

COVID-19

Managing supply chain risk and disruption

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Executive Summary

This report summarizes the impact of Covid-19 on Global Supply Chain. It deals with the analyses of various issues in the Supply Chain such as Early Manufacturing Halt, Difficult retrieval of Manufacturing, Strategic changes, Future action plans and Tools for better Supply Chain. It gives an overview of how complex supply chain problem arises and what measures can be taken to avoid it. It also deals methods to deal with such conditions if such things happen in future. It also gives insights on new tools and technologies that can be used for improving the efficiency of Supply Chain.

1.0 Introduction

Covid-19 being one of the deadliest pandemic's world has ever seen. It has not only taken a toll on many lives of people but also caused an enormous damage to the Global Supply chain and also impacted the financial sector of the same. To understand the impending impact of Covid-19 on Global Supply chain it is important to appreciate how deeply the entangled the global economy is. After the globalization, supply chain saw its transformation to a different level. Integrating it with modern technology if data mining and predictive analysis, it has made it more efficient and more reliable able to cross boundaries all over the world. The subsequent sections of this report show how Covid-19 has affected the supply chain and preventive measure to avoid it in future.

2.0 Analysis

As the report shows various aspects regarding supply chain which covers halt of manufacturing, supply disruption, strategic decisions for supply chain. Each of these issues will be detailed and analyzed below.

2.1 Early Manufacturing Halt

The Covid-19 pandemic caused shutdown of various industries in China leading to enormous disruption in the supply chain. United States being a major manufacturing powerhouse in many sectors still face a shortage of essential items such as ventilators, masks etc. The probable explanation can be given as, unlike older days when a single manufacturer would manufacture all or most of the subassemblies and components it needs to make a finished product are probably gone. With the world expanding its boundaries every second, companies also tend to expand its boundaries. Due to the realization that it is impossible to possess all the skills that are necessary in just one place, people specializing in one domain and subcontractors were their major attraction. Stating an example of a simple desk lamp, each component has different suppliers and that suppliers having their own suppliers. Also specialists are also able to exploit scale economies both in production and design, making it harder for firms who might wish to become self-sufficient to perform those tasks economically. This results in a large supply chain network with scattered suppliers around the globe. This complexity adds itself a dependency for manufacturers dependent on first-tier suppliers, which, in turn, are dependent on a second tier, which are themselves

dependent on a third tier, and so on. Further visibility of third and fourth tiers is difficult making supply chain network more complex.

With the outbreak, the suppliers would may have to shutdown the production in turn having a serious impact on the supply lead times. For most companies, the inventory coverage they have will allow them to match their supplies with demand, with no additional supply, for between two to five weeks, depending on the company's supply chain strategy. Shipping to US from china usually takes about 30 days. This implies, that if suppliers from china stopped manufacturing prior to mid-January, the last of their shipments will arrive in around mid-last week of February. All this suggests that there will be a temporary closure of assembly and manufacturing facilities staring in mid-March or at the end of February. The prevalent reason being complex supply chain for this closure, other factors also contribute in doing the equal harm. Even though many US firms having the capacity to put products in the production, but since taking a product into manufacturing has increasingly turned into one of sourcing from offshore producers. In an emergency when companies need to scale up production the skills are hard to find. Also since offshore supplier have moved so effectively down the cost curve that it made it difficult for a potentially superior new supplier in the US to let alone raise the capital for a new production facility.

2.2 – Difficult retrieval of Manufacturing

Covid-19 has caused enormous disruption in the global Supply chain. With the suppliers unable to manufacture products it has put enormous pressure on the overall demand pattern. Even though many US firms having the capacity to put products in the production, but since taking a product into manufacturing has increasingly turned into one of sourcing from offshore producers. In an emergency when companies need to scale up production the skills are hard to find. Also since offshore supplier have moved so effectively down the cost curve that it made it difficult for a potentially superior new supplier in the US to let alone raise the capital for a new production facility.

