



Enhancing global logistics systems in future pandemics



SPC2

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Introduction

With the spread of the coronavirus in 2020, the world felt the effects of trade restrictions as governments strictly regulated the in- and exports of goods to control the further spread of the virus. Research shows that of businesses affected by the coronavirus, only 2 per cent were prepared for the pandemic, whereas 72 per cent experienced negative effects (Harapko). Almost all production and logistics activities were suspended, while overall consumption went up (Singh et al.). As such, despite the world coming to a standstill, the existing logistics structures were strained. This raises questions as to how the world must prepare for the next pandemic, and moreover how the world intends to prepare global logistics systems for future pandemics.

Definition of Key Terms

Cold Chain Logistics

Supply chains that are centred around perishable, temperature-sensitive goods, are designed to transport such items securely from the manufacturer or supplier to the consumer (AltexSoft).

Contingency Planning

A plan made by an organisation in case of an emergency, ranging from the management of human resources to external coordination (IFRC).

Lockdown

A temporary condition imposed by governmental authorities (as during the outbreak of an epidemic disease) in which most people are required to refrain from or limit activities outside the home involving public contact (Merriam-Webster).

Logistics

Logistics is a fundamental part of supply chain management. It consists of the organisation and management of flows of goods related to purchasing, production, warehousing, distribution and the disposal, reuse, and exchange of products, as well as the provision of added value services (European Commission).

Nearshoring

Outsourcing business activities to an organisation in a relatively nearby country with lower wages (TTEC).

Pandemic

The epidemic of a dangerous disease, that spreads across a large area or region and affects many individuals at the same time.

Sustainability

Reducing emissions in activities involved in logistics enterprises.

General Overview

In 2020, the coronavirus spread into the world from Wuhan, killing an estimated 3 million individuals, with officially registered deaths being numbered half of that (WHO). In total, over 700 million individuals have been infected over the course of the pandemic. During its initial spread, the coronavirus had a death rate of approximately 6 per cent, prompting governments to take immediate action to prevent further spread of the virus. Most governments mandated lockdowns, forcing residents to stay inside their homes for prolonged periods of time. Though lockdowns differed per country, in essence, they were all quite alike; non-essential businesses were typically mandatorily closed, while travel was restricted and only allowed for essential workers who worked in essential businesses. Some countries even enforced this measure with the deployment of police officers monitoring the in- and outflow of residents by checking for travel permits (Graham-Harrison). With a large part of the populace at home unable to pass its time doing what it usually would do, many turned to online shopping. At the same time, many started to hoard essential products out of fear of the spread of an even deadlier mutation of the virus (Zhao et al.). The totality of human consumption as a result of this went up, while production in factories was at a minimum, leading to an unprecedented burden on logistics chains leading to many disruptions (Todorov).

Shortcomings of global logistics systems

Multiple factors contributed to this strain on the logistics chains, including the lack of contingency planning. While businesses typically would expect external factors to affect trade, none would foresee the coronavirus' devastating effects (Price). At the same time, when adapting to the new circumstances, few could foresee the sheer scale of consumption, so the adaptive measures taken would prove to be futile in view of the overwhelming capacity deficit (Vilko and Hallikas). Finally, the shift to e-commerce was of such a volume that shifts that were previously expected to take years to accomplish now took place within weeks, not allowing for an organic growth of logistics chains to engage with this excess (Luciano).

SDGs and their role in logistics enhancement

With the enhancement of global logistics, it is paramount to have due regard for the UN's sustainable development goals (SDGs). Six elements can be identified which play a relevant, though secondary role in enhancing global logistics for future pandemics: (1) waste reduction, (2) ethical sourcing, (3) overproduction minimisation, (4) route optimisation and fossil fuel reduction, (5) container space maximisation, and (6) environmental risk monitoring (Lifshitz). Though the goal of enhancing global logistics systems would primarily pertain to replenishing the shortcomings of global logistics systems, it is particularly important that this is done with due consideration of sustainability, with the rise of global consumption levels and their impact on the climate. For example, the disruption of cold chain logistics led to "a massive amount of food waste, unavailability of pharmaceutical products, interrupted immunisation programs and loss of demand for some chilled and frozen products (Kumar et al.)."

(Post-)pandemic logistics

The logistics industry plays a vital role in the manufacturing and transportation of essential products, as well as economic recovery after economic turmoil as a direct result of the economic slowdown (Lam). The coronavirus has revealed weaknesses in the global trade, as it is structured today. While supply chains came to a halt, this has left the world in uncertainty about obtaining essential goods that are needed for combatting the pandemic. Production was typically located too offshore, leaving existing logistics to be inefficient in supplying to all clients and grinding to a halt. Many companies started nearshoring their activities in order to prevent similar events from happening again, such as in Europe, where activities are moved from Asia to the Balkans (Zijverden et al.).

Food products were harder to reach as a result of the lockdown, while simultaneously the pandemic created disruptions to food. This was already worsened by previous locust infestations in the Middle East and East Africa (Stone). According to Oxfam Novib, there is a direct link to an exponential increase in the number of coronavirus-related deaths when malnutrition is factored in. Unprepared logistics systems were the sledgehammer blow.

