

IMPLICATIONS CORONAVIRUS PANDEMIC HAS ON SUPPLY CHAIN LOGISTICS



UNIVERSITY OF WISCONSIN, PLATTEVILLE

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MASTER OF SCIENCE IN INTEGRATED SUPPLY CHAIN MANAGEMENT

By

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Abstract

In 2020 the world was overcome to a pandemic that swept across continents like wildfire. With the pandemic we in the supply chain sector faced never before issues on the logistic side that were new. For the first time, we have seen where entire airports were shut down and companies began not to deliver their product. We have seen a lot of small companies shut down do to the fact they could not deliver orders. Doing the research to see how the pandemics became the issue it has become; I took a look back at to see if and when we had stoppage in the supply chain. I also took a look at how we can mitigate these issues moving forward. In 2021 we will start new dynamics ways to move product from point a to point b. Companies will become more smarter, meaning doing more cloud computing, use more unmanned machinery, collaborating more, along with a list of many other things. 2020 has forced us to open our eyes globally and think differently. This caused the biggest shift in business since computers came online. 2021, will opened doors that were not there before, I look forward to seeing all the new changes that are coming down the line.

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Introduction

The last time we, our country faced a change in how we use our supply chain system and more so the logistics side of supply chain, happened because of the attacks of September 11, 2001. During this time period the entire country as well as the world had to think about how to move things from point a to point b. This tragedy caused everything from air freight, ocean freight, over the road transportation and rail transportation to change. We also faced a change in 2003 when SARS hit. Fast forward 17 years later and the world faces another change in how the way supply chain moves goods logistically.

With certain countries reopening around the world, globally COVID-19 is still sticking around and causing roadblocks everywhere we turn. Watching the news and keeping informed by reading articles and blogs, the virus is not only jumping borders but also crossing over oceans infecting thousands. Thousands have already paid the ultimate price. COVID-19 meets the pandemic guide lines on two fronts. One it infects and causes illness and second, it can spread from person to person. The numbers were low back in February here in the U.S. with them slowly raising as we push through the beginning of 2020. With numbers of infected raising, and no real cure insight this will cause an overall shift in how things are moved logistically.

Number show in order to reduce the spread of the virus, a handful of shipping companies have scaled back on the number of vessels going and coming out of China. This in turn causes the sea trade routes from China and most of all other countries doing trade with China to become restricted. Research is showing that the restrictions in place, in terms of monetary value a loss of \$350 million and that total continues to rise in the shipping sector. China has 7 of the world's busiest seaports worldwide. With 7 shipping lanes being restricted that causes a significant slowdown in global shipping. Lockdowns across the globe

are causing delays of loads and discharging goods. In some shipping ports, workers have stayed home causing ships to be stuck on the docks. Some shipping ports are quarantined. Then there are countries such as Australia, that are not allowing ships to port if they come from China.

Over the past couple of months rounding out the year of “2020”, we have seen the environment change completely right before our eyes. All of the world has to deal with COVID but we here in the United States still have deal with seasonal natural disasters. So far, we have had record number of hurricanes touch down in the U.S. this year, record setting 13 in total. Not to mention wildfires and floods as well as tornados. Not to mention we here in America had to deal with racism at an all-time high. Jobs slowly disappearing. Children being forced to learn in a different format completely. The school systems not being ready to combat children not being in school. This year has made for big motion picture, that all a famous writer could write about. This paper is about how logistics has been completely turned upside down, but it also shows how divided we are in this country as well as shining a light on how separate we are globally.

I want this paper to open eyes of not only the readers but to all who deal in supply chain. Over this past year I have been allowed to see how supply chain can give lesson to everyday issues as well be taught different ways to handle issues the arise in the day-to-day supply chain. Globally we are due for a change, and we need to move forward on transparent and level table. This would allow for the world to deal with pandemics such as the one we our facing now in completely different way. The pandemic itself did not expose how much the strategies, and operations need to be change in supply chain, the companies and people around the world have. There is no reason why every country cannot use the same supply system. The

only difference would be the language barrier and the different cultures. But again, those can be worked around. Once things it or resume to some type or form of normalcy, nations should get together and talk about moving toward one style of supply chain.

