j.ocecoaman.2021.105638

NST Business. (2023, February 9). Supply chain woes are costing Malaysia's economy RM8.7bil a year. NST Online. https://www.nst.com.my/business/2023/02/882096/supply-chain-woes-are-costing-malaysias-economy-rm87bil-year

Pires Ribeiro, J., & Barbosa-Povoa, A. (2018). Supply Chain Resilience: Definitions and quantitative modelling approaches – A literature review. Computers & Industrial Engineering, 115, 109–122. https://doi.org/10.1016/j.cie.2017.11.006

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

Ponis, S T., & Koronis, E. (2012). Supply chain resilience: definition of concept and its formative elements. Journal of Applied Business Research, https://doi.org/10.19030/JABR.V28I5.7234

Reuters. (2021, January 10). Malaysia's help needed to ease global chip shortage, Taiwan says | Reuters. Reuters. https://www.reuters.com/technology/taiwan-says-resolving-chip-shortages-needs-malaysias-help-2021-10-01/

Sherman, E. (2020). Coronavirus impact: 94% of the Fortune 1000 are seeing supply chain disruptions | Fortune. Fortune. https://fortune.com/2020/02/21/fortune-1000-coronavirus-china-supply-chain-impact/

Statista. (2023). Malaysia: COVID-19 impact on supply chain sector 2021. Statista. https://www.statista.com/statistics/1235332/malaysia-covid-19-impact-on-supply-chain-sector/

The Star. (2022, August 16). Mental health protection for the workforce. The Star. https://www.thestar.com.my/news/nation/2022/08/16/mental-health-protection-for-the-workforce

World Economic Forum. (2020, June 22). The ongoing impact of COVID-19 on global supply chains. World Economic Forum. https://www.weforum.org/agenda/2020/06/ongoing-impact-covid-19-global-supply-chains/