Supply Chain Resilience Strategies During COVID-19: A Case of Apparel Manufacturers

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ABSTRACT

There are many natural and other disruptions to businesses and supply chains in this dynamic and uncertain business world. Facing those disruptions and surviving the company becomes highly challenging. Global apparel value chains have been severely disrupted by the COVID-19 pandemic, which has delayed their recovery in the short term. This study explores how the sector mitigates challenges during the pandemic and the steps the industry should focus on in the new-normal era. Using a multidisciplinary approach, this study conducted an evidence-based case study method. Through secondary data, it was examined short-term and long-term strategies executed by the industry. Due to the scattered nature of the supply chain and the labour intensity, the apparel sector faced significant challenges compared to other businesses. However, the industry rebounded after the pandemic by adopting short-term and medium-term resilient strategies. This cross-case analysis discusses the challenges faced by apparel manufacturers during the COVID-19 pandemic in different countries. The industry adopted short-term and long-term solutions to recoup from the COVID-19 storm. The findings provide an opening for the researchers to explore the viability of the strategies adopted by the industry. Also, the results open avenues how for exploring other techniques to be assumed to be resilient in unexpected situations like COVID-19.

KEYWORDS: Supply chain resilience, Apparel industry, COVID-19 pandemic

Introduction

Supply Chain Disruption

Individuals, communities, and organizations face a dynamic and ever-changing global environment. Every organization in the Supply Chain (SC) is vulnerable to disruption events in today's volatile and uncertain climate (Knemeyer et al., 2009). The magnitude and frequency of the dangers posed by this tumultuous environment might vary, and they can come from within or outside of a system. These unpredictable incidents have frequently disrupted global SC activity. Events like flood situations, hurricanes or typhoons, tsunamis, earthquakes, diseases, and terrorist attacks are just a few examples of recent disasters that have been widely publicized. SC disruption management has become a hot topic among academia and practitioners (Blackhurst et al., 2011; Craighead et al., 2007).

Furthermore, internal strife, such as economic recessions, challenges with the loss of large buyers, the introduction of new technologies, and infrastructure quality, always impact the current market and may also affect the future growth of the sectors (Abeysekara et al., 2019). Every economic sector, particularly those in emerging countries, is affected by these vulnerable conditions (Abeysekara et al., 2019). Droughts, landslides, and flash floods caused by extreme weather conditions have claimed lives and destroyed livelihoods, putting a strain on businesses in the apparel industry's ability to meet customer demands on time (EIU, 2016).

Apparel supply chains also face similar issues in the current context. Apparel manufacturers must also deal with external disruptions and operational matters such as quickly changing demands and shorter lifecycles. In addition, the result of the economic crisis and policy shifts have been constant challenges. To be successful, the SC relies on the resilience and adaptability of its member firms. The apparel industry is particularly vulnerable to this problem because of the volatile nature of the market.

Supply chain resilience (SCR) refers to an organization's ability to quickly adjust its supply chain in the face of disruptions to maintain uninterrupted operations (SCRes) (Abeysekara et al., 2019).SC resilience can be categorized into internal, supplier, and customer resilience depending on the nodes in which interruptions occur and the business continuity plan guaranteed in the SC. Research shows that SCR is an effective strategy for reducing risk and recovering quickly after a disruption (Blackhurst et al., 2011; Chopra and Sodhi, 2014; Hora and Klassen, 2013; Jüttner and Maklan, 2011; Zsidisin and Wagner, 2010). Ambulkar et al. (2015), quoting Howell (2013) state that 80 per cent of companies have made supply chain resilience a top priority. Building resilience in the supply chain is now a priority for companies who realize that supply chain disruptions can have negative consequences (Jüttner and Maklan, 2011).

COVID -19 Disruption

Many businesses have suffered significant financial losses due to the global supply and demand disruptions caused by the COVID-19 pandemic. Even in today's COVID-19 vulnerable business environment, companies are prone to unforeseen events in various parts of SC (Hendricks and Singhal, 2005; Wagner and Bode, 2008). COVID-19 has created a global health crisis never seen before. More than 111,652 people have died due to the worldwide pandemic, contaminating more than 1,773,084 (WHO, 2020).

