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## Abstract

Covid-19 has exposed the risks of complex, dispersed and disconnected supply chains. Many businesses have realized they need to reach a state of greater visibility and agility across their supply chain, both internal and external, with an increased move to near shoring and indeed on shoring. This crisis has forced practical, agile thinking, giving the courage to test, fail fast and try again. Decision-making and digital transformations that would have taken months or years are being done in a matter of weeks. The main objective of the research paper is to study the initiative taken by companies to make their end-to-end Supply Chain resilient, agile and robust. This paper also throws the light on the new age technologies that are evident for new-normal supply chain management.

**Keywords:** New-normal supply chain management, Agile Supply Chain, Robust supply chain, Resilient supply chain, Supply chain visibility, Bull-whip effect.

## Introduction

In December 2019, first case of COVID-19 was found in the Wuhan city of China, which subsequently outspread across the world by the end of March 2020. Countries across the globe announced full or partial lock down to control the outbreak of covid-19, which resulted in bullwhip effect in supply chain due to the sharp rise or fall in demand.(Hoek, May, 2020)

The two main objectives of any corporate in the current scenario are:

- Managing the cash flow during this pandemic  
Surviving in this lockdown with sharp downturn in demand (up to 20% to 50%) is challenging tasks; this downturn has affected cash flow, which is most important chunk of the operating capital.
- Designing the Supply Chain for the new normal

As we look ahead, there is no one size fits all model and firms will have to work closely with their manufacturing, logistics, distribution, marketing and sales to define their future supply chain.(Sarkis, Dec, 2020)

On the advice of the World Health Organization, Government announced unanticipated lock down, lead spike in demand; it was very challenging for the outbound supply chain as consumers were buying the available products without considering the brand. This forced retail distribution to increase the speed of replenishment, to satisfy the customer demand.(Cordon, 2020). On the other hand, scenario was opposite in the Inbound supply chain, organizations were trying their best to cover up their inventory for longer lead-time. There was short supply due to sudden lock down

announced by government authority. Organizations were looking for alternative resources. Most of the industries are focusing on protecting the businesses until the pandemic gets over, by acquiring their supplies either through local or global sourcing to sustain their business activities. (Sarkis, Dec, 2020)

As the pandemic progressed, and lockdown imposed, companies found it difficult to process orders, and suddenly short lead time products required long lead time. In current situation, the firms that are in close connection to their suppliers managed to get their requirements fulfilled, this is how the vendor management played key role in this crisis. (Umesh Gaur, Oct, 2020). The key impact of the pandemic on the supply chain planning was to apply different strategies for the forward and backend / backward supply chains, while in the normal condition, the forward and backend / backward supply chains were working in congruence. (Edward Barriball, 2020)

In case of purchasing, the pandemic began around Chinese New Year in January 2020. Since most Chinese firms were closed for the Chinese New Year, companies had built up their inventory. (Hoek, May, 2020) However, instead of resuming operations after New Year vacation, the Chinese firms went into a lockdown, putting pressure on supplies. Therefore, companies immediately started looking for alternate suppliers in other parts of the globe. This did put a pressure on the alternate suppliers; they had their constraints in expanding production to meet the new demand. In addition, raw material prices started rising, putting pressure on gross margin. As the pandemic progressed, and lockdown imposed, companies found it difficult to process orders, and suddenly short lead time products required long lead time. (Umesh Gaur, Oct, 2020)

Most of the Supply Chain players were not integrated which resulted in lack of visibility. Due to this, companies were unaware of the challenges faced by nodes-up or nodes-down in the supply chain, which increased the Sourcing risk. Especially in the Pharma sector, significant share of the active pharmaceutical ingredients is provided by China. Therefore, even if companies shift their manufacturing to any other location, it will be of no use as the source of majority of the key active ingredients is still China. (Manu Sharma, Aug, 2020)

## Objectives of the Study

- Impact of sudden lockdown on the supply chain of manufacturing and distribution organizations in India
- Initiative taken by organizations to make their end-to-end Supply Chain resilient, agile and robust
- The new age technologies that are evident for new-normal supply chain management.

