



IMPACT OF COVID-19 ON THE SUPPLY CHAIN MANAGEMENT IN THE LOGISTICS INDUSTRY IN INDIA

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Abstract: Novel Coronavirus (COVID-19) Pandemic, a newly discovered virus that has spread to approximately 188 countries leading to high mortality rate and decreased Gross Domestic Product. The virus has affected the economy badly across the globe that we all are facing economy crisis all the more the virus has disrupted the supply chains, international trade, travel, tourism, Logistics etc. After the 1918's Spanish flu pandemic which was considered to be the deadliest in the history we now see Coronavirus (COVID-19) pandemic which is astonishingly spreading at a greater speed. In this paper we shall talk about the impact of COVID-19 on the supply chain management in the logistics industry in India with a close focus on Supply chains along with Logistics also looking at the roadmap to recovery for the same.

Index Terms: Pandemic, Economy, Supply Chain Management, Logistics Industry.

I. INTRODUCTION:

At present the world is battling to fight the war against Coronavirus. Novel Coronavirus also known as COVID-19 was initially originated from the major transportation hub of China, the city, Wuhan. The first case was noted in December 2019 since then the spread of this new virus has been rapid and has affected numerous lives across the globe. After the global spread of the virus almost all the countries-imposed country wide lockdown where in which the sea ports and Air ports had also taken a back seat and went on to be in a rest mode for the duration allotted by the government of each country. Not only the travelling and tourism was affected by this but also the import and export of goods was affected as China is the major distributor of the raw materials therefore manufacturing activities also got affected across the globe due to imposition of lockdowns in almost all the countries. India being a developing country got adversely affected as its economy crippled the manufacturing activities were disturbed majorly and most importantly the supply chains got disrupted along with disturbance in the logistics industry. India imposed lockdown where in essential activities were allowed to operate or function after every interval. We now have entered the unlock 1 phase in which everything has been opened except the schools, colleges, educational institutions, health clubs, cinemas etc. Talking about the supply chain management and how it has affected the logistics Industry we know that supply chain management is directly related to logistics they both go hand in hand and this can be understood by the following flow chart:

RAW MATERIALS → SUPPLIER → MANUFACTURING → DISTRIBUTION
 → RETAIL LOCATION → CUSTOMER/CONSUMER

Now for a company to produce goods it has to follow a certain path that is the supply chain management and it can only fulfil the criterion if the company has the required raw materials to produce a particular good and make it accessible to all the consumers. During the lockdown period the companies were unable to produce goods as raw materials weren't made available to them as china as we talked before is the greatest raw material distributor and all the export and imports were shut therefore there was no international trade happening between the countries. Meanwhile the daily labourer's, helper, drivers, workers etc went back to their homes in respective villages fearing cash crunch because of

no work. Hence there were no trucks or conveyance that could possibly supply or transport the goods from one place to another which caused massive disturbance in the logistics industry. The study depicts the impact that the Novel Coronavirus has had on both the supply chains and the logistics industry in India. Further critically analysing the topic by bringing out sub-heads such as Barriers, After Effects, Roadmap to Recovery etc.

1.1 OBJECTIVES:

1. To understand the impact of coronavirus on the supply chain management in the logistics industry also the disturbance in the logistics industry alone.
2. To understand the roadmap to recovery for the supply chains and logistics industry.

II. RESEARCH METHODOLOGY:

It is a descriptive study in which secondary data is collected from various journals, papers which helped to comprehend the concept of Impact of COVID-19 on the supply chain management in the logistics industry in India. Researcher conducted the study to identify the factors impacting the supply chain management in the logistics industry. Both the terms Supply chain and Logistics cannot exist without one another and hence we see the downfall of the supply chain and logistics together.

2.1 IMPACT ON THE SUPPLY CHAIN:

The impact of novel coronavirus pandemic has been visible to the entire world as there is no export and import of goods happening between the countries which has altogether affected the manufacturing worldwide. However further we will be discussing about the three areas that have been affected by the outbreak of COVID-19 which has resulted in the disruption of Supply chain management. These are discussed as below:

1. **Workforce:** The government-imposed lockdowns where in the people were advised to stay at home to limit the spread of Coronavirus. Hence the less workforce. Also, there might be a case where an industry depends upon another industry for goods but the transportation was not possible because there was hardly any workforce to help out with the transportation for the same. Therefore, the industries are having less work force and are unable to meet the consumer demands.
2. **Products:** Due to less workforce there has been poor production of the products as the industry could not meet the desires of the consumers and due to less availability of the products the consumers have shifted onto new company's products. Therefore, we can say that there has been loss of market value for the popular products but gain in the value of the unpopular products.
3. **Cost:** Industries are now trying to meet their financial motives or objectives therefore there has been increase in the cost of products due to increase in the shipping charges of the products.

