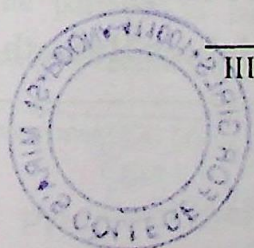


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26. Challenges and Opportunities in Supply Chain Management Post Covid- 19

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Abstract

The main aim of supply chain is control cost and create time and place utility of the goods produced. The global coronavirus pandemic has a direct impact on this primary objective and customer demand due to Covid-19 related transportation restrictions. In this difficult times, the organisation should be prepared to face the challenges and focus on solutions and business continuity. The current situation has led to delay in receiving orders, lack in fulfilling consumer demands, increased prices of products, reduction in manufacturing staff, production delays, etc. If business initiatives are not taken at right time, it may lead to the risk of damaging the long term relationship with the customers. Some of the measures to overcome current challenges are leverage digital technologies, modularize production, prioritizing products, act as responsible retailers, supplier flexibility, diversify supply chain, etc. Supply chain in future will become more local which will lead to domestic manufacturing, increase in warehousing space across networks, reduced touch-points of products in the entire supply chain, automated handling systems, sanitization protocols, increased insurance costs, drone delivery, etc. This paper is an attempt to focus on the challenges and opportunities in Supply chain management post Covid-19 with special reference to National transactions.

Keywords-Supply Chain Management strategy, digital technologies, business initiatives, demand volatility, manufacturing firms

Introduction

During the initial days of Covid-19 Pandemic, the National Supply chain had come to a halt around the world as companies and government were trying to fulfil the necessities to people. Supply chain is the process that involves all the stages in getting products from raw material to the customer. The partners in supply chain includes supplier, manufacturer, transporter, warehouses, wholesalers, retailers and customers.



With passage of time, the technology has advanced and has led to increased automation and digitization of Supply Chain. This has also made the integration of different activities of Supply Chain, such as Material Management, Physical distribution, Logistics operations, Information and Communication technology, etc.

After the evolution of the concept of Supply chain in 1960, we have seen revolutionary changes in this field. Initially Supply chain and Logistics were two different activities, but with the introduction of globalization and advancement in information technology, integration of activities in the chain of supplies has become possible.

Growing automation and digitalization in the field of supply chain has led to efficient physical distribution, inventory management and logistic activities. Supply Chain Management assists business organization to achieve its objectives and compete in the dynamic market.

Today, the scenario of supply chain has changed due to shorter business cycles, educated and knowledgeable customer base, evolution of big data etc. leading to increased competitions between supply chain of different companies. Objective of SCM:

- To channelize all inbound and outbound activities across and within organizations
- To provide value addition to customers
- Collaborative relationships or partnership between supply chain partners
- Integrated management and control of information
- Fulfil demand efficiently
- Improve responsiveness
- Contribute to financial success

Supply Chain Management Logistics enables coordination and movement of resources across destination. It widely covers purchasing, storage and delivery of raw materials, Warehousing, shipping, transporting goods to distributors. Hence, efficient logistics are essential to business profits and customer satisfaction.

The global coronavirus pandemic has negatively impacted the common social spaces like shopping malls, multiplexes, markets and restaurants and hotels. It has a direct impact on the primary objectives of daily commodities and customer demand due to transportation restrictions. Many organisations are facing challenges to manage the supply chain and moreover there are many brands which are heavily dependent on footfalls and physical sales. Despite these

they must be prepared to manage the present crisis, focus on alternate solutions to ensure business continuity.

Literature Review

Guruprasad.T.S, Sundara Natarajan. P, Dr. N.Panchanathan – 2016, ISSN - 2249-555X). The researchers have highlighted the issues and challenges of Supply Chain Management in India. It pointed out that supply chain should focus on smooth flow of goods, reduced carbon footprints and reduced logistics costs. Some challenges faced by companies are balancing short term and long term needs, service high growth, reduced delivery cost, demand volatility, etc. The paper suggested that business strategy should be aligned with supply chain strategy and to incorporate the power of Information Technology.

Anu Sharma, Pankaj Gupta and Rishabh Jha- 2020. This paper focuses on disruptions in the logistics supply chain due to imposition of the strict lockdowns due to COVID-19. The paper suggested that, the government should try to introduce policies to reducing the dependencies on imports from other countries and focus on promoting Indian markets, which in turn will solve unemployment and increase the GDP. It gives insights on the challenges, solutions and recommendations to strengthen the logistics supply chain management in developing countries like India by promoting lean supply chain strategies, diverse supply chains and multiple sources for key commodities to reduce interdependence, local supply chains, etc.

Amallesh Sharma, Anirban Adhikary, Sourav Bikash Borahc, in their paper offered strategic insights in terms of major issues faced by firms in supply chain managements. The study was based on twitter data from NASDAQ 100 firms to study the challenges faced by different firms in implementing sustainable supply chain. The paper recommends firms to adopt forward-looking approach, integrate advanced technologies such as AI and deep learning-based tools in the supply chain decision framework, collaborate with multiple stakeholders, etc.