In all this pandemic has also shined a light on how we can change the environment significantly. During the time of the initial lockdown or stay at home was put in place, environmental agencies were calling in drops in emissions by 17% or more. Those drops also caused to focus on the environment even more, because it showed that will could change things if we actually wanted too. The environment is showing us slowly but surely that if we don't make the change now, we will not be able to make it later. The more hurricanes come, the more wildfires that start from nothing, the tornadoes are getting stronger and the floods are becoming more frequent.

Yes, this paper is to focus on how we can move forward logistically in the supply chain during COVID, but again it is to urge people to wake up to the somewhat subtle warnings being given to us by our environment that we are not paying attention too. This is a global problem and not country specific, we need every nation to be onboard making the environment better. With countries taking full advantage of globally warming, such countries as Russia. Who now have the opportunity to drill in the Artic ocean due to the ice melting at a rapid rate. Or we can look at the killing of the Amazon down in South America. Or we can turn to the Gulf of Mexico and all the of sure drilling that goes on down there. We have to do better globally if we do not want to see pandemics like COVID continue to come and literally shut everything down.

Purpose

Over on the rail side, there has been a drastic drop in the rail cargo movement as well. When considering how much we move or transport goods by rail, there has been a significant drop in rail transport. Goods going from Los Angeles and Long Beach from 50 trains down to 25 trains a week. Trucking seeing a slight hit in the over the road hauls. The trucking sector is getting hit on both sides, they are seeing lower volumes and seeing some spikes in demand. Those peaks come from store owners wanting to stockpile and others just having to replenish their stock on a frequent basis. Some states are putting in place an 8p.m. curfew for non-essential personal. With these acts in place this will cause an increase in delivery delays. This in turn causes problems for local business that receiver delivers on the daily, some on a hourly basis. Another issue with the trucking sector, there is a shortage of drivers. Some companies are cutting back on their drivers where others cannot hire enough. Some drivers have taken time off, while others are choosing to stay home due to the amount of time being spent on the road. There have been plans set in place to keep drivers on the road for a set period of time. In all this is temporary, the demand for supply will increase which will cause an increase for drivers to be back on the road.

Literature Review

Supply chains around the world have always had some issues, but this pandemic is disrupting everything. It has caused every problem to know and not know logistically everywhere. But there are solutions, and those solutions begin with technology as well as the people using the technology. The root of logistics has been showcased by the coronavirus, from getting personal protective equipment (PPE) to medical workers and over on the other end of the spectrum, replenishing stocks in supermarkets. This caused the shipping sector to remove all

shipping capacity. On the air sector of logistics, they have seen a significant drop in passenger flights. Which has caused the airlines to look at moving more freight. They have started to convert passenger planes into freight cargo planes.

COVID-19 has basically caused the masses of consumers to shift to online buying. With most people buying on-line, it can cause a problem logistically. E-business can and will require goods to be fulfilled and delivered to consumer promptly. There are solutions to this dilemma, companies can use alternative inventory storage, like more warehousing being closer to regions where e-business is high, you could turn a store front into a distribution HUD, or you could use cargo ships as a floating storage area, but they would have to be worked out in different areas. One of the most important things/lessons to come out of this pandemic is, it made us re-evaluate the supply chain locations around the world. At the beginning of the pandemic, the focus or everyone was looking at China and how production in China slowed greatly. When that happened, it caused fashion retailers in the U.S. to close all together or temporarily shut down due to most of their product comes from China. From goods not being delivered on time to goods not being wanted, this pandemic has done nothing but cause disruption.