We know that supply chain is completely dependent on workforce or manpower and that supply chain is the backbone of logistics. Non availability of the workforce has unfortunately brought the entire supply chain to a halt. There is pending work in the factories, warehouses companies etc because of lockdown there is no one to deliver or pick up the goods and deliver at all ends alongside which has also affected the smooth functioning of the trade.

Further listed are the impact on the logistics industry that tell us what the logistic industry is going through in such trying times.

2.2 IMPACT ON LOGISTICS INDUSTRY:

1. 50% of the organised sector and unorganized sector long haul trucking fleet of India is apparently without the workforce there are no drivers reason being that they have gone back to their homes.
2. The Local short haul transport is working but with reduced capacities.
3. Essential items that are being carried by the trucks are stuck as there is no labour to help out with loading and unloading of the essential items. The logistics now team also believes the movement of trucks or letting the trucks pass helps only if they are unloaded, and can return for loading it again.

4. Dependence on Railways would not suffice as it would only cause a larger gap as first mile and last mile might be a great challenge with Railways.

2.3 AFTER EFFECTS:

The after effects that we might get to see in the unlock 1 phase would,

1. Definitely be the burden that will grow many folds as soon as the companies resume to their works as the new work or orders would be added to the pending work or orders which will add to further stress in the logistic network in the unlock phase.
2. Mass hiring of the delivery personnel on urgent basis will be the need of the hour.
3. Higher manpower will be required to deal with the impending storm and to deal with the challenges efficiently.
4. The companies might have to overwork to meet the desires and demands of the consumers as soon as they start functioning.
5. The finite resources and the limited infrastructure might not favour the increase in production that would be needed to compensate the slowdown. Further this may also lead to exhaustion of resources leading to no revenue and losses as companies would also have to deal with the hike in costs and prices of logistics mainly in terms of lower valued goods
6. Disturbances will tend to persist in the supply chain management maybe not as massive as of the lockdown period. The disturbances were visible even before India underwent Lockdown as china had imposed lockdown way before any other country. Taking example of M2M Cybernetics Private Limited they were facing supply chain disruption even before India underwent lockdown as their raw materials are bought from china so companies who had been buying raw materials from China were already facing disruption in the Supply Chain Management.

III. LITERATURE REVIEW:

1. “Effect of COVID-19 on the Indian Economy and Supply Chain” (Shruti Agrawal, Anbesh Jamwal, Sumit Gupta): The paper talks about the effect of COVID-19 on Indian Economy and the supply chains. It tells us about the peak of Novel Coronavirus that has affected and forced thousands of industries to shut down their operations completely because their supply chains were badly affected and hence, they could not run their operations effectively and efficiently. The paper also mentions a few barriers that affect the supply chains in India. (Shruti Agrawal, 9 May 2020)
2. “The Coronavirus and the great Influenza Pandemic: Lessons from the “Spanish Flu” for the Coronavirus’s potential effects on mortality and economic activity” (Robert J. Barro José F. Ursúa Joanna Weng) : This paper talks about the Mortality and economic contraction at the time of Great Influenza Pandemic of 1918-1920 that provided plausible upper bounds for outcomes under the coronavirus (COVID-19). The data given in this paper is for about 48 countries and its mortality rate in the year 1918-1920 is given of about 40 million, 2.1% of the world population implies 150 million deaths when applied to current population. The paper also talks about the economic declines for GDP and consumption. Evidences that higher mortality rates realized real returns on stock especially on short-term government bills. (Weng, March 2020, Revised April 2020)
3. “Trends and applications of resilience analytics in supply chain modelling” (Maureen S. Golan · Laura H. Jernegan · Igor Linkov): This paper talks about the supply chain resilience and study that focuses on resilience modelling that further connects to logistics that is transportation, command and control. It has been concluded in the paper that for network resilience there should be a comprehensive approach towards the supply chain in the context of other networks has to be addressed for the emerging field of challenges. The specific discussion has been done on the connection to systematic threats which includes pandemics etc. (Igor Linkov, 2020)
4. “The Global Macroeconomic Impacts of COVID-19: Seven Scenarios” (Warwick J. McKibbin, Roshen Fernando) : This paper tells us about 7 different ways by which Novel Coronavirus might evolve in future using

modelling technique given by Lee and McKibbin which has been further continued and extended by McKibbin and Sidorenko. In order to better understand the economic outcomes the paper tells us that even in short run the outbreak could impact the global economy. The scenarios given in this paper also tell how the scale of costs can be prevented by high investment in the public health systems in all economies but particularly and specifically in less developed countries and economies where health sector is comparatively less developed and the population is high. (Warwick J. McKibbin, 2020)

