Topic 2: Methods to replace modern day supply chains

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Introduction:

As our world advances, many things have advanced alongside us. However, one of the few things that has remained the same is our supply chain, yet some countries strive to replace it and aim to be pioneers in order to gain control of supply chains. Our current supply chain relies on cargo ships, which are prone to delays, excess inventory, and the ships are unable to adapt quickly to emergency situations. Countries now strive for new solutions such as digital supply chains and China's new Belt and Road Initiative, which both provide new ways to keep the global supply chain running.

Topics to be discussed:

Weighing the positives and negatives of replacing the modern-day supply chain and evaluating the amount of time and money that should be spent on doing so

Applying measures to prevent countries from obtaining a monopoly on said new supply chains

Focusing on the most effective way of replacing supply chains, and whether multiple methods should be applied

Further analyzing China's Belt and Road Initiative and its effectiveness

The dependance of current digital supply chains on current modern day supply chains, and whether they are interdependent in our current economy

The use of AI and delivery automation via warehouse management systems and self-driving vehicles

Attempting to solve the supply chain's weakness to events such as COVID-19

Key words:

· Supply chain: a connected system of organizations and individuals that starts with following a product from its point of creation until it reaches the consumer.

· Digital supply chain: a system which leverages technologies to capture and analyze data on each step of the supply chain in order to find drawbacks and flaws.

· Belt and Road Initiative: an initiative started by China that utilizes trains and other modes of land transportation as a replacement for the modern supply chain and cargo ships. It will extend from China all the way to the Middle East and from China to Europe as well.

· Cargo ships: the most common way of currently delivering products to other countries, utilizing cargo containers to store massive amounts of a product in a compact and easily utilized space.

· Silk Road: an ancient network of roads used for trading and exchanging goods throughout most of Asia.

· Delivery automation: the use of robots as delivery drivers in order to deliver an order in a more effective and easily manageable way.

· Warehouse management system: an interconnected system of robots that is used to easily transport products throughout a warehouse.

Key Actors:

· China: with the COVID situation, China has struggled with modern day supply chainsChina is creating the new Belt and Road Initiative in order to gain control of the supply chain as it will massively boost their economy.

· United States: The United States is the world's leading economic power and currently benefits from the traditional supply chain, yet US-based companies are making a shift towards digital supply chains.

· European Union: The EU has considered the possibility of China's BRI, and is working with China to overcome some of the challenges presented with it.

· Egypt: if the globe makes a shift away from traditional supply chains, Egypt will suffer heavily, as the Suez Canal majorly helps boost its economy.

Background Information:

Drawbacks of our supply chain and early solutions: As companies are faced with more and more issues due to our modern supply chain, innovators are looking to find ways to replace these supply chains. Delays may be caused due to things such as the famous Suez Canal incident, which halted the global supply chain. Certain companies may purchase excess inventory in order to save on cargo shipping costs, which may lead to wasted inventory, and the cargo ships are not easily maneuverable. With COVID-19, our modern supply chain quickly fell and items flew off the shelves and didn't get restocked, proving that our current supply chain is very prone. As such, many solutions have been proposed, such as reverting to traditional linear supply chains rather than the current circular supply chains. Another solution is China's Belt and Road Initiative, which has been dubbed as the "Modern Day Silk Road". What this strives to accomplish is to create a supply chain from China to the Middle East and even stretches out to Europe. Rather than using traditional cargo boats, it strives to use things such as trains among other things. This is only one side of the equation, as in the West companies are looking to completely automate their supply chain.