The COVID-19 pandemic has wreaked havoc on the global apparel supply chain. Since this crisis is unlike any other previous one, it's affected every link in the supply chain. This has caused problems for everyone, from apparel manufacturers and distributors to raw material suppliers, retailers and consumers (ILO, 2021). As a result, many apparel-producing countries may not be able to meet the SDGs' major milestones of no poverty, minimising hunger, equality of the sexes, economic growth, and business, innovation, and infrastructure if the value chain's early and sustainable recovery is not ensured (UNDESA, 2020).

To deal with immediate and short-term crises and the associated risks and vulnerabilities, countries have taken various measures on a national level.

There have also been country-level efforts to combat the transmission of the virus, including those in the apparel industry. Unfortunately, the short-term crisis measures have been ineffective (Moazzem et al., 2020). There is a lack of financial resources in many developing countries to adequately support vendors and employees in the value chain of the apparel industry (Gupta, 2020).

Global structural supply shocks have resulted from changes in aggregate demand, a slowing global economy, the closure of manufacturing stores, and the halt of production due to the COVID-19 pandemic (Chakraborty and Biswas, 2020). The pandemic has had similar effects on the apparel supply chains. China is an essential source of textile inputs, Chakraborty and Biswas (2020) further explain. Wazir (2020) demonstrates that the influence of garment consumption has considerably impacted global apparel and fashion exports. The EU and the United States are the two largest garment importers (O'Connell, 2020). During COVID, apparel consumption dropped in the EU and USA. Figure 1 depicts the shift in garment consumption in the United States and the European Union, with an estimated 40% less apparel consumption in the United States and 50% lower consumption in the EU in 2020 compared to 2019 due to lower GDP and shop closures (Wazir, 2020).

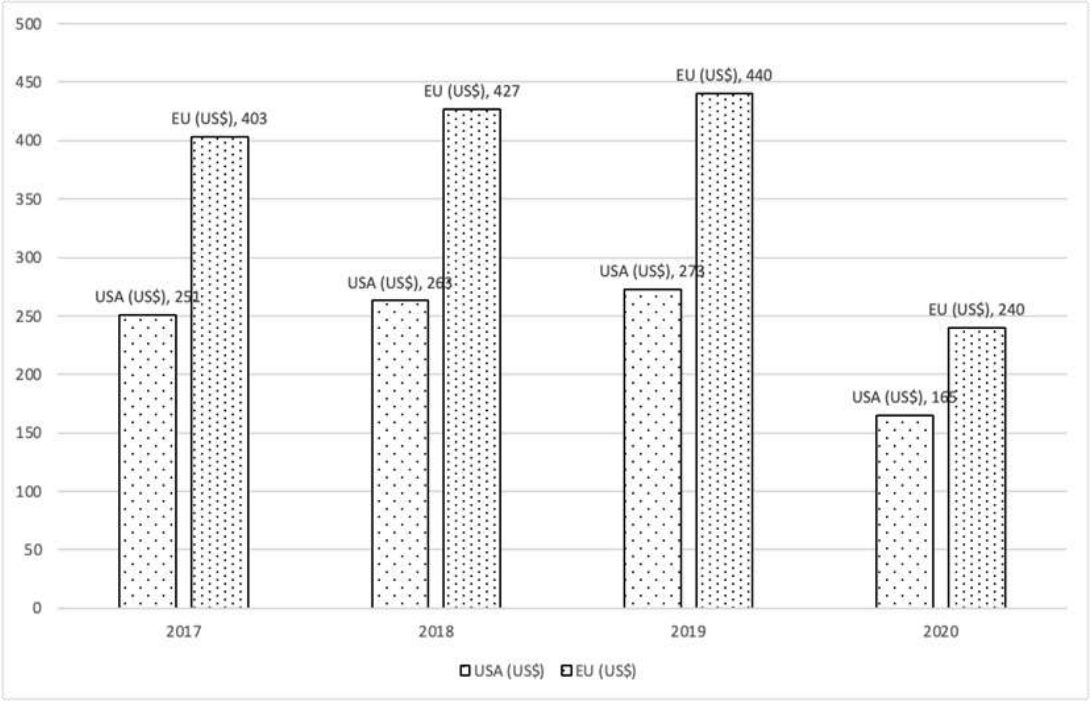

Figure 1: Apparel Consumption in USA and EU (USD)

Source: Wazir (2020)

The effect on clothing consumption and imports will have a higher influence on the GDP and employment of Asia's top-tier apparel or RMG exporting countries, including Bangladesh, China, Vietnam, and India (Techpacker, 2020).