5. “Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy” (Nuno Fernandes) : This paper talks about the economic impact of the COVID-19 and the Gross Domestic Product of several countries. It also tells us about the global economic estimate cost of Novel Coronavirus and growth of Gross Domestic Product of different countries. The paper also shows the economic effects of outbreak are currently being underestimated, due to over-reliance on historical comparisons with SARS, or the 2008/2009 financial crisis. (Fernandes, 2020)

IV. DATA ANALYSIS:

India being a developing country has had adverse effects on the supply chain due to outbreak of Novel coronavirus. It is also known that the Supply Chains are influenced and affected by barriers, as we know countries have banned on their imports and exports which in turn have shown its effect on the firms across the globe. Talking about India in particular there are about 18 barriers that have been noted which have caused massive disruption of Supply Chains in the Logistics Industry:

Table 1:

1. Unavailability of Imported Goods	8. Slow movement of goods	12. Lack of Labour
2. Ban on overseas Transportation	9. Decline in consumption of high value food commodities	13. Lack of Transportation
3. Bottleneck in last mile delivery	10. Increased shortage of Perishables	14. Lack of availability of Local Transport
4. Perception of scarcity among masses	11. E-Pass issues	15. Lack of raw materials for Production
5. Pressure from Local Laws enforcement		16. Lack of Buyers
6. Shortage of livestock feed and their availability		17. Lack of Cash Flow
7. Slow credit flow from banks and non banking financial companies		18. Lack of awareness in People regarding Covid19 (affect the chicken and egg demands)

[source: (shruti agrawal1, 9 may 2020)]

All these barriers have immensely influenced the supply chain that it has been estimated that the global supply chain market that recorded to be worth \$14.5 Billion in 2018 and which was growing at a Compound Annual Growth Rate of 10.5% was supposed to reach \$24 Billion by the year 2024. But now will drastically fall down reaching the desired or predicted targeted figures that will get deferred by the couple of years. Not only this, the deceleration of the movement of the goods amongst the nations are causing considerable gaps between the demand and supply.

The impact of the pandemic on the logistic industry can be seen with a sharp fall in availability of mode of shipments due to restrictions on production of non-essential goods. When the goods are not been produced there's no way that they can be transported. The logistics industry is stuck with huge EMIs to be paid or deferred payment of EMI with delayed period interest with income declined deeply. Many non-essential goods were at halt and loaded trucks were in middle of the trips as the borders were sealed.

