

Adaption of Supply Chain Strategies Amid Covid-19

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Abstract:- This study aims to analyse various companies' measures to manage supply chain models to adapt to COVID-19 Lockdowns. The study also attempted to explore various challenges caused by the pandemic through an extensive Literature Review. This study uses a theoretical analysis and explanation of the existing literature. Journals, articles, journal proceedings, company reports were used as the secondary sources for the task. The study will give an insight into the various supply chain challenges faced by multiple organizations during the pandemic. The research also tried to explore the strategies adopted by various companies' supply chains to cope with the pandemic. The localization strategy of the supply chain was one of the companies' main methods as it provides a competitive advantage. Digitalization of traditional supply chain models can help in building a resilient and agile supply chain network. Other significant options to manage supply chain operations during the pandemic include managing demand volatility, integration, and diversification, investing in online distribution channels.

Keywords:- Supply Chain, COVID-19 Pandemic, Adaption, Strategies.

I. INTRODUCTION

The global supply chain got disrupted due to the spread of the pandemic COVID-19. This is due to the demand uncertainties. Various challenges are faced due to the pandemic. Provision for providing medical supplies like masks, gloves, and other checking and testing equipment [1]. Another major challenge is meeting the customers' needs for food and other essential items due to restrictions on the materials during the pandemic [2]. The disruption in the flow of raw materials and other materials from China to other parts of the world and vice versa is another major challenge. According to [3], Wuhan is considered a worldwide constellation of the automotive, optical, electronics, and biomedical equipment industries. Many supply chains that require Wuhan's materials were disrupted due to the restriction of movement amid pandemics. The difficulty is managing the global supply chain while the operation in some major supply chain areas stops.

Another major example can be taken from the US and European cases where the pandemic has caused the restriction of movement of resources, resulting in the delay of materials and shortage. There is found to be an increase in the demand for products used for epidemic control. Similarly, it was difficult to predict the pattern consumption

pattern of the public during the pandemic. Specific firms face a severe challenge to restart the supply chain after these disruptions.

Many firms have found that the challenges can be overcome by working closely with the government and other significant sectors to overcome the pandemic. Sectors like logistics, retail, manufacturing, e-commerce, food, and healthcare have a significant role. Some sectors demonstrated a better capability to cope up with the crisis than others.

II. IMPACT OF THE PANDEMIC-COVID 19 ON SUPPLY CHAIN

According to [4], there is a change in countries' policies to prevent the pandemic's spread, like a restriction to travel. These quarantine regulations significantly affected the supply chain's disruption, thereby disrupting various business operations and declining revenue for firms. China's slowdown had a significant impact globally as the exports from China have dropped significantly [6],[5]. European Union, US, Japan, Taiwan, and Vietnam are the most affected economies. For example, European Union is a global cluster for machinery, automotive, and chemicals, the US for machinery and other precision equipment, South Korea, Taiwan, and Vietnam for communication equipment.

Various other impacts like absenteeism, labor shortages, business curfew were also identified [7]. The availability of white and blue-collar labours is severely limited, and strict quarantines in the manufacturing hubs are found [8]. When it comes to the demand patterns, there is a decrease in the spending pattern, especially in luxury goods [9]. Piling up of essential items or panic buying is found during the spread of COVID-19, especially in crucial items [10];[12];[11];[7];[13]. A massive increase in online shopping can be found in this regard. Consumers are attracted to e-commerce rather than retail options. According to research findings, six key threshold levels related to consumer behavior are identified that are tied around the spread of COVID-19 [14].

Many Meso-level impacts on the supply chain can be found. The impact depends on the limit to which the region depends on the exports, especially from the affected regions, and the amount of inventory available with you as a buffer in case of disruptions [10]. The shipping and reception of goods is a significant problem [7]. The firms experience many supply chain challenges to get raw materials [10]. The firms with more China exposure take more time delay of 30,60,90 days [4].

The lead times of china-sourced materials have double for many businesses in the US[6];[15]. The primary reason for this is reducing the movement options via air and ocean even though they have enough orders. Moreover, the increase in the cost of supplies is another major due to the pandemic. There will be an increase in the cost of supplies available from china due to the staff's additional freight charges and overtime [16]. Price gouging can also be there, especially from the side of both suppliers and sellers, and panic buying is the major reason behind this.

Force majeure declaration is another major impact on the supply chain due to the pandemic. Force majeure declaration includes certain clauses which allow parties to delay or even terminate the contract performance. This can be done by the firms dealing with china as the suppliers there will confront some legal defenses like this for non-performance. Some third-party sellers on amazon have experienced price gouging, especially from Chinese suppliers who have returned to work[17]. Third-party sellers have also raised prices for health-related products on amazon [13]. To upstream supply shocks, production sectors' operation can be labour intensive[10]. Some manufacturers in china were operating at a capacity of 50% with 56% normal staff, which caused delays and stoppages in production [6].

Due to the lockdown and other cutbacks because of the pandemic, the cargo via ocean /air was also affected. The rate up of truck being used to supply groceries and other consumer package goods have increased. The shut down due to pandemic has also increased the price volatility[18].

III. BUILDING RESILIENCE IN SUPPLY CHAIN

Four principles are required to design a resilient supply chain[19]. This is known as ECAC, which includes Engineering, Collaboration, Agility, and culture.

A. Engineering

Supply chain engineering includes mapping the supply chain structure, covering first and second-tier suppliers, distribution channels, and consumers. This is important as it helps in identifying the bottleneck that will obstruct the production flow, capacity, and visuality. The strategies in procurement also play a role in the design of a resilient supply chain. This is because the organization's capability to cope up with the variability, both internal and external, as well as the ability to implement contingency plans can be identified from the decision they are taking related to sourcing (single or multiple) as well as sourcing (local or global). The concerned procurement managers must assess the suppliers' risk management as they must identify and select the existing and database in the future.