Reviewing the example of Apple, which has majority of the parts supplier from China has took a major hit in the peak season of launching their new series of phones. Since the manufacturing units operated by Foxconn are being shut it creates a very sleek chance of launching new series of phone in coming September 2020. The probable reason for sourcing majority components to one place is due to the favorable economic conditions that nation offers. Asia being one of the biggest manufacturing hubs Apple procures the parts in relatively cheap rates. Also all the components required for manufacturing are already available in China with low worker cost adding to it makes them to draw all the attention for being a potent supplier.

Even after knowing all conditions an attempt to manufacture the Apple in US would cost double the present rate. Since all the parts required should be procured from the China. Secondly it is difficult to find such specialist worker which specializes in a particular item. Even if a robot replacement is suggested it would cost millions for the setup with significant amount of time to setup. Hence effective planning can be done in order to distribute the suppliers across the globe with some being situated locally ensuring reduced but at least working condition of the firm.

2.3 – Strategic changes

Covid-19 being a black swan event affecting thousands of people world, disruption in the global supply chain with heavy economic losses to linger for coming months. Although with this huge impact seeing a positive aspect of this pandemic as it has heightened our awareness of fragility of supply chain network. Hence every shipper, carrier and Supply chain related personnel could see that there could be a significant paradigm shift for future sourcing and inventory management. Below listed are the strategic changes that can be incorporated in these times to avoid further damage:

1. *Track down employees:* Employees being on the front line of any operation in the industry are the ones mostly affected after the pandemic. Tracking down of all employees and providing them with housing, foodstuffs, and cash advances for employees and their families would help preserve this critical resource.
2. *Digital Push:* When one connected enterprise is available for planning, sourcing, design production and logistics retailers can thorough asses the problems to ease the problem. Also after the manufacturing capacity returns, delay of critical production decisions by postponement tactics can be done by retailers. Adding further, a digital Supply chain platform will help retailers manage raw materials for quick deployment to right factories. Also such platform will allow to create diversifying sourcing strategies with features such as vendor onboarding and management will let companies handle multiple sourcing locations.
3. *Mapping:* Mapping your suppliers several tiers back will help for effective management of resources in such pandemics. Mapping gives you visibility of your supply chain hence making company more agile and resilient to the natural calamities.
4. *Localizing more manufacturing and Transportation:* This design will allow the company to source products locally rather than offshores. This will allow to spread the risk equally, but unlike offshore suppliers with low scale of economies with low transportation cost.
5. *Implement global supply chain command center:* The goal here is to actively seek real-time information and feed it into an agile response planning and execution process. This approach will companies to thrive in time of such crisis.

2.4 – Future action plan

Covid-19 being labelled as the black swan event due to its immense implication globally on people as well as on the global supply chain. But the best response later would be being well prepared if another pandemic hits again. One of the major steps taken should be effective supply chain mapping. Although mapping can be intense and difficult, but the value of the map is greater than the cost and time to develop it. Various tools provided by service companies can help acquire and analyze supply network data and organize the results in a user-friendly way. The goal of this activity should be going down as many tiers possible since there may be hidden critical suppliers, the firm is not aware of.

Secondly people from different work domain such as procurement, logistics, and supply-chain financing need to come for collaborative action plan needed to be fix the gaps and to protect the company from disruptive events in the future with a combine goal of aligning procurement with the overall business objectives. Also firms can incorporate disruption related metrics in their evaluation of the suppliers. Additional strategic changes are also being listed in the 2.3 of the analysis sections, which can help us better tackle future pandemics with a more resilient supply chain.

2.5 – Tools for better Supply chain

Block chain is a data structure that holds transactional records while ensuring security, transparency, and decentralization. Blockchain application in Supply chain area greatly improves supply chain by enabling faster and more cost-efficient delivery of products, improving product traceability, better coordination between partners, and aiding access to financial sector of the co-operation. Also unlike cryptocurrency where an unlimited number of anonymous parties to transact privately with one another without a central administrator control, in supply chain it will allow limited number of known parties to transact in order to protect their business operations.