The COVID-19 outbreak resulted in a substantial drop in GDP per cent and employment in these nations, according to our study of data from the Asian Development Bank (Park et al., 2020).

Apparel value chain recovery will be more difficult in the medium term. Compared to short-term economic crises, medium-term recoveries necessitate the development of new strategies for dealing with long-term retail market demand slumps (Moazzem et al., 2020). The global apparel supply chain is likely to join a recovery phase despite the widespread and continuous pandemic, despite its current state (Thomsen and Rhee, 2020). Any uncertainty over the recovery period could affect consumers' purchasing habits, brands' and buyers' sourcing strategies, and suppliers' apparel production. Uncertainty in the apparel supply chain's 'world of work' could have long-term detrimental effects. To ensure long-term recovery, the most pressing question for market participants is how to reduce supply chain uncertainty (Moazzem et al., 2020). This research aims to create value chain-based approaches to aid the restoration of the apparel industry in the supplying countries. For these reasons, this paper aims to thoroughly examine the challenges during the COVID-19 pandemic to apparel manufacturers and to analyze and discuss resilient strategies the apparel manufacturers deployed to overcome COVID-19 disruption.

Methodology

Using a multidisciplinary approach, this study conducted an evidence-based policy analysis. The analysis relied on secondary data. Sources of information include newly published academic papers, articles from industrial magazines (such as Just Style and Fiber2fashion), reports from consulting firms (such as McKinsey and Company), and documents from government or organization bodies (IMF, United Nations, WTO, etc.).

COVID-19's impact on operations was evaluated using secondary data. The secondary data examined the exports and imports of each country's apparel sector, employment situation, factory safety measures, and implications for worker protection from disease. Accordingly, a list of each country's various support measures was put together to understand better how much of their stakeholders' needs were met. We also gathered secondary data, such as information from government documents and surveys, on various work-related topics, such as women's employment, wages, and health and safety at work.

Empirical and Theoretical Foundation

Supply Chain Resilience

SCR is a company's ability to recover from adversity. On the other hand, SCR measures the system's ability to withstand short-term disruptions (Soni et al., 2014). Johnson et al. (2013), Sawik (2013), and Day (2014) explain that the resilience of the SC is characterized by the capacity of the SC to rebound from disruptions of the SC and remain consistent with the information material and cash flow. Identifying potential threats to a company's operations and assessing its level of sensitivity to mitigating the effects of those threats should be a priority for organizations (Pettit et al., 2013).

In the past, a variety of SCR indicators have been used. Despite this, there are wide variations in the SCR scores (Hohenstein et al., 2015; Jüttner and Maklan, 2011). Most of the SCR capabilities can be found in various sources. Authors like Brandon-Jones et al. (2014) and Ambulkar et al. (2015), define SCR as a one-dimensional concept. According to some authors, resilience is primarily achieved through agility and robustness (Wieland and Wallenburg, 2013). On the other hand, Christopher and Peck (2004), on the other hand, believe that resilience is made up of four key elements: agility, re-engineering, collaboration, and a culture of risk management.

Cultural change is the most difficult, and it is also challenging to provide a distinct idea of what it means to be (Sheffi and Rice Jr, 2005). Leadership and innovation are the two pillars of SCRM. Creating a solid organization requires leadership and innovation (Kamalahmadi and Parast, 2016). To ensure the smooth operation of the company's SC, leaders must be intimately engaged in all functions, according to Kamalahmadi and Parast (2016). Systematic, strategic, and agility to deal with a crisis are all critical elements in risk-management culture, a significant component of SC management (Liu et al., 2018). SCR management allows for both reactive and proactive vulnerability reduction. It aids in the monitoring of SC shifts and approaches related to customer needs, competitors, and technologies in the reactive approach. It helps to identify and mitigate potential risks before they occur, and it does so proactively (Hallikas et al., 2004). The introduction of something entirely new can only spark organizational innovation. Knowledge culture and strategic planning are closely linked to the level of innovation. Corporate survival, growth, and resilience can all be impacted by this issue (Abeysekara et al., 2019).

According to Wieland and Wallenburg (2013), agility is quickly adapting to changes in the environment by modifying its established stable configuration. According to Kamalahmadi and Parast (2016) and Liu et al. (2018) agility is also relevant to SCR's reactive aspect and is closely linked to emergencies.