There will be non-existence in the trade-off between efficiency and redundancy, and to deal with the changes in the supply chain, there is a need for some slack. To eliminate keeping surplus points of inventory in the supply chain, a compatible strategy called decoupling end can be used.

Including merge-in transit, practices can increase the supply chain's flexibility without the additional cost of inventory.

B. Collaboration

Adaptability and flexibility are the main aspects of a resilient supply chain. Information sharing is considered the best way to increase visibility and reduce the risks of supply chain risks. A common understanding can be formed through collaboration as a clear understanding can make the relationship more meaningful. PEST outputs can be shared, and the assessment of risk regarding demand, supply, and process between the supply chain members tends to create a community perspective.

C. Agility in supply chain

Visibility and velocity are the two sections in this principle. Monitoring the flow of materials and information across the supply chain to confirm the procurement and order will be met is known as visibility. To achieve a shared view of the process, planning and forecasting are needed. The portal software can be used for examining the real-time data. This can also be used to share the required resources with the suppliers, distributors, and retailers to enable monitoring and collaboration to identify issues and adjust planning. The end-to-end time taken for the production and delivery of products and services is known as velocity. The activities or processes can be identified using value stream mapping, which will help to reduce or eliminate to improve the material flow. Sensors, barcodes, Internet of things are some digital technologies that can make visibility and velocity of the supply chain to be enabled.

D. Risk Management culture of Supply chain

The routine part of an organization should include risk assessment management. This will help to anticipate and to react to any disruptions. Risk assessment teams will always help in this criterion. Information related to past events will help in this. The collection and recording of data can be done using Big data analytics and blockchain. A disciplined attitude towards assessing risk, common purpose between the team members, and efficient flow of materials and information is required to build resilience in the supply chain.

IV. METHODOLOGY

This paper used secondary data as the source of data and is based on the existing literature on the impact of COVID 19 on the Supply chain and various strategies adopted by the companies to cope with the pandemic. A careful analysis of different research papers on this area is done. Journals, articles, journal proceedings, company reports were used as the secondary sources for the study.

V. DISCUSSIONS

Many companies started adopting an Operating model based on digital strategy. According to Steve Hasker, the CEO of Thomson Reuters, Supply chain risk is now seen as the second most significant threat to business growth. Even

before Covid-19, this potential threat was in the spotlight due to increasing volatility, be it trade tensions or extreme climate-driven events. Transformation of the traditional model of the supply chain was the primary option for many organizations. The use of new supply chain technologies, which is the Digital supply chain network (DSN) is helpful that will improve the visibility and can aid agile and resilient supply chain where traditional "overhead" will not be there[20]. The design of Digital Supply chain networks was made in such a way that they can forecast any interruptions or upcoming troubles and can mitigate the impacts by reconfiguring themselves appropriately. This can save various companies from the second wave of the pandemic[23].

According to the KPMG CEO Outlook report published in 2020, a customer-centric supply chain was one of the top evaluated options by various organizational CEOs. According to the report, many organizations initially focused on managing the uncertainty caused by the pandemic and tried to concentrate on issues related to continuing the operations. But many CEOs found various challenges primarily associated with investing in automation and other technologies and agility building in the supplier and partner networks. Different companies have adopted the strategy of Localizing the supply chain by bringing the manufacturing in-house or ever closer. Localizing the supply chain operations provides a competitive advantage. Firstly the suppliers in the local boundary can speed up the business process as this will help the companies to develop a supply chain network that is more adaptable. Secondly, as nowadays customers focus more on the product origin and environmental factors, localizing the production can help the organization attract customers to buy their products. An Oxford business group article, the US companies' trend to realign the supply chain to the home countries like Mexico. Similarly, Asian companies like Honda and Samsung have also expanded their supplier sources beyond china [21].

Managing demand volatility is another option that some companies like Tesco have focused on [28]. Tesco participated in Feed the Nation, which is a plan to control the demand by working with the suppliers, thus creating a good image in customers' minds. Suppliers can be linked to the business's customer demand, allowing complete visibility to the trusted suppliers.

Vertical integration was done throughout the value chain among certain big companies to grab autonomy over various aspects like costs, quality, and input supplies[24].

Unreliable demands were found for both essential and non-essential items due to different reopening strategies by various countries. This was a great challenge for the organization to forecast the changes in the customer purchasing patterns. Bauer started manufacturing face shields and fabric face masks instead of hockey equipment amid the pandemic[25]. This diversification has helped the company to make use of its plants instead of closing it. Unilever changed their production prioritization production

from low demanded skincare products to surface cleaners and other hygiene products [26].

Similarly, some companies started investing in the online distribution channel. As most customers began working from home, it is easier to find out the opportunities to virtually reach the customers. So, the companies began expanding the online space or home delivery services [27]

VI. CONCLUSION AND FUTURE DIRECTIONS

This paper discussed the actions taken by various organizations in managing their supply chain during the pandemic. It was found that the initial focus of many organizations was to address the uncertainty caused by the supply chain and to cope up with the current operations. Localization of the supply chain, managing demand volatility, integration, and diversification, investing in online distribution channels are considered the significant options to manage the supply chain operations during the pandemic. There is a scope for future research to be done on the strategies to adapt to the supply chain based explicitly on a particular country/sector. It would also be interesting to analyze the effectiveness of various organizations' supply chain management strategies to cope with the pandemic.

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