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‘Navigating Geopolitical Challenges: The Case For Supply Chain Reorganization’

¹Mr. Animesh Ramdas Bhavar , ² Mr. Pranav Mahendra Chemte

¹Student of SY BBA-IB, ²Student of SY BBA-IB

¹BBA-IB,

¹Sanjivani Arts, Commerce and Science College, Kopergaon, Maharashtra, India

Abstract— Given the disadvantages of global supply chain plans being controlled by a few countries, Global supply chains have been diversified to achieve regional goals. Countries that are Major sources of supply for some exports may “weaponize” their trade relations to Enhance their regional advancement. This brief article argues that while many measures Have been taken worldwide to combat such threats, efforts to improve supply chains Should be supported by financial support to reduce the costs associated with such re-Operations.

Index Terms— Supply chain reorganization, COVID-19 pandemic, Supply chain resilience, Just-in-time (JIT), Supply chain diversification, Technology in supply chains (AI, Blockchain, IoT), Structural ambidexterity, Supply chain agility, Nearshoring / friend-shoring, Resource allocation.

I. INTRODUCTION

All The reconstruction of the global supply chain during the COVID-19 pandemic is a matter of geopolitics, not the economic benefits promoted by the global economy. This is an unprecedented effort. International supply chain international trade develops according to the specific economic values of different countries, leading to different levels of supply chains. These benefits include being a supplier of raw materials, intermediate goods, space, and production and marketing capabilities. Manufacturers with unique strengths from different countries come together to make positive contributions to the economy, but geopolitical developments cause current demand to be disrupted. Economic efficiency alone is not the driving force of supply chains; geopolitical factors have become important factors in the organization of networks. This brief analysis attempts to assess the feasibility of geopolitically driven supply chain change efforts. It looks at the characteristics of supply chains before and after the spread of COVID-19 to understand how geopolitics are a key driver of networks. It examines the possibilities for supply chain finance consistent with the views of the field. The report believes that efforts by multilateral organizations, such as the Quadrilateral Security Dialogue, to reform supply chains will face challenges in meeting the needs of the region with business.

□ REVIEW OF LITERATURE

Given the disadvantages of global supply chain plans being controlled by a few countries, global supply chains have been diversified to achieve regional goals. Countries that are major sources of supply for some exports may “weaponize” their trade relations to enhance their regional advancement. This brief article argues that while many measures have been taken worldwide to combat such threats, efforts to improve supply chains should be supported by financial support to reduce the costs associated with such re-operations.

1.(Pratik Maheshwari, 07 Aug 2023)

Avoid COVID-19 is responsible for medical emergencies, and uncertainty in healthcare supply chain (HSC). The HSC is struggling against the massive disruption due to the pandemic; thus, this alarming trend reinforces the need for a resilient HSC and a unique dynamic, responsive plan. The pandemic has strained hospitals and quarantine centres, necessitating crisis management for resource allocation. Addressing HSC issues, we've meticulously analysed vehicle routing problems (VRP) and devised solutions. The proposed methodology is exploring the dynamic programming (DP) for resilient HSC. The study offers a single-vehicle routing strategy with simultaneous loading and unloading of items between the depot and N nodes (hospitals and quarantine centres) to alleviate the vulnerability of commodities and recovery of items. The implication of this work is to provide dynamics of special purpose vehicle (SPV) with two storage facilities, one dedicated to fresh healthcare products (depot to nodes) and the second dedicated to old/recyclable/disposable healthcare products (nodes to depot). Finally, utilising the DP and particle swarm optimisation introduces an innovative strategy that compares efficient routing and allocation decisions for resilient HSC. It offers practitioners guidance on optimal operational sequences, optimal cost, and computational times for SPV, enhancing HSC response capabilities during crises

2. (Ruel, 3 Jun 2022)

This article investigates the role of business continuity practices during the COVID-19 outbreak in raising financial performance and supply chain disaster readiness. To do so, 322 organisations in France were surveyed in Spring 2020 and collected data were analysed through structural equation modelling using Amos

23. The results support both organisational information processing (OIPT) and resource-based view (RBV) theories regarding business continuity practices in the current health crisis. Furthermore, the findings indicate that firms that improve their supply chain disaster readiness are better at enhancing their financial performance. Some unexpected aspects of the results are also discussed such as the lack of negative impact of COVID-19 outbreak on business continuity practices.