Christopher W. Craighead, David J. Ketchen Jr, Jessica L. Darby – 2020, Decision Sciences Volume 51 Number 4. The study used many theories to develop a knowledge about the effect of pandemics on supply chains and its responses. The study concluded that the company should prepare themselves for the next pandemic and focus on new inventions.

Amelie Meyer, Wiebke Walter and Stefan Seuring – 2021 did a study on impact of coronavirus pandemic on supply chain through text mining such as newspapers, articles, open sources. The study focused on the topics such as risk, resilience, disruption and sustainability.

The study concluded that the major issues discussed by newspapers were regarding food, disruptions, people & health issues, etc. Most of the study gave importance to sustainable supply chain.

Changes in Supply Chain after Covid-19 Pandemic

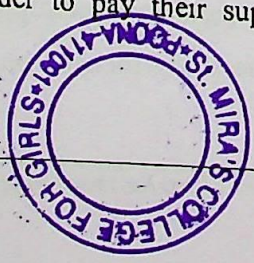
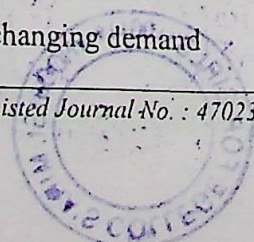
Shopping brands moving from physical transaction to online transactions have brought about a paradigm shifts in the whole supply chain cycle. There is increase in online buying pattern of consumers as it is a safer option while maintain social distancing norms.

To fulfil the online market demand Store footfall brands introduced

- Provision to handle online orders
- Deliver from stores-to-end customers or delivery from producer to consumer
- Faster delivery
- Introduction of Supply chain based on Artificial Intelligence
- Integrating with Third Party Logistics to eliminate dependencies and surpass mediators.
- Increased investment on online advertisements and online sales to increase online demand of products
- Diversified vendor and supplier base to reduce dependencies on specific vendors and suppliers
- Localization of supply chains (To avoid interstate transportation)

Brands in markets are exploring new methodologies or alternate solutions. Some of the key changes that are brought in the process

- Diversified supply chain i.e. instead of relying on one source of supply, other avenues will be looked at. This will facilitate switching to alternative providers when regular suppliers face disruption.
- Decentralized manufacturing (eg. Many companies are looking to bring production home)
- Digitization of the paperwork
- Injecting liquidity into supply chain
- Technology driven supply chain financing model
- Banks to offer favourable credit to organizations in order to pay their suppliers (Government backed loans)
- Custom-made supply chain as per changing demand



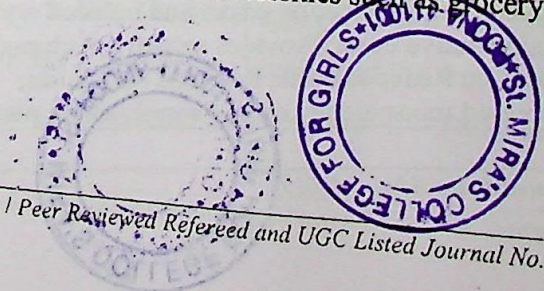
- Dynamic planning to handle frequent variations
- Integrating rural supply chains
- Collaborating with local retailers to provide faster and fresh deliveries
- Exploring alternative distribution centres
- Disintermediating warehouses by direct deliveries to customers
- segmented and customer-centric supply chain
- Transformation to an agile supply chain
- Sustainable supply chain

Market are either inclined or adopting technologies making their supply chain operations efficient. Digitalization revolution bringing new ways to deal various operations and challenges in industry sectors. There are few mentioned technologies below that are really bringing significant changes.

Challenges in Supply Chain

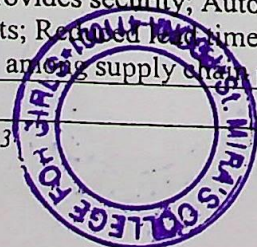
Over 75% of the companies had to suffer during Covid-19 pandemic due to supply chain disruptions due to shifting customer demand, transport restriction, shortages, etc.

- localization of supply chain / Maintaining Traditional Inventory Strategies
- Transition towards more sustainable supply chain
- Demand supply challenges during the coronavirus pandemic due to lack of visibility across supply chain to understand over stock and out of stock of essential and non-essential items.
- Technological challenges during the coronavirus pandemic / Digital transformation
- Building a resilient supply chain
- Look for alternate source of supply (local suppliers)
- Prepare for Plant closures, increased absenteeism
- Evaluation of alternative inbound and outbound logistics partners
- Short term demand and supply synchronization
- Reinforce screening protocols
- Increased demand for necessities such as grocery items, drug stores etc.



