

Increased Reshoring Efforts in Response to Global Emergencies

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Abstract

The initial effects of the COVID-19 pandemic first impacted China and quickly spread worldwide by late March 2020. China, the epicenter of the pandemic and the main supplier of many products worldwide, was the first to shut down many of their manufacturing plants without notice. In conjunction with an increase in demand for many products, this abrupt pause induced severe tension on the global supply chain from companies around the world. These shortages of many crucial products, such as PPE, highlighted the need for reshoring of certain industries to the United States to promptly and adequately respond to future global emergencies. This paper will explore how medical industries' supply chains were impacted by the Covid-19 pandemic and analyze the viability of reshoring essential products to the United States while continuing to import for other industries.

Keywords

Supply Chain, Reshoring, COVID-19, Essential Products, Medical Industries

1. Introduction and Background

1.1 Objectives

The analysis outlined in this paper will present an evaluation of the act of reshoring essential items in the medical field back to the United States to provide insurance for future emergencies. This paper will explore the many advantages and disadvantages of reshoring and potential logistical challenges that could ensue. Ultimately, this paper will provide a recommendation for the future of reshoring in response to emergencies similar to COVID-19.

1.2 What is Reshoring?

Reshoring, also known as backshoring, nearshoring, or onshoring (De Backer, 2016), is characterized as the relocation of business operations from locations offshore to locations back in the United States, where the company was first established. Because reshoring assists by balancing the trade and budget deficits, reducing unemployment, and fostering a skilled workforce, it serves as an efficient way to strengthen the United States economy. Reshoring also benefits manufacturing companies, such as improving balance sheets, reducing the total cost of products, and increasing product innovations' effectiveness (Foerstl, 2016). The motivations behind reshoring fall into two basic categories: the company's strategic goal and the dominant factors affecting the decision to reshore (Barbieri, 2018). Reshoring serves as one of the alternatives to offshoring; however, reshoring provides many opportunities and benefits to companies, demonstrating why many companies are considering this process.

1.3 History of Reshoring

Global supply chains are an integral aspect of the world as constant attention is given to the issues that develop through these supply chains. One of the current topics that are being focused on in global supply chains is where and if manufacturing should be expanded, moved, or contracted over the world (Ellram, 2013). Reshoring is one of these topics that is frequently discussed. Walmart was one of the first companies to develop reshoring strategies, increasing

its sourcing within the United States by \$50 billion (Ellram, 2013). Reshoring has assisted Walmart in its growth; however, each company must have a deeper understanding of the process of reshoring.

While many companies struggle with deciding whether to reshore or expand, this decision begins as a manufacturing location decision. Reshoring is primarily concerned with where the manufacturing activities occur, independent of who is carrying out the manufacturing activities (Gray, 2013). Since reshoring is a location decision, there are four primary reshoring types: in-house reshoring, reshoring for outsourcing, reshoring for insourcing, and outsourced reshoring (Gray, 2013). Fulfilling demand in the local market, in-house reshoring focuses on relocating manufacturing activities performed in offshore facilities back to the United States-based facilities. Reshoring for outsourcing is similar; however, this process relocates manufacturing activities from offshore facilities back to the United States-based suppliers. The third type of reshoring, insourcing for reshoring, focuses on fulfilling the demand by relocating manufacturing activities carried out by offshore suppliers back to United States-based facilities. Outsourced reshoring focuses on relocating offshore suppliers' specific activities and bringing them back to United States-based suppliers (Gray, 2013). The various types of reshoring options are all very different; however, they are united by the fact that they are all location decisions.

Another critical consideration of reshoring is understanding whether the company has previously pursued offshoring or offshore outsourcing. This must occur because reshoring is a reversion from a previous offshoring or offshore outsourcing decision. The reshoring decision may begin differently depending on the company due to certain questions, such as why the work was offshored initially, when it was offshored and where, and who the work was sent to (Gray, 2013).

The reshoring process appeals to many companies because while offshoring reduces an organization's labor costs, reshoring provides many other benefits to a company. Labor costs in developing countries are currently increasing, and the gap between operating onshore or offshore is becoming negligible. Another factor to consider is that instability is presently present with international trade. While the United States is becoming more cautious in trade matters, changes are occurring in global trade relations, which presents a much higher risk to overseas operations. Reshoring also provides easier management of the supply chain since most of these links will be on the same time zone. Boosting the national economy and protecting risk are other aspects of reshoring that appeal to companies as well. Many companies have begun to embrace the process of reshoring, specifically the electrical, transportation, and apparel industries (Ross, 2020).