One thing company's and leaders talk about is a strategy that can help the supply chain moving forward in this pandemic. The strategy most are looking at for risk-mitigation is supply network mapping. Most have not pulled the trigger because of the large amount of labor and also the time factor. Example, it took a team of 100 Japanese semiconductor manufacturer workers more than a year to get their company's supply network deep into their sub-tiers. This is why most companies are refusing to do it even though it could help them out greatly.

The COVID-19 pandemic has changed the business environment for many organizations around the globe and has highlighted the importance of being able to react, adapt and set up

crisis management mechanisms in order to weather situations of uncertainty. As the acute restrictions and lockdowns created many urgent situations that required immediate attention in the early days of the pandemic, many companies have now begun to move to a "recovery mode" and have started planning for the longer term (Hedwall, M. 2020).

We have yet to see the overall impact that have come from the result of the COVID-19 pandemic. It is more than clear that companies since being faced with this pandemic have had to come up with strategies to continue to run despite business and operational disruptions. These disruptions include mitigating the effects from low supply, disruptions with logistics suppliers, and meeting deadlines and contractual obligations to their customer base. There are a lot of companies that have been able to toe the line with all the issues that came with this pandemic. However, there are some that are not. For those that are having issues, they should turn towards analyzing their supply chain. This could mitigate any other future disruptions. Things to be analyzed are contracts, tax and employment implications, visa issues for staff, a possible exit strategy.

Before the COVID-19 pandemic, some companies began anticipating this next evolution, but this crisis has exposed those weaknesses in the modern supply chain, such that many are looking at what to do next. Such decisions should of course not only focus on the supply side patterns but must also consider that demand patterns may look different going forward the key here is to have a holistic approach and ensure that many different perspectives are considered (Hedwall, M. 2020).

There are a couple of areas the companies looking at their supply chain should focus on and those are technology and sustainability. This pandemic has shown the many different ways of communication while working remote. A lot of companies across the U.S. as week as

globally are moving towards working remotely moving forward. Studies are also showing that companies with digital infrastructure have been able to handle the issues that come with COVID. There are also advances being made I artificial intelligence as well as new technology such as, blockchain. In order to combat the issues, the supply chain are having during this pandemic.

For the longer term, however, companies will need to undertake a more holistic analysis, which may lead to more drastic changes, such as moving supply chains nearby, or to different countries, as well as increasing the digitalizing of supply chains, with a view of creating a more sustainable operation for the future. A holistic analysis should be based on facts and include the modelling and testing of different scenarios. Change scenarios should also include a contingency plan that provides for the possibilities of having to quickly revert and adjust elements of the supply chain (Hedwall, M. 2020).

Methodology

To say the COVID pandemic has disrupted supply chains around the world, is the biggest understatement in 2020. Logistical problems pop up every day, not just in the U. S. but globally. Solutions are out there and most of the answers are coming by way of technology. In the true nature of logistics, the COVID-19 pandemic has touched all aspects of logistics from simple issues as getting PPE to healthcare workers to restocking supermarkets, each thing logistically has been tested. COVID has seem to have some type of bullwhip effect to supply chains trying to move goods and products logistically.

Capacity drastically dropped when the pandemic kicked in. Normally, freight moving by way of ocean is close to 90%, but this was before the pandemic. The pandemic cause Asian manufacturers to slow down production, which caused a ripple effect on the ocean moving freight.

With a tornado or hurricane or even a flood, you can assume the challenges that come with them. COVID presents a number of challenges that have not been seen before. Looking at everyday products such as beans and rice cannot stay on the shelves in stores, and some meats and other specialty items cannot make it to the store. Normally companies can forecast some response plan to a natural disaster. COVID is not like a normal natural disaster, so there is no forecast model, and it is causing companies to bust on their forecast, have more inventory than needed or less than needed.

