

# BUILDING SUPPLY CHAIN RESILIENCE

ASSESSING THE IMPACT AND RESILIENCE OF  
YORK REGION'S MANUFACTURING SUPPLY  
CHAIN IN RESPONSE TO COVID-19

SPRING 2021



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# Executive Summary

## **UNDERSTANDING THE LANDSCAPE**

When COVID-19 hit and Canada launched its lockdown strategies at the federal, provincial and municipal levels, the manufacturing industry faced immediate impact. According to a recent Supply Chain Canada survey, 70% of Canadian supply chain professionals noted their organizations experienced supply chain disruptions as a direct result of COVID-19 implications.<sup>1</sup> This was illustrated by the inability of government and industry to secure access to personal protective equipment (PPE) such as masks, gloves and sanitizer for frontline workers. Similar issues were experienced across the manufacturing process. As borders locked down around the world, the inflexibility of industrial globalization was clear. At the same time, the world was witnessing a rise in nationalism as many countries attempted to divert critical supplies for internal use by local populations.

In Canada, we saw the closure of non-essential businesses, which deeply impacted the country given approximately 40% of all imported goods are non-essential. As these inbound containers sat burdened with inventory for months, the natural flow of containers globally slowly began to congregate in non-traditional locations, resulting in container shortages at points of global embarkation and port congestion. To keep production running, York Region manufacturers turned to airfreight to access critical components that were produced offshore. They quickly found that available airfreight capacity was severely restricted and prohibitively expensive. Most goods are shipped in the cargo hold of passenger aircrafts; with passenger flights falling 85% during the pandemic, this created severe capacity constraints.

Finally, as the pandemic hit Canada, manufacturers faced non-traditional shifts in their demand with virtually no notice. Some industries, such as automotive, shut down completely in the first few months, while others like pharma, food and paper goods saw massive upswings due to consumer stockpiling. With short notice shifts in demand and long global supply chains for many manufacturing components, York Region manufacturers faced a myriad of challenges to navigate during the first two months of the pandemic, with many forced to pivot in order to survive.

## **THE PROCESS**

To facilitate economic recovery and build manufacturing capacity and overall supply chain resilience, The Regional Municipality of York, in partnership with the cities of Markham, Richmond Hill and Vaughan (study co-sponsors), sought a deeper understanding of local manufacturing supply chain constraints, particularly within key industry verticals. To facilitate this work, they collaboratively engaged the support of Canadian industry association, Supply Chain Canada, and supply chain management consulting firm, Supply Chain Alliance.

Over several months, Supply Chain Alliance conducted detailed interviews with CEOs and supply chain and procurement leaders of York Region manufacturers in key sectors to identify COVID-19's impact on their businesses, learn how these leaders responded, assess their state of readiness to the pandemic, and uncover any move-forward plans businesses have made to address future disruptions.

<sup>1</sup> <https://www.supplychaincanada.com/coronavirus-covid19-resources>

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### **A FRAMEWORK FOR SUCCESS**

The following insights provide a framework of best practices that businesses can use when confronted with future supply chain disruptions:

1. Review business continuity plans (BCP) in the event of unplanned disruptions
2. Secure systems and data against cyber attacks
3. Create alternative manufacturing and logistics capacity
4. Focus on dual sourcing or increase inventory of critical components to enable manufacturers to weather sourcing disruptions
5. Build strong supplier relationships and know their capabilities
6. Develop alternative labour plans that address backfilling massive workforce losses
7. Accelerate supply chain digitization; allow technology to share demand signals with trading partners and automate communications
8. Consider the feasibility of nearshoring
9. Boost your ability to rapidly reduce and/or change your offering

With respect to government recommendations, the study revealed York Region manufacturers would benefit from the following support from their different levels of government:

#### **Municipal Governments**

1. Continue to build strong relationships with manufacturers in the Region
2. Make advice available by bringing the manufacturing community together to share best practices and resources, acting as a conduit of knowledge during a disruption
  - a. Lead BCP workshops to assess risks and preparedness
  - b. Facilitate manufacturers conference calls during disruptions
  - c. Facilitate conversations with provincial and federal governments
3. Facilitate the move to ecommerce and digitization