2. Pros and Cons of Reshoring

2.1 Pros

Reshoring can be a creative and innovative tool with many advantages beyond just solving economic or supply issues.

2.1.1 Production

Many products manufactured and imported from overseas lead to intellectual property concerns, quality control concerns, an increase in land costs, lack of control of production, and supply chain delays. One significant advantage of reshoring is being able to assure your product is the top priority. Manufacturing your own product means you are in control of quality control and control processes. Another advantage is being closer to your customers. This proximity can enable you to modify production with seasonal changes or shifts in consumer taste. This, in turn, will increase customer responsiveness.

Intellectual property is hard to safeguard when manufacturing overseas. Reshoring allows companies to oversee the production and ensure security and rules are followed. Another significant advantage is the zero-tariff policy when producing in the United States, Mexico, or Canada. We cannot predict how the United States and China's tariff policy will change in the future, so reshoring eliminates this uncertainty and tariff cost (Donahue, 2020).

2.1.2 Government

In addition to production and quality advantages, there are also government advantages to reshoring. One example of a reshoring benefit is the guaranteed contracting in response to the PPE shortage. This guaranteed contracting helps companies ensure the reshoring process will be successful. Another advantage of reshoring is the ability to take advantage of opportunity zones. There are opportunity zones where the costs of financing new facilities will be

reduced. Lastly, there are federal grants that companies can take advantage of when reshoring. These grants come in the form of technology investments to encourage businesses to assist in programs that help communities (Fish and Honora, 2020).

2.1.3 Community

Reshoring provides many advantages to the local communities within the United States. By reshoring manufacturing, there is an increase in demand for skilled workers and reintroducing and re-harnessing skills. This increase in demand for mid to high-skill labor also leads to new educational institutions and training providers (Fish and Honora, 2020).

2.1.4 Sustainability

One of the less obvious advantages to reshoring is the impact on the planet. Many companies make environmental and social commitments obstructed by the lack of supply chain visibility and differences in country practices and standards. By reshoring, a company can ensure that social and ecological commitments are upheld. Another sustainable advantage is the decrease in product travel distance. Many modes of product transportation involve the use of fossil fuels. Reshoring can allow for more sustainable transportation and the reducing need for oil (Ashby, 2016).

2.1.5 Economic

Increased labor costs, high oil prices, increased transport costs, and global supply risk are offshoring risks. By reshoring, these risks can be mitigated. Reshoring and utilizing local suppliers can make production more economically viable (Ashby, 2016).

2.2 Cons

Although reshoring brings multiple economic and social advantages to the American people, it is important to recognize key costs and difficulties in reshoring to determine whether to reshore certain products. Disadvantages to reshoring can manifest themselves in multiple ways; these include, but are not limited to, an increase in local labor costs, initial reshoring costs, as well as a decrease in employment to those in other countries overseas. These key factors will be discussed further below.

2.2.1 Labor

In the late 1970s, companies began offshoring their manufacturing from the United States to other countries overseas to pursue multiple economic advantages. Of these advantages, the most prevalent was decreased labor costs due to just plain lower minimum wages and looser workplace and environmental regulations (Staff, 2011; Johansson, 2018). These remarkable decreases in cost are key factors that continue to drive offshoring manufacturing practices to this day. In recent years, large manufacturing districts in China have experienced multiple economic changes that have made it less economically attractive to American companies. Increases in wage rates and auxiliary labor costs, as well as a shrinking supply of qualified workers and fewer tax incentives, have worked against the benefits of offshoring (Tate, Daum & Bals, 2015).

Nonetheless, despite newly poised deterrents to offshoring, costs to reshoring on labor fronts still greatly outweigh those remaining offshored. When the values of productivity are included in calculating wage differences between China and the United States, China still outperforms the United States in low-cost labor by a factor of 2 to 3, which is hugely significant (Tate, 2014). Though the gap is closing, China still bears a low wage rate of \$5.71 per hour, whereas the United States is more than four times as costly at \$22.95 per hour (Trading Economics, 2019). This advantage of offshoring alone makes moving production back to the United States difficult for American companies financially.

2.2.2 Initial Reshoring Costs

Outside of increases in labor cost, transitioning production back to the U.S. involves many upfront costs that pose significant hurdles to the reshoring mission. Outside of the simple long-term ramifications of reshoring, the restructuring of the supply chain that will be made necessary to reshore as well as the acquisition of locations at which to conduct the reshored manufacturing work against American companies' efforts to bring their production back to American soil (Zielinski, 2020).