One of the first things or issues we should look at is the livelihood of people. The research down on this area looks at the short life cycle of perishable products, fashion products and electronic products. In this day and time, we look at city and emergency logistics as well agriculture supply chain. Looking at the development of economy and technology can be the second way to look at moving in a new direction on logistics and supply chain management. Example is the information technology research done on e-business. Today companies can use information and data from RFID and cloud technology. Environmental research would be a third issue we look at.

Combining multiple research methodologies seems to be the trend when researching problems in logistics and supply chain management. Example, when looking into coordinating supply chain issues, some companies establish some form of a respective model and verify their results with real world cases. Some other companies go in the direction of behavioral experiments, then use those with the goal of exploring real-world theoretical model. In order to move forward it will take managers and leaders in general to rethink think the movement of goods globally in order to really get a handle on this pandemic.

Discussion and Conclusions

The virus is still a live threat and will continue to be threat as we all move forward with caution. Other sectors in the business world have seem to be able to move forward, however the supply chain sector continues to have issues. The economy will restart, and, in some places, it has already had in certain areas, but the supply chain will be critical because goods need to be shipped safely and efficiently. If this is done, communities will be able to move through the crisis and can start to see some profit.

Increasing operational efficiency and effectiveness by way of digital capabilities and renew logistics operating models are a great wat that a business can use to reset their supply chain operations. In doing this and making these changes you give the business a chance at being stronger when facing future disruptions. Transparency can come into play when an integrated logistics control tower is used. That also helps with flexibility, inventory and helps with a balance supply and demand. Before COVID-19, logistic companies were in the process of apply more technology to everyday operations to make business more efficient as well as being more productive. COVID-19 has made overall day-to-day operations a little hard, but during this time period there is still room for growth for logistical companies.

As we are starting to see across the globe, countries around the world as well as different regions, have put in place special programs. These programs are to help the logistics infrastructure moving forward. Logistical providers and freight movers have for the most part during this pandemic have been on the front-line keeping stores with supplies as best they could. During this pandemic leaders are forced to make fast educated decisions to ensure that the business operation are continuing to move. Also keep the focus on immediate and long-term goals are kept. In the logistics sector, leaders have come together to create response centers.

These response centers are in place to monitor as well as respond to every challenge COVID brings. Businesses continue to move freight with COVID still in place and new rules, as well as different restrictions at the border.

COVID-19 has caused for the most manufacturing leaders have been faced with an uphill battle with how to keep production going and moving goods throughout the United States and well as globally. The coronavirus has caused an outbreak of unseen magnitudes. Every company across the U.S. in every sector were caught off guard. COVID also shined a light on how one sector of business can control every other sector in business. Things that should be considered by upper management are different strategies that will help combat the issue ahead as COVID continue to stick around. One strategy to look into is a regional strategy. This would allow key goods to be produced in one area at substantial proportion.

Speaking on trade earlier, the United States should consider moving labor jobs from China and look at sending those jobs down to Mexico or Central America. To keep countries moving in western Europe, they could rely more on countries closer to them rather than rely on countries overseas or further away. They could look to the countries to the east such as Turkey and Ukraine. China in order to keep moving forwards have look towards African countries for cheap labor

When looking at how models can predict the level volume of shipments is hard during this time because they have never seen this type of pandemic. This pandemic has caused most companies to become more proactive than what the normal reactive as how most companies conduct operations. The outbreak has caused companies to shift from relying so much on Asian product assessment. Companies and supply chains in general are and will continue to face issues with getting supplies in certain area do to bottlenecking.

Transport modes have been impacted by COVID greatly. Heavier or bulk shipments have not seen a big hit, bulk rates are at all-time lows. Air freights seem to have been hit the hardest. Finally, hotels and restaurants can be important contributors to food banks, and their closure has reduced supply to these outlets at a time when demand for their services is increasing.

Recommendations and Implications

Some of the things we can recommend moving forward and the implications from those actions are ensuring uninterrupted shipping. For carriers to remain operational, ports must keep some level of transparency in order to keep goods moving in a safe manner. Protect international trade on critical goods and speed up custom clearance as well as trade facilitation.