As a result of collaboration, it is possible to examine and appreciate the synergy of an SC. Two methods have been widely used to achieve cooperation: trust and information sharing (Kamalahmadi and Parast, 2016). There are two types of collaboration that Barratt (2004) characterized. Integrating customers with internal channels throughout functional units and with suppliers is one example of vertical collaboration. A different kind of horizontal collaboration involves working with competitors and non-competitors. Collaboration lowers the likelihood of disrupted distribution channels and increases market competitiveness (Kamalahmadi and Parast, 2016). Abeysekara et al. (2019) assert that closer ties with key suppliers are critical to SC risk management success.

Resource-Based View (RBV)

Competitive advantage can be generated through procurement and supply chain management if the resources or capabilities are valuable, rare, unique, and nonsubstitutable (Brandon-Jones et al., 2014).

Even though opponents of the RBV complain that terms like resources and capabilities aren't distinct enough in the literature, as Brandon-Jones et al. (2014) pointed out, these distinctions are becoming increasingly important. In addition to physical, human, and organizational capital, resources have been categorized into financial, technological, and reputational capital, which have been expanded.

New business venture success (Zhao and Ha-Brookshire, 2014), manufacturing flexibility and supply chain agility (Chan et al., 2017), e-commerce capabilities (Mola et al., 2020), and sustainable growth and dynamic capabilities (Da Giau et al., 2020) are all explained by the RBV in the apparel industry. COVID-19 pandemic resources include the ability to innovate goods, operational flexibility, on-the-spot information, and long-term viability (Queiroz et al., 2020). During a crisis, a clothing company can use the RBV to determine which resources are most important to have on hand. Apparel manufacturers can also use RBV to determine what to produce to provide value to other stakeholders (Brandon-Jones et al., 2014).

Apparel Supply Chain Vulnerability

Major economic disruptions immediately impact companies involved in global supply chains. They also recover more quickly than companies that don't participate in supply chains (OECD, 2020). This is due to the interdependence of the various networks involved in a supply chain. Bullwhip effect in case of setbacks and immediate market reaction in the scenario of recoveries are caused by this (Moazzem et al., 2020). For example, how much disruption and how quickly the company recovers depends on the supply chain segment or network in which it operates and the relationship it has with other supply chain segments. According to Moazzem et al. (2020), the company's raw material, components, product, export, and marketing networks all fall under this category. There is a greater concentration of export-oriented clothing sectors in product networks than in component networks. Almost all of the upstream and downstream elements of the apparel supply chain, such as the raw material supply chain and the marketing network, take place in places other than these three (Moazzem et al., 2020). As a result, a global crisis, like the COVID-19 pandemic, directly impacts countries' product and subsystem networks that supply raw materials.

However, this level of competitiveness has not been maintained, particularly in original manufacturing brands and original designs. As a result, the industry's value chain has only been improved at the process level (Moazzem et al., 2020).

High production volume and low-value activities are the main characteristics of this segment. The raw material inventory, cash flow, and labour management all suffer significantly when there is a significant disruption in these production networks (Moazzem et al., 2020).

Results and Discussion

COVID-19 Impact on Apparel Industry

Global markets have been rocked by the crisis, which is likely to impact the worldwide economy.

As a result of the severe disruption of global supply chains and the escalating health crisis, garment manufacturers in several Asian countries have been ordered to stop or reduce production, leading to nationwide restrictions on people and economic activity (ILO, 2021). Due to China's decision to halt upstream garment and textile manufacturing after the Lunar New Year and impose transportation restrictions to prevent the virus from spreading further, Asian garment-producing countries, many of which source raw materials from China, experienced a chain reaction. To illustrate just how tightly Chinese manufacturers are integrated into global supply chains, in 2018, 53.7 per cent and 60.6 per cent of textile imports from East Asian and Southeast Asian countries came from China (WTO, 2019). Trims and accessories are frequently sourced from China as well. Chinese factories will need time to increase their production capabilities before supply levels rebound after the COVID-19 outbreak was contained by the end of February (WTO, 2019). Travel restrictions, rising costs, and a lack of raw materials are quoted by producers as the main impediment to resuming entire operations following the hurricane (Lu, 2020). In addition, transportation restrictions prevent raw materials from reaching other countries in the region that manufacture clothing.