3. (Ahmet Çetindaş, 24 Jan 2023)

The aim of this paper is to analyse the effects of supply chain agility on firm performance and the role of demand stability in this relationship. Within the scope of the research, by establishing a SEM (structural equation modelling), effects of supply chain agility and demand stability on firm performance were investigated. In addition, the effect of supply chain agility on demand stability is also observed. Analyses have shown that during COVID-19 pandemic period, supply chain agility positively affects demand stability and firm performance. In addition, demand stability has positively affected firm performances. The mediating role of demand stability was analysed with the Process Macro method and its moderating effect was analysed with multiple regression. Analysis results showed that demand stability has a mediating role in the effect of supply chain agility on firm performance, but it doesn't have a moderating role.

4. (Bah, 30 May 2021)

The novel coronavirus pandemic (COVID-19) has massively disrupted supply chains at the global and local scales resulting in economic slowdown and social issues. To respond to these changes, supply chains need to quickly adapt to the new situation. This paper presents a review of literature that addresses supply chains under disruptions due to COVID-19 pandemic. Papers are classified based on issues addressed. The major findings or recommendations are discussed. These include the rising importance of safety, digitalisation, localisation, the need to revisit the meaning of efficiency, and the production and distribution of COVID-19 vaccine. We show that most mitigation actions proposed prior to COVID-19 such as redundancy and flexibility are still considered as possible strategies to mitigate supply chain disruptions due to COVID-19, but there are stronger pressures for digitalisation and supply-based localisation. The research agenda is also outlined at the end of the paper.

5. (Brenda de Farias Oliveira Cardoso, 11 Jan 2023)

Disasters can severely impact supply chains (SCs), including all stakeholders involved. This study aims to identify the impacts of major disasters on SCs and countermeasure strategies. Based on a systematic literature review, we analyse 160 documents to propose a taxonomy, research agenda, and framework. The taxonomy encompasses a list of impacts categorised into resource constraints, SC instability, outflow disruption, financial constraints, and consumption patterns. Strategies are divided into proactive (preventive SC collaboration, resources maintenance, digitalisation or automation, local SC, and human capabilities)

and reactive (responsive SC collaboration, resources maintenance, information system, virtual marketplaces, and business continuity plans). The research agenda provides opportunities for future research based on the literature analysis. Finally, the framework presents the study findings using an integrated and holistic approach. The study expands the theoretical view related to the impacts of disasters on SCs and highlights the need to implement strategies to ensure the functioning of SCs during disasters.

6. (Palit, 2022)

In this 2022 issue brief published by the Observer Research Foundation, Amitendu Palit discusses how the COVID-19 pandemic has shifted the restructuring of global supply chains from being driven solely by economic efficiency to being significantly influenced by geopolitical considerations. The brief examines the nature of supply chain disruptions before and after the pandemic, highlighting the increasing role of geopolitical factors in supply chain organization. Palit argues that efforts by multinational coalitions, such as the Quadrilateral Security Dialogue (Quad), to reorganize supply chains will face challenges in aligning geopolitical objectives with economic efficiency.

7. (Hamid Moradlou, Geopolitical Disruptions and Supply Chain Structural Ambidexterity, Aug 2023)

Published in the International Journal of Operations & Production Management in August 2024, this study investigates how multinational enterprises restructure their global supply chains to manage uncertainties caused by geopolitical disruptions, focusing on events like Brexit, the US-China trade war, and the COVID-19 pandemic. Through 29 expert interviews with senior supply chain executives across 14 multinational manufacturing firms, the authors identify that companies develop and deploy supply chain structural ambidexterity in three distinct ways: partitioning internal subunits, reconfiguring supplier networks, and creating parallel supply chains. The study contributes to organizational learning theory by explaining how ambidexterity extends beyond firm boundaries into supply chains to mitigate uncertainty and balance exploration and exploitation benefits.

8. (Shukla, 2024)

European Economic Letters in 2024, this paper examines how geopolitical factors, including trade wars, economic sanctions, regional conflicts, and international policies, significantly impact the stability, efficiency, and sustainability of global operations. Through the analysis of real-world cases and academic insights, the study highlights the need for adaptive strategies, robust risk management practices, and collaborative frameworks to sustain operations amidst geopolitical disruptions.