#### **Federal/Provincial Governments**

4. Increase cybersecurity funding and resources for both the public and private sectors, focusing on workforce training and professional development, research and development (R&D), and technology adoption
5. Establish a supply chain focal point within government and a national early warning system
6. Introduce smart, enabling supply chain policies
7. Review emergency financial programs for overall effectiveness
8. Invest in workforce training programs aimed toward future economic activity

# Introduction

## WHAT DOES IT MEAN TO BE RESILIENT?

Today's manufacturing supply chains need to move quickly to meet customer demand despite disruptions. Being able to bend, not break, is as important to supply chain management as reliability and efficiency.

Supply chain resilience has been described in several ways in academia and in practical discourse, particularly since the start of the COVID-19 pandemic. This report relies on the following working definition of supply chain resilience:

The supply chain's ability to prepare for unexpected risk events, respond and recover quickly to disruptions and return to its original situation or grow by moving to a new, more desirable state in order to increase customer service, market share and financial performance.<sup>2</sup>

In simpler terms, from a systems approach proposed by Joseph Fiksel (2006), resilience can also be viewed as "the capacity for an enterprise to survive, adapt, and grow in the face of turbulent change".<sup>3</sup>

## METHODOLOGY

This report summarizes observations generated from video conference interviews and electronic surveys with leaders of 30 companies from across York Region within the following five industry verticals:

- Electronics and electrical
- Food & beverage/agriculture & processing
- Building materials
- Automotive components
- Pharma/medical devices

York Region's local municipalities of Markham, Richmond Hill and Vaughan (study co-sponsors) each represented about 30% of all participating companies with the remainder 10% located in Northern York Region.

The study also relies on industry knowledge and secondary information sources to provide a broader understanding of how the pandemic has influenced, and continues to shape, supply chain operations.

The objectives of this report are three-fold:

1. Identify and assess the impact of COVID-19 on York Region manufacturers; reveal their actions, state of readiness, and move-forward plans.
2. Outline preliminary high-level recommendations and best practices for manufacturers to address both current and future supply chain resilience issues in the event of continued COVID-19 economic uncertainty or similar major market disruption in the future.
3. Outline high-level recommendations and best practices for municipal and upper-tier government economic development stakeholders to facilitate local manufacturing supply chain resilience in the event of continued COVID-19 economic uncertainty or similar major market disruption in the future.

The report was commissioned by The Regional Municipality of York, with the support of The City of Markham, The City of Richmond Hill and The City of Vaughan.

Supply chain management consulting firm, Supply Chain Alliance, conducted the interviews, provided the strategic analysis, and compiled the report, with the guidance of Canadian industry association, Supply Chain Canada.

The analysis reveals rich insights into the behaviours, beliefs and expectations of York Region manufacturing businesses as they continue to face the fall-out of COVID-19. Following this study, the Region may consider undertaking in the future a larger and more targeted study to deliver comprehensive supply chain crisis "playbooks" both for local manufacturers in specific industry verticals as well as for economic development stakeholders.

<sup>2</sup> <https://www.emerald.com/insight/content/doi/10.1108/IJPDLM-05-2013-0128/full/html>

<sup>3</sup> [https://www.researchgate.net/publication/320927352\\_Sustainability\\_and\\_resilience\\_toward\\_a\\_systems\\_approach](https://www.researchgate.net/publication/320927352_Sustainability_and_resilience_toward_a_systems_approach)



# Company Feedback

The feedback below is organized in the same sequence as the interviews with the manufacturers: initial impact in the early days of the pandemic, specific actions that were taken by the company, an assessment on the state of readiness and finally, plans or steps the company looks to take for the future. Thank you to all the participating companies for their insight and contribution.