Numerous Asian garment manufacturers are also struggling to meet demand. The COVID-19 outbreak became a global pandemic in March, causing a significant economic impact worldwide. Because many retail establishments were closed to the public, European and American buyers began cancelling or halting orders from suppliers as a result (ILO, 2021). COVID-19 has had a negative economic impact on Asian garment factories outside of China, which may have initially viewed the virus as an opportunity for increased orders as customers were looking for alternatives (WTO, 2019).

Moreover, to the unfortunate human consequences, COVID-19 is expected to have a significant economic impact. According to recent estimates, the number of working full-time could drop by 195 million by the Q2 of 2020, a decrease of 6.7% (ILO, 2021). The UNCTAD estimates that the pandemic will cost the world economy $1 trillion in 2020 because of the uncertainty caused by the epidemic. Furthermore, according to the organization, the COVID-19 epidemic could cost global value chains $50 billion in exports (UNCTAD, 2020).

COVID-19 harms garment factories in four key aspects, lack of supply, demand, labour shortage, and closures. Considering how tightly China is integrated, it is likely that in global supply chains, the initial infection in China will remain to affect the rest of the world (Barrie, 2020). It will take time to locate alternate sources of textile and accessory inputs, which could cause a further delay in production. Raw materials will be even more scarce in the future due to transportation restrictions on land, sea, and air.

There has already been a decrease in consumer spending and consumption due to the COVID-19 virus's economic impact. Recessionary consumers' decreased income, social isolation, and apprehension about spending money will reduce global demand for products, which include clothing. Even if the global economy eventually recovers, no one knows when (Craven, 2020).

There is a possibility that garment factories will run out of workers.

If a factory employs foreign workers, they may discover that they have returned to their home country of origin (ILO, 2021). The absence of workers could be because they are ill. After all, they are afraid or need to care for their families. This is especially true for female garment workers, who shoulder a disproportionate amount of domestic and childcare duties (ILO, 2021)

Impact on Apparel Producing Countries

Sri Lanka

Apparel suppliers in Sri Lanka say they've lost orders totalling $US 5 billion (Sri Lanka Apparel, 2021). As a result, they cannot pay their employees' salaries in May and must lay off at least 30% of their workforce (ILO, 2021). At least 50 factories in Sri Lanka, as per the Apparel Exporters' Association of Sri Lanka, were facing temporary closure earlier than usual as of 2nd March 2020 (Ladduwahetti, 2020). Under government orders, factories have been forced to close in some areas (Barrie, 2020).

Bangladesh

Bangladesh's government announced a public holiday until April 25th to contain the spread of COVID-19 on April 14th, 2020, at which point most factories in the country shut down (ILO, 2021). Production of Personal Protective Equipment (PPE) is exempted from the new rules (BetterWork, 2020). According to Bangladesh apparel manufacturers and exporters, more than $ US 3.15 billion in orders have been suspended or cancelled because of COVID-19, affecting 1,136 factories. Ready-made garments accounted for 84% of Bangladesh's total exports in 2019, with $US 40.5 billion. 2.26 million workers are being impacted by the decline in demand (BGMEA, 2020). More than a million Bangladeshi garment workers have already been laid off or given indefinite leave due to the recent economic downturn (ILO, 2021). Solidarity Center reports that garment workers have negotiated with their unions to ensure they are paid during plant closures and given proper PPE to wear (Connell, 2020).

India

Clothing manufacturers in India have predicted that the country's garment industry will suffer a 30 per cent decline in sales, resulting in a 10-15 per cent increase in unemployment in the sector (Fiber2fashion, 2020). For 21 days beginning on March 25, 2020, the entire country, including factories, is on lockdown (Sani, 2020).

Vietnam

When raw material (RM) from China was estimated to be further delayed in early March, it resulted in a loss of up to US$2 billion in Vietnam (Star, 2020). Since then, Western buyers have begun cancelling or suspending orders for garment manufacturers. It has been reported by the Ministry of Labor, Injured Persons, and Social Affairs that many garment manufacturers have had to reduce shifts and overtime hours (Buckly, 2020). There have been strong social distancing rules implemented across the country from April 1-15, 2014, to prevent the spread of COVID-19 (Better Work, 2020).