2.2.3 Skilled Labor Supply

Should a company have the financial means to move production back to the United States, they should not proceed before considering all costs to reshoring, besides just those related to direct monetary costs. Moving production to the U.S. requires that American companies rehire employees in the U.S. to operate the new manufacturing facilities. Unfortunately, the supply of skilled laborers in the U.S. has experienced a significant decrease in recent years as fewer and fewer people explore the manufacturing trades as a career path (Anderson, 2020). At its conception, offshoring offered firms the ability to consider very competitive labor costs overseas. Now, given the time that has passed since offshoring began to be widely accepted among mass manufacturers, reshoring has started to be constrained by the size of the domestic job market and quality (Bailey and De Propris, 2014).

3. Reshoring and COVID-19

Since the beginning of 2020, COVID-19 has drastically changed the world, including the organization and management of the global supply chain. Many countries had to adapt to China's production shutdowns by either relocating to reduce their risk or shifting production lines for essential products.

3.1 Essential Medical Industries Impacted

The United States is hoping to motivate companies to onshore their products to be better prepared for any future emergencies. PPE for medical professionals, medical equipment like ventilators, and pharmaceuticals are essential industries severely impacted by the COVID-19 pandemic and the United States' best candidates to reshore.

3.1.1 Personal Protective Equipment for Medical Professionals

The medical industry suffered greatly when the COVID-19 pandemic began to spread in the U.S., with PPE shortages occurring during the pandemic's essential times. By May 2020, studies showed that 27% of nurses were exposed to infected patients without the proper PPE, while 87% of nurses had to reuse single-use face masks (Cohen and Rogers, 2020). The lack of adequate equipment has contributed to both illness and death in healthcare workers, highlighting why we need a significant shift in this industry. There were four major contributors to the lack of PPE in the United States-- low inventory in hospitals, demand shock, supply chain pitfalls, and government failure.

The U.S. healthcare system incentivizes hospitals to import most equipment due to the low costs. Thus we are the number one importer of PPE from China. China dominates this market due to the low manufacturing cost but high quality and therefore had a monopoly over these items once the COVID-19 pandemic spread across the globe. In late 2019, when the virus first spread across China, they stopped exports and bought up a large portion of the world's inventory in face masks. Soon after, other countries such as India, Taiwan, and Germany restricted supplies to ensure their own countries would not experience shortages. Unfortunately, the U.S. did not stop their exports of PPE quickly enough and had a significant deficit in March. The prices of medical-grade face masks rose by a factor of six, as every country was fighting for what was available (Cohen and Rogers, 2020).

3.1.2 Ventilators and Medical Equipment

The threat of coronavirus also created a chaotic few months for medical devices such as ventilators. There were shortages worldwide as the machines were necessary to treat patients with severe disease cases and the spiking cases made them difficult for many countries to acquire. Approximately 1 in 6 patients affected with COVID-19 require a ventilator, according to the WHO (Iyengar et al., 2020).

When the virus first spread to the United States in March, the U.S. struggled with attaining the number of ventilators needed since they were imported from other countries. Approximately 54 countries suspended exports of medical products, which included ventilators. The shortage was directly linked to the global supply chain issues, as countries halted medical exports to ensure they had sufficient supply for their demand. Since China was the first country to lock down and stop production, there were additional strains in supply chains with other countries as everyone depended on China as the lead manufacturer. Ventilators are labor-intensive and require a level of expertise to manufacture, making them difficult to rapidly-produce (Iyengar et al., 2020). This drastic increase in demand worldwide contributed to further tensions for the United States to get the supplies needed in preparation for the spike in cases.

3.1.3 Pharmaceuticals

The pharmaceutical drug industry supply chain is especially vulnerable to shutdowns across the world. The FDA reported several drug shortages due to coronavirus supply chain disruptions (Moser, 2020). To be placed on a ventilator, several key drugs are needed for COVID-19 patients: propofol, midazolam, lorazepam, fentanyl, norepinephrine, succinylcholine, hydromorphone, and morphine (Gurvich and Hussain, 2020). Basic ingredients for drugs and some antibiotics are sourced from China (Coates, 2020). The U.S. Department of Commerce reports that approximately 97% of all antibiotics in the U.S. come from China (Moser, 2020). The U.S. is also dependent on Active Pharmaceutical Ingredients, or APIs, from overseas as an estimated 80% of our APIs come from China or India (Oehler and Gompf, 2020). China is the main supplier of APIs for the U.S. as well as other countries, demonstrating the significant impact their shutdowns can have across the world (Moser, 2020). The U.S. can cut manufacturing costs of APIs and final goods by up to 30-40% by producing in China and India; however, this cost reduction comes with the consequence of not being prepared for an emergency shutoff in the supply chain (Strong et al., 2020).