## Research Methodology

- All the data is gathered from Secondary Sources such as various Research paper in the field, Peer-reviewed journals, specialized magazines online news websites, blogs and information encyclopedias.
- At the end of the study, analysis will be done and suggestions will be stated regarding creating resilient, agile and robust Supply Chain

## Results and Analysis

In the current scenario external factors play very important role in demand forecasting and planning, therefore demand planners have to re-evaluate their existing model and inculcate these external factors.(Hoek, May, 2020)

At the distribution level, companies are facing lot of variation in demand; there is increase in demand for one set of products and decline in demand for others.(Edward Barriball, 2020) To reduce the complexity in demand, company could not rely on an algorithm as this is the first time the world is seeing such a large scale disruption, and only way to balance this situation is to identify the trends through close conversation with the suppliers, and understand the risks in their supplies.(Cecere, 2020)

To understand the complex situation supply chain managers relied on information from distributors and wholesalers and estimated what needs to be done.(Umesh Gaur, Oct,2020) The only positive aspect of this situation is, due to fall in demand of some products, inventory in hand was sufficient cover a longer period than during normal times. In the case of short shelf life products like food and beverages, it seems to be adequate stock available; but companies may suddenly find themselves facing supply shortage, as the expiry date of inventory approaches. Here companies would face both supply shortages and dead stock.(Cordon, 2020)

Supply chain professionals need to develop long term vision of the situation, they must be well aware of the demand pattern in next 6-12 months down the line. Supply chain managers should be worried about what is going to hit them 6 months down the line. Clearly supply chain challenges are set to increase.(Manu Sharma, Aug, 2020)

## Resilience of Supply Chains

The supply chain robustness can be defined in two parts; the first is how the companies are able to respond to the customer's changing needs, whether it is B2B or B2C perspective in current scenario.

The second is – what should the companies do to prepare for an uncertain future. These decisions are not just supply chain decisions, but the strategic one. While taking supply chain decisions managers should consider the impacts on the cash flow. The supply chain managers need to discuss their on-the-ground perspective with the marketing and sales teams; at the same time, they should engage tier 3 or 4 entities down the supply chain, to understand their challenges. Supply chain professionals cannot rely on established statistical model; they have to get down to the task of really understanding their supply chain.

## The impact on demand planning and the planning process

Jack Ma once famously said, “I feel like a man sitting on a blind tiger.” The current situation is pretty much the same. The demands are unpredictable, products which were treated as secondary – like sanitizers, mask, exercise equipment are sold out very quickly. Many companies' are underperforming during pandemic as their forecasting tools were unable to anticipate the current

scenario. The tools were configured for a normal market condition, and were not suitable for the current situation.

Initiative by Organizations during the Pandemic: - With the pandemic disturbing and disrupting the SC, many organizations have taken various initiatives to improve it, and bring it back on track. Using various literatures this paper has listed the initiatives.

1. Majority of the offices are in Metro cities like Kolkata, Bengaluru, and Mumbai, but due to the pandemic companies are considering the options of work from home or working once a week from office. Due to this people are moving towards non metro cities considering it as low income cities. Also, many organizations are looking forward to move their offices to non-metro offices.
2. For fulfilling the desired positions in organizations, companies are recruiting people from anywhere in the world. Hence, location is not a constrain for job since people will work from home. This has also attracted exceptionally talented people.
3. With lower travelling and more time saved, organizations are giving more growth options in terms of training and development.
4. The pandemic has made organizations believe that having one or multiple specialization of the same product is not enough. Hence, many companies are now opting for multiple variations in the product line. Manufacturing and selling of hand sanitizers by a liquor company, making masks for all occasions by fashion industry and manufacturing medical equipment like ventilators by an auto company are some of the initiatives.

## Conclusion

Current scenario very well brings up the fact that companies cannot control the demand; therefore to cope up the ever changing demand pattern, they have to build the flexible supply chain and production system. To infuse the agility in supply chain, scalable solution combined with automation is the key. While going after agility, firms should also consider the cost, as no organization wants their operational expenses to go up. The human capability plays a very important role here.

For accurate planning, precise forecasting is must and for precise forecasting, the use of big data and machine learning is must. Further, firms cannot rely on available metrics – particularly for planning. Undoubtedly, it is time to move to the new metric – net promoter score – to measure the effectiveness of the supply chain to meet customer expectations.

This is the era, where data is available in abundance right from the point of sale to the consumer buying behavior. Data driven decision-making has enabled the demand planner to take accurate decision. Tools like artificial intelligence and machine learning are aiding decision-making process through extracting valuable information out of big data. Going forward, Supply chain transformation will play key role in enhancing the business performance.

In the new normal the consumers are divided in two different groups—

- The price sensitive consumer who is not particular about brands: if he is getting the product at a lower price, he will go for it.
- The second type of consumer is cash rich, but is delivery sensitive – more worried about how quickly he can get the product.

The pandemic has highly impacted the consumer buying behavior. Prior to pandemic the practice of offline shopping has now moved online. The share of e-commerce is increasing significantly. This is posing additional challenges to the supply chain management.

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