Things companies can look into moving forward to keep the contact of people to a minimum, companies can go completely paperless. Product and goods still need to be moved; all paperwork should be done paperless. Most airlines to keep revenue coming in they have turned to the “mini freight” service. It allows empty seats to be filled with cargo. Using technology in logistics today came make for things to go over smoother on both ends. Using logistics technology, you can generate different paperwork electronically which would keep the drivers out of the warehouse and the warehouse workers away from the drivers.

Businesses are going to be key during the pandemic. They will be look upon closely to pay attention and abide by the guidance from agencies such as the CDC or FMCSA. Businesses are being required to have certain level of insurance and have to hold a surety bond; this is mainly for freight brokage. Business should be ready to lend a helping hand to the upcoming issues we are going to face after COVID. In times like this where things become hard to move product, it then becomes time to reevaluate model to be able to assess forecast models. Being

able to have cash on hand will give companies the upper hand in doing business, do to they will be able to pay freight forwarders and transports quickly instead of putting operations on hold. Business that are able to keep a good level of cash flow will be able to move with less headache than a companies that does not.

As we move into 2021 the full effects are still not known. The disruptions that are in play now that deal with the changes to transportation as well as to shipping practices. With social distancing continuing to stay in place across the globe, there will continue to be delays or slowdowns in the shipping lanes. Other parts of the world are feeling the full impact of factory shutdowns and limitations on workers that have been in effect in China and other areas since January and February. Within the United States, the situation is changing rapidly, and things still remain uncertain, but these shutdowns will begin to impact businesses that rely on shipments from overseas as their replenishment stock, supplies, and new seasonal products will be delayed in the coming days and weeks. Agriculture and food products in Europe as far as shipping and transporting are up during this pandemic due to the sharing of trucks throughout Europe. The productivity has increased from one-third operating capacity to more than half the operating capacity during the lockdown.

Although some countries have introduced export restrictions during the current crisis, so far, their number and impact has been limited. What these bottlenecks have in common is that they are difficult to overcome in the short run. As the COVID-19 pandemic spreads in Latin America, home to important global suppliers, new risks to global food supply chains may also be emerging. Consumers access to getting food and everyday supplies is the biggest risk when concerns come up that deal with food security. With lockdowns in place and all other issues that have come with COVID, the recession is real and there are millions that have either lost their

income or have seen a significant drop in their income. Everything concerning supply chain continues to unfold when dealing with issues that continue to emerge. Having the market being open and somewhat predictable can allow for a fluent moving distribution of goods moving through supply chains. It also affords the ability to ensure goods are getting where they need to be. A business having some level of diversity can allow a business to adapt and fight through any input sources that were disrupted from the logistical issues. Last, a business should be able to meet some or all the needs of groups that require a certain level of attention. Maybe this could come in the form of ensuring targets or having some type of safety net in place.

In order for the companies around the globe to move forward, we must all be on the same page supply chain wise. The logistical world is slowly coming around and companies are starting to be more proactive and less reactive. One of the ways Amazon was able to keep moving forward, was that they were able to be proactive with issue that came with COVID. There has to be a way that countries can balance their own supply chains and still co-mingle with other countries globally. We have not seen all that COVID has thrown at us. There are still different restrictions coming down the pipe, countries are still going to be overly cautious. Slowdowns and bottlenecks are going to continue to happen. Another year or more of COVID could be ahead of us. Nothing is for sure; we do not know how the vaccine is going to take if it will really help or if it will cause more problems. We as speaking globally, have yet to come up with the right logistical plan that will help disperse the vaccine, if and when they get when they get one in place.

In closing, this pandemic has made some new millionaires and have caused some to lose everything. People have not only lost money and other material things but have also lost their

way as far as moving business wise. I hope we allow can find our way moving forward and we are not left behind still trying to figure things out months or years from now.

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