## ▣ IMPACT

### SUMMARY OF FINDINGS

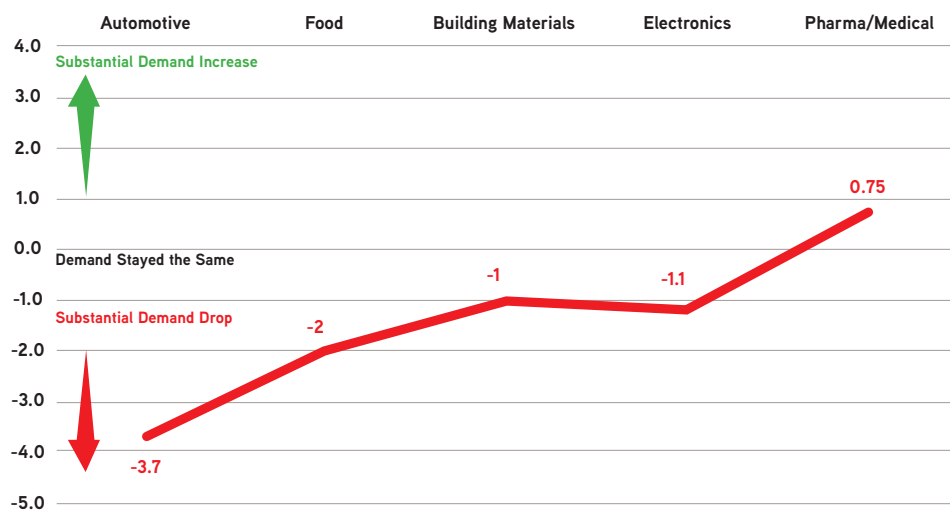
Changes in demand | Impact on labour | Sourcing challenges | Costs and complexities

### CHANGES IN DEMAND

As expected, demand impact differed across industries and by individual businesses within the same industry. Businesses supporting sectors that faced steep decline or closure, such as education and foodservice, saw demand drop to a fraction of pre-pandemic levels.

Some companies saw a dramatic shift in their product mix, while others were able to shift production focus quickly and produce ventilators or hand sanitizer. Generally, the greatest demand impact was felt within the first two months.

### Initial Demand Impact



Companies were asked to assess the initial impact of the pandemic on the demand for their products, ranging from substantial drop to substantial increase in demand. Leaders from the Automotive sector felt they had the largest negative impact whereas the Pharma/Medical sector showed a slight increase in overall demand.

## **IMPACT ON LABOUR**

The impact on labour varied depending on sector and shifts in demand. It also came from the employees themselves. Some businesses that remained open reported hearing from employees who were too frightened to return to the office or production site, requesting to be laid off so they would be eligible to collect the government's CERB program.

For all respondents, labour planning was impacted, particularly those that relied heavily on final mile delivery. When offices and sites did open, many companies reported difficulty in filling positions as they were competing with CERB. While some of the businesses interviewed for this study noted that a few of their employees contracted COVID-19, they were not considered (at the time of writing this report) community outbreaks and didn't spread throughout the workforce.

## **SOURCING CHALLENGES**

Following the initial shock of COVID-19, many businesses noted that materials such as steel and corrugate were difficult to source or that they required much longer lead times particularly due to the change in mix, such as different packaging sizes or configuration. Companies with a more global supply chain were more heavily impacted than those that sourced domestically, as were the companies that are unable to stockpile materials or that produced custom, "made-to-order" products.

Some companies faced supplier issues in response to more rigorous local government restrictions, such as those operating in Quebec.

## **COSTS AND COMPLEXITIES**

Businesses noted that air freight costs increased substantially as commercial airline capacity dramatically reduced. Costs and transit times also sharply rose on ocean and surface freight as the network was thrown out of balance.

Although some companies reported experiencing border issues with their inbound materials, this did not appear to impact the majority of companies. However, restricting people from crossing the border was an issue. One respondent noted that while it received the equipment it required, foreign technicians could not be sent to install it, which required a shift to virtual installation demonstrations.

## **▣ ACTIONS**

### **SUMMARY OF FINDINGS**

- Ensuring a safe environment
- Shifting labour needs
- Communicating with suppliers and customers
- Tapping into government aid
- Simplifying focus and portfolios
- Accelerating planned projects and change initiatives

### **ENSURING A SAFE ENVIRONMENT**

As the pandemic took hold, respondents noted that they immediately started planning and building safe work environments for their employees and their customers. This included sourcing PPE (which proved particularly problematic for some companies), setting up safe workflows in their sites, staggering shifts to avoid overlap of staff, introducing flexible work hours, and setting up employees with the technology and support to work from home.