9. (Kancs)

Motivated by the recently experienced systemic shocks (the COVID-19 pandemic and the full-fledged Russia's war of aggression against Ukraine) - that have created new forms of uncertainties to our supplies - this paper explores the supply chain robustness under risk aversion and ambiguity aversion. We aim to understand the potential consequences of deeply uncertain systemic events on the supply chain resilience and how does the information precision affect individual agents' choices and the chain-level preparedness to aggregate shocks. Augmenting a parsimonious supply chain model with uncertainty, we analyse the relationship between the upstream sourcing decisions and the supply chain survival probability. Both risk-averse and ambiguity-averse individually optimising agents' upstream sourcing paths are efficient but can become vulnerable to aggregate shocks. In contrast, a chain-level coordination of downstream firm sourcing decisions can qualitatively improve the robustness of the entire supply chain compared to the individual decision-making baseline. Such a robust decision making ensures that in the presence of an aggregate shock - independently of its realization.

10. (y Lukasz Bednarski ORCID Icon, 1 Dec 2023)

This comprehensive literature review analyzes how geopolitical disruptions impact global supply chains and explores strategies for redesigning supply chains to minimize significant impacts on supply continuity and demand responsiveness. The review suggests solutions such as regionalizing supply chains by relocating manufacturing and storage facilities closer to end markets and moving away from just-in-time, lean supply chain management models in favor of maintaining higher levels of stock at different supply chain stages. The authors note that while these strategies can enhance resilience, they often come with increased costs and require substantial time to implement.

Methodology

OBJECTIVES.

1. **Identify key geopolitical challenges affecting supply chains:** Research and document specific geopolitical challenges, such as Brexit, the US-China trade war, or the COVID-19 pandemic.
2. **Examine the role of technology in supply chain reorganization:** Investigate how technologies like AI, blockchain, and IoT can facilitate supply chain reorganization and improve resilience.
3. **Evaluate the potential benefits and drawbacks of supply chain reorganization ;** Assess the potential advantages (e.g., reduced costs, improved agility) and disadvantages (e.g. increased complexity, higher costs) of reorganizing supply chains.

Research Design.

1. **Systematic Review :** A structured approach to analysing existing studies.

Types of Research .

1. **Applied Research :** - focus on providing practical solutions, recommendations, and actionable insights that can be implemented by organizations to mitigate geopolitical risks and reorganize their supply.

Finding.

Impact :

1. The earthquake of Fukushima 2011 was the first event to attract global companies in the weak places of the supply chain used by the semiconductor. Some chosen countries (in this case Thailand and Japan). Other natural disasters, such as hurricane in Sandy, and hunger in some African countries, have led to a wide range of obstacles to the supply chain. Indeed, global businesses identified natural disasters and extreme weather events as the most prominent risks to the uninterrupted functioning of supply chains. Political unrest and social conflict, such as the Arab Spring in West Asia, were other important factors that caused disruptions. Towards the end of the last decade, just before the onset of COVID-19 in January 2020, unscheduled IT disruptions were noted as major causes of supply chain breakages, along with adverse weather events, cyberattacks, data breaches and natural disasters.

2. While the pre-pandemic disruptions were sporadic and often localised in their impacts, the upheavals caused by COVID-19 were extensive. Indeed, these disruptions, which begun from the strict lockdowns introduced in China from early 2020 to curb the pandemic (particularly in the Wuhan province), affected many supply chains that relied extensively on that country for sourcing. Wuhan is one of the most important sourcing hubs in China, with over 900 Fortune 500 companies having supply links with the province. The impact of the shutdown in Wuhan was expectedly profound—supply shortages led to production cutbacks across various supply chains, acquiring wider proportions when the pandemic spread to Southeast Asia and the region introduced lockdowns that affected more sourcing

3. China was able to recover from the pandemic faster than other parts of the world, enabling a resumption of activities across several supply chains. However, it has since experienced subsequent periodic disruptions— such as the closure of the Ningbo-Zhoushan port, one of the busiest cargo ports in Asia-Pacific, in August 2021 due a COVID-19 outbreak among workers—that have caused serious disruptions in container and cargo movements. Further disruptions are expected from the renewed surge in cases in the mainland since March 2022.