Benefits and Opportunities of Technology advancement in Supply Chain during Covid-19
Technology Meaning Components

Technology	Meaning	Components
IOT (Internet of Things)	digitization in manufacturing and logistics, Exchange of data online	Warehouse Management System using RFID, Bar code readers, GPS sensors, hence protects the health of employees and customers
		Fleet Management to optimize routes based on warehouse locations, control speed of vehicles, etc.
		Inventory management to control inventory cost and wastage
		Remote employee collaboration and workforce tracking to enforce physical distancing measures
Augmented Reality	Digital interaction through computer generated elements; Provides real-time object recognition, barcode reading, indoor navigation and seamless integration of information	Error free and cost effective movement of goods and services
		Prevents unnecessary physical interaction during the COVID-19 crisis for both commercial and residential repairs, service calls and training
		Eg. Robots and POS devices helps in cashless payments, record inventory levels, re-stock shelves, and receive shipments.
		Remote Collaboration of supply chain partners such as suppliers, manufacturers, distributors and wholesalers.
		Warehouse planning, identification of Traffic congestion to detect the obstacles that lie ahead of them, Freight loading and parcel loading and drop-off, value added services by third party logistics, etc.
Blockchain	Transparent and accurate end-to-end tracking in the supply chain; digitization of decentralized immutable record of all transactions; blocks any kind of tampering without altering the subsequent blocks	distributed ledger technology which adds a layer of additional security over and above a manual system
		Lowers the chances of errors within the chain; Products in the supply chain can be readily traced and origin could be verified
		Collaboration with Internet of Things can help in use of temperature sensors during transportation on Covid-19 vaccine. (Helped to monitor the rollout of Covid-19 vaccines).
		Reduced communication errors and reduced administrative costs; Provides security; Automation of contracts; Reduced costs; Reduced lead times; Increased transparency among supply chain partners



		and Controlling cost and inventory
Cloud Computing	Allows to share and process huge amount data in a secure way; unrestricted access to technologies	Uniform accessibility of data; reduces time and cost to develop new applications; reduce supply chain carbon footprints; improves resource efficiency; reduces the cost of maintaining IT infrastructure
Data analytics	Ability to make data-driven decisions; helps to understand future scenarios and predict future risks	Prominent role in planning and execution in Healthcare sector; developing strategic partnership with suppliers based on distance, time, cost and lead time during crisis
		Used as a tool to accurately forecast and then position supply to respond to a rapidly spreading disease; just-in-time and dynamic planning of inventory
		Used What-if analysis with machine language for accurate and timely decision support to prevent supply chain disruptions and financial losses; improvement of warehouse productivity, optimize routes, delivery planning, performance management, and optimal utilization of logistical resources
Elastic Logistics	Conducting business that is flexible depending upon the demands of market and hence the supply chain operations are based on real time predictions on the basis of market.	Handle supply chain during fluctuations in demand (specifically during Covid-19 times); more flexible and responsive supply chain and hence can manage to stabilize the business performance; fast on demand delivery services by adopting elastic logistics to optimize transportation fleet.

Steps taken by Indian Government and Companies

Accenture centralized company data and created a digital twin capability which helped them in better modelling and scenario planning, visibility into short-term demand changes, mid-term forecasting to judge the recovery curve and optimized portfolio agility, allowing for substitution and simplification.

Railway introduces luggage pick, drop service (Times of India, Business News, 22nd Oct., 2020): The northern railway zone has introduced demand luggage pick and drop service through an app called BOW (Baggage on the Wheels). In this, the user can book for pick-up of luggage from his / her house, hotel or any other place which will be dropped at the confirmed berth of the passenger in a train. The service will be <https://www.railways.gov.in> also. <https://www.railways.gov.in>



timesofindia.indiatimes.com/business/india-/railway-introduces-on-demand-luggage-pick-drop-service/articleshow/78809369.cms

Indian Government has launched AarogyaPath portal for healthcare supply chain to provide integrated public platform that provides a single-point availability of key healthcare goods which helps to customers in tackling a number of routine issues such as such as limited access to suppliers, time-consuming processes to identify good quality products, dependence on limited suppliers, etc.

Conclusion

This pandemic has proved to be one of the toughest stress test for most companies. Hence, we can conclude that the companies should learn from the current pandemic that supply chain in future should not only think of supply chain as a cost centre but should try to inculcate the following qualities in supply chain

1. Relevant (Quick response as per market changes, demand planning, B2B and B2C tailored experience, use of Data analytics for decision making)
2. Future ready supply chain operations i.e. more transparent and predictable supply chain
3. Sustainable, secure and responsive supply chain.
5. Use of latest technologies and maintain an optimal balance between people and technology.(eg. Cloud infrastructure, artificial intelligence, augmented reality, robotics, etc.)
6. Introduction and more use of Autonomous Vehicles to move goods and services without human intervention. Eg. Moving goods from warehouse to store or vice versa, meals from restaurants to customers, etc.
7. Resilient i.e. quick response towards demand and supply shocks to safeguard the participants in supply chain.
8. Responsible towards its stakeholders by keeping the system very transparent and secure

Hence, it is very early to give an insight into the opportunities and challenges of supply chain during and after Covid-19 pandemic. A more detailed research could b possible after the pandemic is completely over by taking into consideration the financial data for different companies.



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