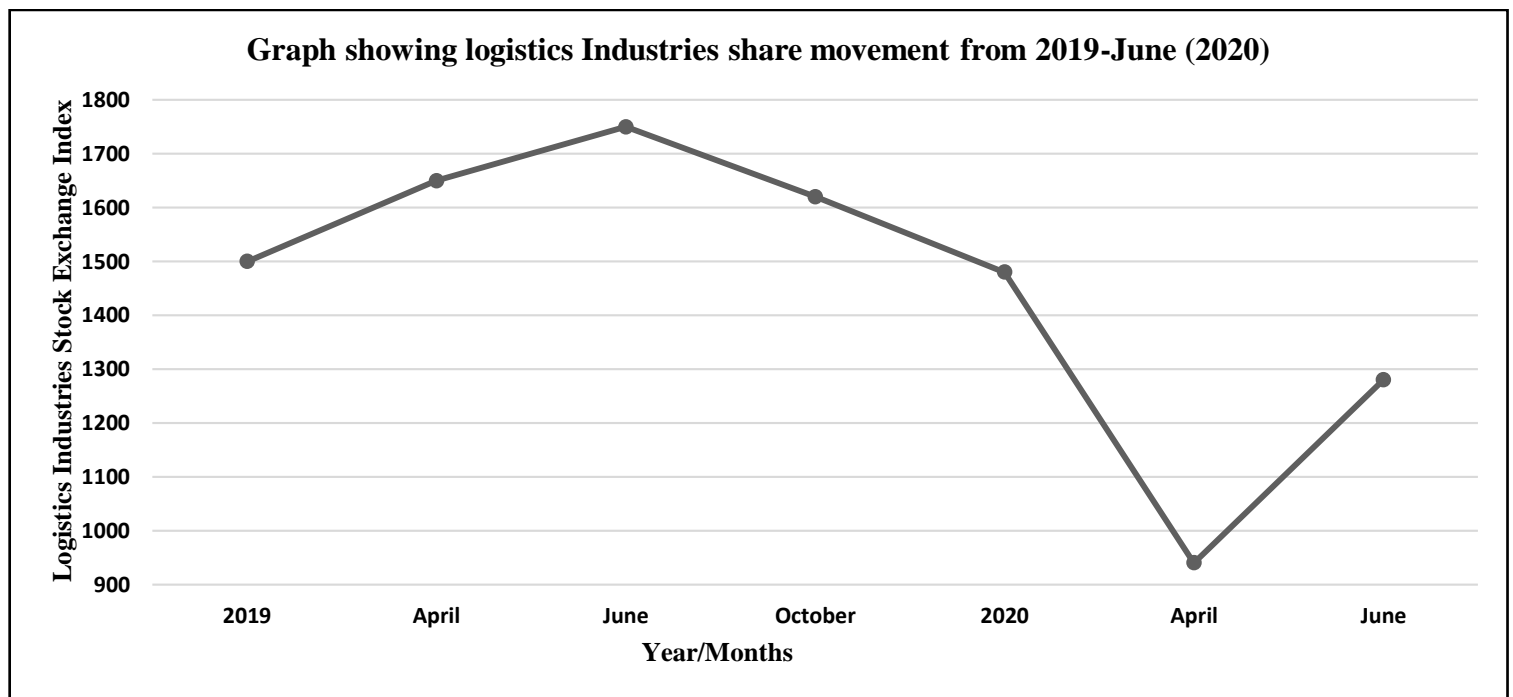
The Financials of logistic companies for quarter ended 31st Dec 2019 and 31st March 2020 are compared in the table below:

Table 2:

Particulars	Amount Rs in Crores					
	Mahindra Logistics Ltd			Blue Dart Express Ltd		
	Mar-20	Dec-19	Decline	Mar-20	Dec-19	Decline
Sales	747.09	858.01	12.93%	724.13	855.64	15.37%
Profit (Loss) before Tax	13.19	21.45	38.51%	-33.33	24.34	236.94%

Keeping in mind the above table and the barriers the logistics companies have also faced a drastic fall in their stocks in the stock markets which is represented as under:

Figure 1:



[source: (pti, the economic times, 2020)]

Table 3:

Year/Months	2019	April	June	October	2020	April	June
Logistics Industries Stock Exchange Index	1500	1650	1750	1620	1480	940	1280

(NOTE: The graph presented above represents data when the country was under lockdown VS when the country implemented the unlock 1 phase.)

The rise and fall in the stock market of a company depends on various conditions one of which could be the conditions in a company's industry we know that the outbreak of Covid-19 has left the logistics industry disarray. The downfall in this graph can be seen in the months from April-June, April seeing the lowest site as the government had ordered for a complete lockdown and so there were no activities taking place in the entire country but we also see the rising scenario towards June that is because after every interval as stated before essential services had been allowed to function. However, this was just a small piece of information for the downfall and rise scenario in the graph, the other factors that led to the downfall due to which the logistics industry was getting crippled and Supply chains were having a hard time are discussed as under:

1. **Manpower:** The logistics industry in India is excessively dependent on Manpower, Manpower that is semi-skilled, skilled and unskilled. Due to lockdown there has been massive shortage of manpower which has slowed down the operational activities and simultaneously has made an increase in the cost of the wages of the manpower as well.

2. **Transportation:** The Logistics company's major component is transportation which is highly both in organized sector and unorganised sector in the country. Due to slowdown in demand crime related incidents have increased, the loads have reduced, there also has been inability of the industry/companies to cover the operational expenses which also includes the fuel costs. Such a situation has resulted in increasing of costs and uncertainty in the transport sector.
3. **Warehousing:** The state of warehousing is such that the capacities are either choked or are completely empty. The ones that are empty are not ready to refill their warehouses as it is a task for them to complete the agreement. The landlords are not ready to rent their warehouses as the customers are either asking for a reduction in rent or a waiver of rent. Similarly, the insurance companies are not agreeing on giving or insuring new sites to people. The guidelines for the industries/companies to work with a 30% manpower has created a shortage of manpower and has also disrupted the operational activities so much so that it is getting difficult to fulfil the orders of even essential items/goods.
4. **Visibility in Logistics:** With the stoppage of the trucks the companies are finding it hard to take a note of the stock of their inventory and are also unable to assess or note the potential damage incurred on account of loss of inventory. There's also a great challenge for the companies in having the end to end stock visibility so as to be able to plan their further course of action and continuation.
5. **Working Capital:** Novel Coronavirus has severely hampered not only the working capital of the companies but also the cashflow of the companies. The working capital has been getting affected due to the slowdown in the payments or the deferment in payment of the older invoices. It's a double loss for the logistics companies as the industry is facing not only an increase in the cost of operations because of the rise in costs of manpower that is the wages there also is expenses that are to be taken up to fulfil the guidelines of implementation of safety to fight against Covid-19.