4. A key aspect of the efforts to build resilience is to work towards diversifying sourcing by

reducing the dependence on a few key sourcing locations. The need to diversify has been strengthened by the urge to decouple supply chains from countries that are major sourcing hubs and may be inclined to exploit the advantage for geopolitical benefits. This distinct geopolitical feature of the ongoing multi-country effort to reorganise supply chains through sourcing-diversification strategies is a notable outcome of COVID-19.

Challenges.

❖ The Quad has seized the context of the pandemic to address global public health challenges through a vaccine partnership; Australia, India, Japan, and the US will leverage their respective economic strengths to make a billion doses of the COVID-19 vaccines by the end of 2022 for countries in the Indo-Pacific region. The US International Development Finance Corporation will finance increased capacity in India's Biological E for making vaccines; Japan will provide concessional loans to India to expand the manufacturing of COVID-19 vaccines for export; and Australia will financially contribute to providing vaccines and ensure logistics for their regional distribution. However, extending a similar partnership template to strategically sensitive supply chains, such as semiconductors and large batteries, might be challenging due to China's current influence over these networks as a major sourcing location and a significant final demand market.

❖ The steady growth prospects of the Chinese economy, notwithstanding the pandemic, ensures that lead firms in most hi-tech supply chains will continue to look at China as a major market for consumption, particularly in products like lithium-ion rechargeable batteries and consumer electronics. At the same time, the lead firms in these chains will also seek to stay geographically close to the Chinese market to ensure that 'just-in-time' supplies are not choked and inventories not exhausted, as it happened during COVID-19.

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Conclusion.

This look at has validated that the traditional model of globalized deliver chains, even as green during periods of balance, is sick-equipped to handle the escalating geopolitical challenges of the twenty first century. The evaluation of [mention key cases or data points from your research] exhibits the extensive expenses related to over-reliance on unmarried sources and geographically focused production. moreover, the exploration of [mention specific strategies discussed, e.g., nearshoring, friend- shoring, advanced manufacturing] highlights the capability for strategic reorganization to enhance resilience and decrease geopolitical exposure. shifting forward, corporations should adopt a holistic method, integrating risk evaluation, technological innovation, and collaborative partnerships to build sturdy and adaptable supply chains. policy makers, too, have a vital function in fostering a strong worldwide trade environment and supporting domestic production talents. The path to supply chain safety is not with out its demanding situations, however the opportunity—endured vulnerability—is absolutely untenable.

Reference

- [1] World Economic Forum, Building Resilience in Supply Chains, 2013.
- [2] Asian Development Bank, Asia-Pacific Trade Facilitation Report 2021, ADB, October 2021.
- [3] Steve Lohr, "Stress Test for the Global Supply Chain," New York Times, March 19, 2011.
- [4] Aekapol Chongvilaivan, "Thailand's 2011 flooding: Its impact on direct exports and global supply

chains,” Working Paper Series, Asia-Pacific Research and Training Network on Trade (ARTNeT), 113, May 2012

- [5] “Building Resilience in Supply Chains”
- [6] “Building Resilience in Supply Chains”
- [7] “Asia-Pacific Trade Facilitation Report 2021”
- [8] Elisabeth Braw, “Blindsided on the Supply Side,” Foreign Policy, March 4, 2020.
- [9] “Ningbo: Global supply fears as China partly shuts major port,” BBC, August 13, 2021.
- [10] “Asia-Pacific Trade Facilitation Report 2021”
- [11] International Finance Corporation, How Firms are Responding and Adapting During COVID-19 and Recovery, Washington DC, World Bank Group, March 2021.
- [12] ‘Apple results hit by supply chain woes, Cook says holiday quarter impact will be worse’, Channel NewsAsia, October 29, 2021.
- [13] Jamison M. Day, “Fostering emergent resilience: the complex adaptive supply network of disaster relief,” International Journal of Production Research 52(7): Pages 1970–1988, 2014
- [14] World Economic Forum, The Age of Economic Coercion: How Geo-politics is Disrupting Supply Chains, Financial Systems, Energy Markets, Trade and the Internet, 2016.
- [15] World Trade Organization, “Australia, Trade Profile,” WTO.