Digital supply chains and their advancements: This has started with digital supply chains being used to analyze and apply trends to current supply chains. After these analyzations, digital supply chains strive to completely eliminate human involvement in supply chains, even at the micro level. Micro levels indicate the traveling of products between warehouses and stores, or even from stores to consumers. After applying these at a micro scale, they can further apply these onto an international or even intercontinental scale after analysis. The way these are currently being applied are with self-driving vehicles and warehouse management systems, which use automated robot systems to organize a warehouse, and may be used to easily load cargo containers, or smaller cargo boxes in combination with trains. The future may see the use of bullet trains with no conductor, which China has already begun developing. These self-driving trains can travel up to speeds of 350 kilometers per hour and will pair very well with the Belt and Road Initiative. Companies that are switching to digital supply chains also claim they have the consumer as a priority, and the switch to digital supply chains, although very clearly are for a company's benefit, do directly benefit consumers. Should these new supply chains work out, less human error will be in our supply chains, and the automated process will move a lot smoother. The digital supply chain's

analysis should effectively decrease the amount of delays and lost shipments, compensating for the fact that robots cannot make minor alterations if a mistake should occur. However even with robots' lack of this intelligence, the implementation of AI into our digital supply chains can solve these errors. It is clear with these points that digital supply chains have a very vast and expansive future, and can be applied in many different ways.

Timeline:

Autumn 2013 president Xi Jinping first proposed the Belt and Road Initiative

Early 2014 Amazon begins usage of robots in its warehouse for repetitive tasks

November 8, 2014, China funnels 40 billion US dollars into the funding of the BRI

May 14-15, 2017, first Belt and Road Forum for International Cooperation was held, with leaders of 29 countries gathering, with other participants including over 1,600 participants and 80 international organizations

May 31, 2017, British retail store Tesco successfully completes its first robot delivery

August 26, 2018, the number of China-Europe freight trains reaches 10,000

January 21, 2020, Amazon now uses more than 200,000 robots in its warehouses

Early 2020 Chinese company JD becomes the first company to have a fully automated warehouse

March 23, 2021, infamous Suez Canal incident, in which the cargo ship "Evergreen" got stuck in the Suez Canal blocking more than 400 ships, which equates to 12% of the world's sea-trading vessels, and reported losses in the billions

Previous attempts:

UN steps in as the supply chain fails against COVID: The UN is forced to deploy task forces to get vital equipment to frontlines as the modern supply chain falls in the face of COVID. These task forces must deliver required resources for first responders as regular methods of shipments were quickly shut down to avoid the spread of the virus. Cargo flights that would quickly transport these resources to the general area of shipment needed special funding and permission, which only halted the issue further.

Department of Operational Support of the United Nations: This department directly uses a supply chain for UN use, and it is one of the United Nations' supply chains. This supply chain is a traditional supply chain using aviation as a form of transportation.

United Nations Global Compact: Another body of the UN, this body strives for supply chain sustainability. The United Nations Global Compact covers human rights, labor, environment and anti-corruption, and as such striving for a sustainable supply chain is key for this body and the work it does. This body has made guides on how private companies can have a sustainable supply chain, and encourages companies to acknowledge what can affect a supply chain and how. The UNGC sets an example in its four aforementioned sectors, and is striving for companies to follow in its footsteps.

Possible solutions:

Switching to digital supply chains: The switch to digital supply chains is the largest step we can take, as it solves most issues in our current supply chain. Countries that are further developed may also have an incentive to assist under-developed countries, as it will directly set up a trade route for exports and help both economies. Digital supply chains will cause many people to be replaced in their jobs due to automation and use of robots, however governments should have this factor as a number one priority in order to avoid increased unemployment rates, as robots are already beginning to put people into unemployment.

Utilizing land based supply chains: The use of land-based supply chains such as the BRI can be seen as generally more effective, as the trains or shuttles used are not prone to storms unlike cargo ships and cargo planes. It is worth noting that these supply chains can also be fully automated much easier than cargo ships and planes, as China has already announced that they have begun work on fully automated

bullet trains, and hope to bring them into the game within 10 years. Land based supply chains are much more effective for developing countries, as technologies are not required but rather labor is, which will provide new jobs for developing countries and economical incentive for developed countries in the form of trade.

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