4.1 FUTURE SCOPE AND ROADMAP TO RECOVERY:

Novel Coronavirus has indeed acted as a wakeup call to all the companies to further strategize and make policies to be able to survive and be in action in such unforeseen situations and trying times. For now, the best that the companies can do for the smooth functioning of Supply chains and logistics is to prepare or think of a short term plan that can take off some burden from their shoulders as it is necessary for them to be afloat until and unless the situation seems to be stable.

Listed below are a few points that can help the logistics Industry to get back on their feet:

1. **Stay digitally connected:** Technology helps us to communicate with almost anyone all around the world. It should be noted that staying connected with your teams and interacting with them should be at most important in such trying times to work out the further functioning of the company. There might also be times where in people from your company/ organisation might want to connect with you, in such cases one can use any of the apps to get in touch with the person concerned and can also be used for having a discussion etc with you teams.
2. **Contactless deliveries:** With the social distancing being the new normal for the citizens, one must try and not come in contact with anyone so that there is not any risk for them to get infected by the virus. In today's world where safety and security are at most important the contactless delivery will serve the purpose of minimal contact with the consumer with maximum safety of the consumer and the delivery person.
3. **Necessary precautions for delivery executives:** For effective and efficient delivery of goods it is quite necessary for a company to ensure that their delivery executives are well hygienic which means they are taking every possible precaution like sanitizers, masks, Personal Protective Equipment kits if needed which will certainly protect them while they are out on the field working.
4. **Customer engagement and behaviour:** In such trying times it is very certain for people to experience or feel panic or fear but to give them assurance at such a time can be done through social media platforms as we all know for an organisation to function consumers/customers are very important because basically they are the

ones who can make you a profitable company or break you. Without them the organisation would not exist. But at the same time if you interact and engage with your customers/consumers and also note the changing consumer behaviour it will also help the organisation/company to maintain good relations with their customers and might also help them to build new relations with new customers that might also increase and enhance the image of that particular company/organisation.

Furthermore, Retailers and Suppliers should join hands to backfire the Logistics and Transportation slowdown and to push back the Supply Chain Management back on it's track. Retailers and Suppliers should also explore newer technologically more sound distribution channels to fight such Pandemic situations. Reinventing the Indian Supply Chain model will be a true game changer and a key challenge to keep them prepare for such unforeseen situations.

V. GOVERNMENT POLICIES:

1. Advisory on non-charging of container detention charges on import and export shipments: This policy was imposed by the Ministry of Shipping on 29th March 2020. This policy advised the shipping lines to not charge any charges on container detention on the import and export shipments. The advisory had been issued in order to maintain the proper Supply lines at the Indian seaports.
2. No toll collection on National Highways during lockdown period: This policy was imposed during the very first lockdown and was implemented so that there is no delay in transportation of goods from one place to another this was done to help the supply chain financially by reducing their toll tax burden in these trying times.

VI. CONCLUSION:

Pandemics being unpredictable are a threat to supply chains and companies as no one ever thinks about such unforeseen situations taking the current example of Novel Coronavirus had the companies thought about such trying times before and would have made plans to overcome them we would not have faced such a hard time slogging to be on track.

Now to repair the damage caused Logistics Industry will have to work overtime to link the Supply chain back to normal it will comprise of additional capital investment also creating emotional bond with the employees. The companies will have to motive their respective employees, workers, drivers, loaders etc. so that they are inclined to return to their jobs without any fear.

Sanitisation of offices and vehicles used for logistics will have to be done on a regular basis to ensure complete safety of the workers on the field. Companies should also take the responsibility to educate/inform their respective employees about the benefit of social distancing and also provide them with face shields, sanitisers and Personal Protective Equipment if necessary.

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