Cambodia

According to the Ministry of Labor and Vocational Training's latest official figures, 91 Cambodian factories have partially or entirely halted production for one to two months. It is expected that many more factories will be shut down (Better Work, 2020). Unions in Cambodia like the National Trade Union Confederation (NTUC), which represents Cambodia's garment workers, and the Collective Union of Movement of Workers (CUMW) have urged the Cambodian government to temporarily suspend garment production to prevent the spread of COVID-19 (ILO, 2021).

Short-Term Resilient Strategies during the Pandemic

When times are good, the value chain's market players use different business strategies than when things are bad. The business's resources and interaction with consumers, vendors, the government, and associates play a role in crisis management strategies. In contrast, the way countries deal with issues associated with the workplace varies widely, depending on various factors and the size of stimulus packages aimed at workers. The economy's structure includes the most vulnerable group and the capacity of job market institutions, such as employment laws, salary setting, unemployment compensation, and active labour market policies that can accommodate and absorb shocks (Moazzem et al., 2020).

Managing the Cashflow

Businesses are often forced to close their doors because of a lack of financial resources or cash flow issues, especially in difficult economic times. To ensure a sufficient cash flow, even financially sound factories may be forced to take action as the situation worsens, depending on how long it takes for global supply chains to rebound. As a result, factories must focus on managing their cash flow to continue to operate despite the worldwide supply chain disruptions (WTO, 2019).

Apparel manufacturers have taken significant steps to alleviate the immediate financial challenge. Factories were thinking about ways to reduce their costs. Manufacturers were forced to reevaluate and streamline their processes due to the COVID-19 incident. In the beginning, the focus was on lowering their variable costs. It's easier to cut expenses by concentrating on the ones that can be changed rather than those that can only be fixed (Kilpatric et al, 2020).

To avoid having to lay off workers, factories reduce their labour costs. Factories went on voluntary pay cuts for executive and senior employees of the business. Also, factories cut down other perks such as attendance incentives and various additional bonuses to protect cash and survive in the industry.

Improved Communication

Communication is essential in times of crisis. To be successful, no factory can operate without the help of both internal and external stakeholders. Manufacturers kept in touch with their stakeholders during the outbreak of COVID-19 to maintain a good working relationship.

Factory workers were not taken for granted, as they play a critical role during a crisis. Workers were made aware of the emergency and what it meant for the production plant and the workers themselves by making sure they were open and honest about the situation. Factory managers encouraged a wide range of employees to participate actively in the discussion and brainstorm ways to keep the factory running and productive until business resumes as usual (ILO, 2021).

Customer service is an integral part of running a successful business and is particularly critical in manufacturers. The company's passion and commitment to continuing production were clearly communicated to the customers. However, discouraging as it may be for the factory now, the sale will increase again in the months ahead even if orders drop. To avoid losing their current customers, they wanted to ensure they were the obvious choice and could work together again. Customers were also interested in purchasing other products in response to the recent outbreak of COVID-19. For example, personal protective equipment such as face masks and other items have been requested by Western buyers (Lu, 2020).

Improved Employee Welfare

A company's top priority as an employer is to ensure the health and well-being of its workers. Factory management confirmed that all employees, including women and migrant workers, were involved in preventing the further spread of COVID-19. As a result, the workplace became a healthier, safer workplace. Factory workers need to know how the COVID-19 virus spreads and what they can do to stop it, both at work and home and in their communities, to get people involved. The following are some of the steps factories have taken to raise awareness and provide adequate information to all employees (ILO, 2021):

Arrange for briefings on COVID-19 amongst factory workers; consider holding virtual briefings on the best ways to maintain a sufficient social distance. Caretakers' increased risk of infection should be considered when formulating recommendations. They were helping workers with their health and safety through the use of Occupational Health and Safety Officers. Placing notices and posters around the factory to promote social seclusion, good hygiene, and worker safety. The factories were also kept clean and sanitary by the companies. COVID-19 spreads in factories by contaminating surfaces touched by workers, so the surfaces are disinfected regularly.

It was done in a non-discriminatory manner that resulted in as minor damage as possible to those workers when factories were expected to cut working hours or discontinue employment. The companies' constant concern was to find ways to alleviate their employees' financial stress. Governments have implemented various financial assistance programs worldwide to help businesses pay their employees' salaries. When factories in Cambodia closed, garment workers received 60% of their minimum wage, with 40% from factory owners and 20% from the government (Clean Clothes Campaign, 2020).