Timeline of Key Events

Date	Event
30th of January 2020	WHO declares COVID-19 a public health emergency of international concern
27th of February 2020	US stock indexes post their sharpest fall since the economic crisis of 2008
3rd of March 2020	WHO warns of shortage of personal protective equipment
25th of May 2022	Oxfam Novib notes 12,000 deaths from Covid-linked hunger
5th of May 2023	WHO declares COVID-19 no longer a public health emergency of international concern

Major Parties Involved

World Health Organization

The World Health Organization, commonly known as WHO, operates on a global scale to advocate for the well-being of individuals everywhere, safeguard the planet from harm, and extend assistance to those in need. This organization played an important role in bringing together nations from all corners of the world in response to the COVID-19 outbreak. They released timely notifications, provided advice, and put forth suggestions to member states during this challenging period of turmoil.

United States of America

The COVID-19 pandemic brought about some major challenges for the United States in handling global logistics. This was evident from the sharp drop in the stock market that occurred in February 2020, which was the most severe decline since the economic crisis of 2008. As a result of lockdown measures and trade restrictions that followed, it became clear just how interconnected the U.S. economy is with global supply chains. This situation also exposed weaknesses in logistics systems when faced with crises.

China

Being one of the first epicentres of COVID-19 outside of Europe, China has regained a market that had been reported as crumbling to pieces once. In this way, restrictions imposed by the government of China and disruption in manufacturing as well as the supply chain had a ripple effect to show that China is positioned at a key place within a connected structure constituted global logistics.

The pandemic illustrated the need to develop flexible and responsive logistics platforms, which can now anticipate disruptions emanating from an economic giant such as China.

Possible Solutions

The pandemic brought about significant changes in the healthcare supply chain. This thrust an enormous task upon logistic transporters to satisfy the growing demand for essential medical products. These requirements varied from medical apparatus, drugs, cleanliness commodities or personal protective equipment that needed instant and flexible solutions due to the influx of demands. Significantly though, there was a remarkable rise in global cold chain logistics which is the maintaining of low-temperature-controlled supply chain networks. This move has alluded to the need for safeguarding the efficacy and integrity of temperature-sensitive medical supplies. The aftermath of the pandemic: more stress on advanced logistics solutions such as cold chains show a lasting impact on approaches and priorities when transporting critical healthcare supplies in future healthcare logistics.

In particular, nearshoring has emerged as a notable solution by companies who have realized how exposed their supply chains and logistical network are when faced with emergencies, especially those whose suppliers are based in politically unstable regimes like China but not limited to East Asian providers alone. This shift enhances supply chain resilience, ensures quicker responses to

challenges, promotes sustainability through reduced transportation emissions, and facilitates better quality control. It is a holistic solution for this multi-faceted issue.

To ensure global logistics continuity, it is possible to apply combined sources of raw materials and the shortest chains of value-added. Consequently, it facilitates a business model that has been helpful in guaranteeing a continuous supply of basic items throughout the time of pandemics or other worldwide emergency conditions. But at the same time, every crisis poses challenges, but also comes with opportunities for growth. On another hand, there was an observable increase in using trains to transport goods these past few months. To maintain this trend, efforts are being invested into establishing transportation capacity as well as managing rail freight volumes. This underscores the necessity of building its structure on several pillars, since not only does this enhance its strength beyond measure but also makes it remarkably resilient.

Many experts agree on the fact that digitalization tendencies will be boosted by the current pandemic in logistics. However, mounting cost pressures demand a focused approach towards improving internal company efficiency. Different strategic options are available for organizations aiming at increasing their resilience during times of crisis. These options encompass investing in digital technologies to monitor and optimize supply chains, as well as adopting digital tools for inventory forecasting and dispatch. Additionally, implementing comprehensive capacity planning measures is also a viable option. In the realm of digitalization, innovation flourishes, and a multitude of opportunities abound.

Dynamic improvement of logistical systems requires an added focus on the sustainability of logistics as well as supply chains. Not only does this shift present near-term cost savings opportunities due to reduced energy costs, but also it facilitates the effective adaptation of firms to emergent challenges. Companies can no longer choose, but have to be sustainable because of the COVID-19 pandemic.

This means that for future preparedness and resilience in pandemics, logistics need to be reconfigured through proactive approaches.

The logistics industry, which has changed dramatically over time, is driven by a central force of optimizing stock inventories, especially in fashion supply chains that have embraced a customer-centric approach. The ongoing COVID-19 pandemic has highlighted the need for good risk management and contingency planning, therefore business organizations and logistics companies must develop adaptable systems effective in responding to emergencies as they emerge. With

consumers' tendencies towards rapidity and cheapness of deliveries, the sector is pushed to lift operational procedures primarily aimed at improving last-mile delivery abilities due to increased demand for same-day services.

One of the other things to consider in the post-pandemic era is a holistic approach to inventory management which is responsive to shifting customer needs. In addition, there has been a change in logistics environment trends with emphasis on risk resilience, hence setting the standards of having strong risk mitigation measures that can enhance adaptability during unexpected challenges. As well, this sector is also realigning its attention towards last-mile delivery as an area for substantial improvement requiring significant reformations. It means that this multifarious metamorphosis corresponds to the vicissitudes of the marketplace and forms a new global logistics paradigm focused on client-driven inventory strategies, toughened risk handling systems and better efficiency in last mile transportation which are paramount components for keeping its relevancy in today's dynamic business landscapes.

In summary, this multifaceted issue that came about due to the interconnectedness of this modern age needs to be resolved by both new innovative technologies as well as some old-fashioned trade ideas keeping the production close and eliminating reliance on unstable regions.

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