Implementing blockchain in Supply chain field will result in complete visibility and transparency, maintain necessary Compliance, provide flexibility, allow better Stakeholders management. The tool used for the same would be TraceChain which is developed by Deloitte. TraceChain is a blockchain-based supply chain solution, enables the tracking and tracing of finished goods and materials, providing users with a high level of trust that the data they view and store on the chain is correct and has not been altered by an unauthorized party. It functions by creating digital identities for all physical goods involved in the supply chain as well as for the various components involved in the Supply chain such as suppliers, manufacturers, distributors etc. The nature of the tool allows to record the complete transaction history from their origin point to the point of sale. Blockchain will also provide the function of Audibility, wherein it provides full details of data trail and having a full proof lists of all transactions over the Supply chain.

Furthermore additional feature it provides is of Immutability. In this feature all the transactions across the supply chain are timestamped and are non-editable. Hence no tampering with the data can be done hence avoiding counterfeit products. This feature allows the firm to maintain its own design and regulatory standards with identifying the part in which tampering is done. Thus it provides a single source of data integrity over the Supply chain.

Another promising feature that can be highlighted is Smart Contracts function. This function allows real time tracking of data using smart contracts. This would allow for a platform for online marketplace which can be used for selling, reselling and buying raw materials. A pictorial representation of how smart contracts works is given fig 1.1. This can allow OEM's to create a purchase request as per their requirements. Suppliers could then submit their bids including any other condition details. OEM's then could automatically select the supplier which meet the requirement or choose manually.

Although having many advantages to solve complex problems in supply chain, it also has its own conditions and restrictions. If these restrictions are met it could lead to an effective and smooth running of the supply chain with greater efficiency. The concerns and solution for those are as follows:

- Data ownership –
 1. Concern: Competitors might be able to view all the supply chain sourcing details.
 2. Solution: Only trusted parties would be allowed to be entered in the blockchain ensuring total data privacy.
- 2. Supply chain security –
 1. Concern: Using the distributed ledger system puts it under the cyber-attack risk.
 2. Solution: Even though blockchain allows data confidentiality a robust cyber defense system would avoid the cyber-attack.
- 3. Transaction volume –
 1. Concern: Competitors might be able to view how much volume is moving
 2. Solution: The contents of the tracking items can be encrypted.

Smart contracts in action

Using smart contracts to create a shared marketplace

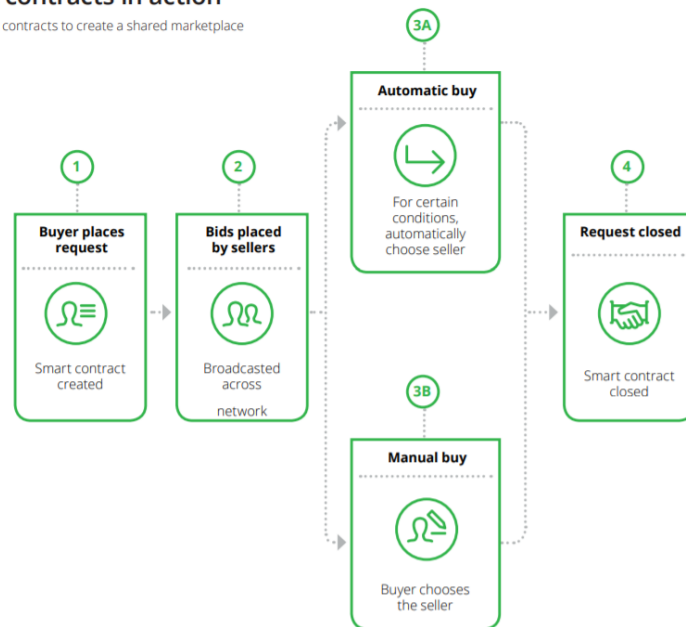


Fig 1.1

3.0 Recommendations and Conclusion

Based on the analysis above, the report clearly shows the present condition of the existing Supply chain. It also shows the effect pandemic has caused on every different aspect of supply chain. It also represents the measure needed to be taken in order to avoid future disruptions and the tools and technologies which can be used to do so.

In conclusion, the effective planning resources and strategic decision combined with modern tools and technologies will help us be in better position than today. Hence implementation of those can help us build a more strong and resilient Supply chain.