Long-Term Resilient Strategies after the Pandemic

Market Consolidation

During the years leading up to the pandemic, the market grew in value, but market concentration increased. Between 2011 and 2020, the market share of the top ten apparel brands is expected to grow from 11.4% to 8.8% (Judd and Jackson, 2021). Around 97% of the garment industry's profits were generated by just 20 companies, 12 of which were among the top 20 in economic gain over the last decade (McKinsey and BOF, 2020).

Consolidation of global supplier bases has been another trend for brands (Judd and Jackson, 2021). Evidence from influential brands implies that supplier channels have shrunk considerably, with many suppliers focused on a smaller number of countries. From 2010 to 2019, Nike reduced the number of factories its sourced footwear from around the world from 163 to 112. In addition, the number of clothing factories fell by a whopping 47%. According to industry experts, these trends are expected to continue after the COVID-19 crisis (Judd and Jackson, 2021).

Large, vertically integrated suppliers are the only ones who can consolidate and concentrate. There is a shift in the roles between customers and suppliers, increasingly taking on aspects of product design and development, inventory management and stockholding, supply chain logistics and multi-factory production planning (Kumar, 2020).

Distributed Sourcing Locations

Over time, the geographic distribution of sourcing has changed. In 2019, China will account for 33% of the world's apparel and footwear exports (ILO, 2021).
A recent downward trend has seen exports drop from 37% in 2015. Many observers believe that the world's reliance on Chinese clothing production is dwindling (Judd and Jackson, 2021).

Viet Nam and Bangladesh have benefited from China's decline in influence.
Even though their GDPs in 2019 were less than 4% of China's, the two countries combined share of global apparel and footwear exports equalled 37% of China's share (WTO, 2019). According to the World Trade Organization data, India and Sri Lanka's apparel and footwear exports have remained stable or decreased over the past few years.

When it comes to supply chain risk diversification, some companies are reconsidering the value of expanding their supplier base beyond just China. This trend is expected to continue after the COVID-19 pandemic, and it may even accelerate. A small percentage of industry experts believe this will spread to other continents, such as Africa, insignificant way (ILO, 2021).

Flexibility, Speed and Control

Before the COVID-19 pandemic, "fast fashion" was the robust business model of the industry, with brands and manufacturers constantly under pressure to lower the time to market, which is a critical measure of industry agility and ability to respond to fashion trends (Berg et al., 2018). Berg et al. (2018) explain that some fashion brands had time to market less than a month before the pandemic.

Supply flexibility is an essential part of fast fashion, and a study done in 2010 modelled the iconic fast fashion strategy for supply flexibility. Profit and market capitalization rose by double digits with a 5% revenue increase, according to the research, because supply agility helped lower inventory costs (Cheng and Choi, 2010).

Many leading industry experts have pointed out that the sector is generally slow to change and wasteful, especially when compared to other industries with widely dispersed manufacturing, such as electronics and automotive (Judd and Jackson, 2021). Markdowns, excessive inventories, and poor forecasting caused enormous losses for buyers in the pre-pandemic era. Still, instead of cutting costs, industry experts say, brands increased pressure on employees and vendors to maintain margins (Robinson et al., 2019).

Nearshore Capacity

Clothes production near major European and North American markets is referred to as nearshoring. Questions about the likelihood, scope, and impact on apparel employees in Asia of such an event remain a top priority for the industry. In countries such as Bulgaria, Egypt, Morocco, and Turkey, which already supply European brands, evidence suggests that European Union (EU) customers and the European Commission (EC) are seeking to enable greater nearshoring through reductions in garment-related trade duties (VogueBusiness, 2020). However, nearshoring prospects may be exaggerated because production capability limitations in many countries may ultimately limit this trend (Judd and Jackson, 2021).

There has been renewed talk of relocating some U.S.-bound garment production to Central America in the post-COVID-19 era due to growing trade tensions with China and the widespread supply disruptions during the pandemic. Based on recent comparisons of "landed costs" for garments made in Bangladesh and China compared to those made in Guatemala and Honduras, there may not be much incentive to relocate production, despite long-term deals with these countries (Robinson et al., 2019). Like the European Union, Central America's limited fabric production infrastructure makes nearshoring impossible (Fiber2fashion, 2020). The availability of raw materials, for example, will continue to be a significant concern for US buyers after the pandemic. However, experts have noted that they may return to Asia to seek new opportunities (Judd and Jackson, 2021).