Drug shortages due to the United States' supply chain dependencies on other countries could severely impact the healthcare system, especially for COVID-19 patients. Currently, the U.S. is looking into reshoring pharmaceutical manufacturing to help strengthen its supply chain. Some key components that go into this decision to reshore are identifying gaps in pharmaceutical knowledge, innovative and advanced manufacturing, drug products quality assurance index, and pharmaceutical education for manufacturing (Gurvich and Hussain, 2020). The U.S. has pushed two pharmaceutical companies, Paratek and Phlow, to consider reshoring their operations with financial backing promise (Coates, 2020; Moser, 2020). This strategic decision will ensure that any APIs at risk of shortages will be available to the U.S. and reduce reliance on other countries.

3.2 Strategies for Reshoring Essential Medical Products

Shortages in essential medical products worldwide highlight the dependency the United States currently has on offshore manufacturing. Therefore, many countries are using policy to enact change in supply chains for essential medical products. The United States government and individual companies have started implementing specific strategies to begin moving production back home.

3.2.1 Government Policies

Reshoring efforts will come with a cost, which the government is trying to alleviate by proposing a "reshoring fund" for companies to restructure their supply chains. Currently, government officials recommend tax breaks and large subsidies to be granted for companies willing to bring their manufacturing home. However, no official laws have been passed. (Shalal et al., 2020) The government's willingness to work with medical companies will significantly impact the U.S.'s success in reshoring these essential industries.

Policies implemented by governments have three main goals for intervention: pushing manufacturing towards critical supplies, ensuring the continued operation of manufacturers, and supporting post-crisis growth for manufacturing (Barbieri et al., 2020). Recently, President Trump signed the "Executive Order on Ensuring Essential Medicines, Medical Countermeasures, and Critical Inputs Are Made in the United States." The order aims to increase the domestic production of medical supplies and pharmaceuticals by enforcing federal agencies to purchase from domestically made products (The White House, 2020).

3.2.2 Company Policies

The pandemic has resulted in a reshoring trend for many companies as COVID-19 served as the trigger for them to alter their supply chains. Many medical manufacturers restructure their companies depending on whether they are looking for a short-term or long-term solution. Companies can make decisions based on individual or joint efforts and reactive or preventative methods. Suppose a company chooses a reactive reshoring method. In that case, this could mean their supply chain temporarily changes before returning to normalcy whereas a preventative method would be a long-term change to the structure of their supply chain (Barbieri et al., 2020).

Three strategic options these companies should consider restructuring their supply chains include: (1) return manufacturing back to the United States for certain materials; (2) expand the number of manufacturing sites internationally; (3) create contingency plans for future emergencies (Gereffi, 2020).

Lean manufacturing helped minimize costs in the supply chain. However, it creates a higher cost in emergencies due to low safety stock levels and leaving a company at risk during emergencies. To mitigate these risks, companies can reduce their supplier risks by reshoring or diversifying their products' sourcing (Coates, 2020). Coronavirus stresses the United States' vulnerability in terms of trade and the need to develop a more resilient supply chain. If the issues continue, hospitals could be significantly affected by the lack of equipment they need to treat patients.

4. Future Reshoring Efforts

The pandemic has exposed the need for medical equipment to be readily available to support our healthcare systems. Without proper preparation by stockpiling, alternative sourcing, or reshoring, the United States was forced to scramble to ensure people had the equipment they needed, only adding to the coronavirus disease's stress. A resilient supply chain is crucial to guarantee there are no shortages in times of shock buying or crises (Gereffi, 2020). The new supply chain must be broader and more resilient, relying on our resources and a spectrum of different countries instead of only one source. Through reshoring and building strong partnerships with other countries focusing on the medical supply industries, we can be confident our supply chain will not fracture again.

5. Conclusion

For many years, companies have used offshoring as a means to decrease costs. The COVID-19 pandemic has revealed the need for reshoring as well as many of its advantages. There are many pros of reshoring, including government, community, sustainability, and economic benefits. There are also several cons, including initial reshoring costs and labor costs. Overall, the benefits of reshoring outweigh the disadvantages, especially in a time of global crisis and in the wake of increasing labor costs overseas. By reshoring even just a select array of essential items, the United States can better ensure proper access to essential PPE and other medical supplies should the country be confronted by future disasters similar to that of the COVID-19 pandemic.

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