A rise in nearshoring, particularly for high-end clothing and footwear with highly automated production, is predicted by some industry observers despite capacity constraints close to the US and EU markets after the pandemic (WTO, 2019).

Use Information Technology

According to IPT, communication between companies is hampered by the lack of a common language, shared understanding, and methods for evaluating value (Gu et al., 2021). The exploitation of IT automates information collection and eliminates misunderstandings between SC parties. Because of this, it encourages a sense of unity and efficiency in the use of resources (Im and Rai, 2008).

The pretty unstable environment necessitates SC partners to develop standardized information formats and gain a common understanding of tasks related to reducing dispute and time in interruption recovery processes, particularly when SC interruptions pose a threat to firms. Consequently, suppliers' and customers' respective resilience will be improved through IT (Gu et al., 2021).

Additionally, supplier IT use streamlines upstream operations such as purchasing, invoices, and inventory management. Upstream disruptions can be alleviated by standardizing information, enabling businesses to remedy material shortages and recover quickly, thus enhancing supplier resilience (Gu et al., 2021; Wang and Wei, 2007). The focal company and its suppliers can benefit from prominent and accessible information searching through IT. When their activities are interrupted, businesses will have more perspective on what they face. Supplier resiliency can be improved by swiftly implementing decisions that both parties agree on (Kim et al., 2011).

In unstructured tasks, the use of IT for exploration encourages the SC partners to share a wide variety of information in-depth. Idiosyncratic environments can benefit from the experimentation and innovation that comes with them (Gu et al., 2021; Im and Rai, 2008). When the environment is dynamic, this info and competence are more valuable. The setting is highly volatile when disruptions occur. There must be enough information available to the company and their supply chain partner organizations to begin taking action right away (Gu et al., 2021). Exploration made possible through information technology results in a more dynamic data exchange. The result is a more significant supplier, and customer resiliency level as firms can dynamically reconfigure their processes in response to environmental changes. When companies and their suppliers implement IT for exploration, they perform uninformed strategies and unstructured operations.

IT infrastructure integrated into a higher level of inter-firm partnering can enable thorough information sharing and streamline previously unorganized activities (Gosain et al., 2004; Rai and Tang, 2010). Companies and their supply chain partners use IT to share direct knowledge and modify planning and scheduling raw material when an unexpected disruption occurs upstream. Because of this, they can respond quickly to SC disruptions and maintain upstream operations in the long run. In addition, IT helps companies better integrate with their suppliers. They have the ability to standardize and automate non-structured processes, as well as solve problems and recover quickly after a disruption (Gu et al., 2021; Wang and Wei, 2007).

As a result, suppliers are more likely to be resilient if they use supplier IT. Similarly, customer IT use increases customer resiliency by empowering the exchange of information and improving integration in unstructured processes. The ability of companies to adapt to changing demand and satisfy consumer standards is enhanced through the collection and analysis of disruption data supported by IT use (Tarafdar and Qrunfleh, 2017). It also reduces the amount of time it takes to process information in the event of a disruption in the future. Because of this, the customer's resiliency is enhanced.

Conclusion

Uncertainty about future configurations and the recovery pattern following COVID-19 is the new normal in the apparel industry. In addition, these scenarios could be reimagined in different timelines and on a successive, incremental basis. This industry's future cannot and should not be based on returning to the "old" normal. There are numerous examples to support this assertion. Before COVID-19, the sector was vulnerable to external shocks because of a lack of productivity and infrastructure and unsustainable practices. Risk disclosures, which are required by law in many countries, reveal how little major brands have prepared for the convergence of risks that will occur in 2020.

Brands will likely expand and improve their risk analyses and professionalize their predictive planning as the industry recovers from the pandemic, allowing them to better predict and manage multiple simultaneous blows to their business. A more fundamental shift in industry basics will be necessary for the industry to become more resilient, fair, and sustainable. This will necessitate a rebalancing of vulnerabilities and how they will be distributed.

Resilience also depends on the attempt to align production and sustainability requirements in the business model. This is an area for practitioners and scholars to explore and provide insights to maintain resilience in the apparel industry in the future.

Future research can be conducted to understand the impact of nearshore initiatives from both supplier and customer perspectives. As mentioned above in the discussion, technology adoption is one of the long-term strategies. Research can be conducted to understand the impact of technology on resilience and the factors influencing quick decision-making.

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