### **SHIFTING LABOUR NEEDS**

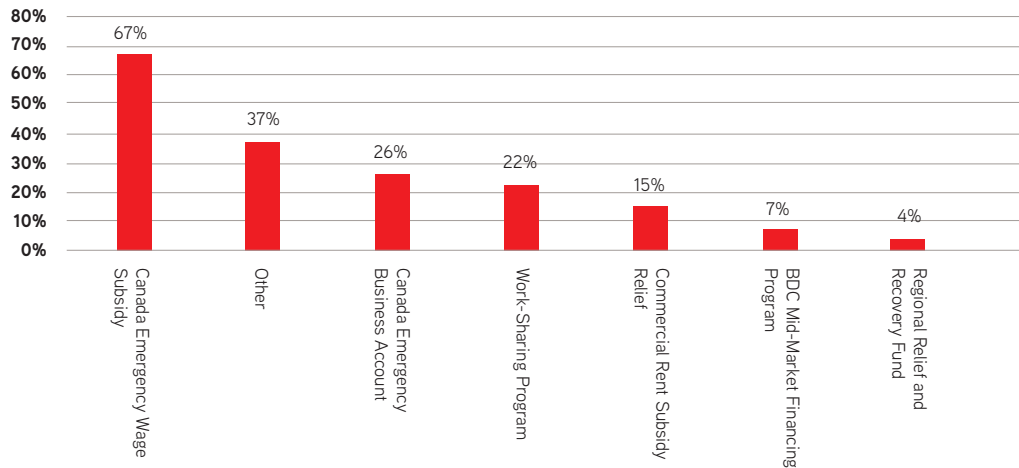
Businesses differed in how they handled employees during the initial slowdown. Most respondents noted they were able to swiftly implement work-from-home measures for office staff with relatively minimal disruption. In cases where demand dropped, many companies were forced to lay off employees (with agency workers being the first to go). Others continued to pay staff during the lockdown, some adding in COVID-19 bonus pay. Companies that experienced increased demand needed to hire additional employees to keep up. When offices and sites opened, some companies found it difficult to fill positions.

A strong focus for companies in the first weeks of the pandemic was communicating with employees, suppliers and customers to prioritize production, establish inventory availability, and ensure deliveries and operations continued.

### TAPPING INTO GOVERNMENT AID

Many respondents noted that they took advantage of government programs, but not all. Some used the financial aid to “top up” employee wages. Companies with greater resources, or that had a global footprint, typically had a greater understanding of the different support available to them and how to access government aid.

### USE OF EMERGENCY AID PROGRAMS



Many companies dedicated individuals or formed COVID-19 committees composed of internal employees who were tasked to follow government announcements on new or changing supports. Companies also relied on outside advisors such as accounting firms for such information. A few companies did call out how valuable its municipality was in providing ongoing information.

### SIMPLIFYING FOCUS AND PORTFOLIOS

As demand changed, companies reported simplifying their portfolios to focus attention on their “A” SKUs. Others adapted to a changed product mix. Some businesses decided to temporarily shift production to high-demand healthcare products such as ventilators, hand sanitizer and PPE to support the overwhelming country-wide needs of essential workers.

### ACCELERATING PLANNED CHANGE

While some companies closed down operations altogether until restrictions were lifted, others used the downtime to complete construction projects and install needed equipment. Companies also reported using the time to sanitize their facilities in preparation for renewed operations. “These kinds of disruptions help accelerate change,” explained one respondent.



## ▣ STATE OF READINESS

### SUMMARY OF FINDINGS

- Recovery plans for future large-scale disruptions
- Good people seen as the secret sauce
- Focus on cybersecurity
- Global knowledge accelerates response

### RECOVERY PLANS FOR LARGE-SCALE DISRUPTIONS

When asked whether they had a formal business continuity plan – a specific document that outlines how business will continue operating during an unplanned disruption in service – many respondents noted that any plans they had in place were largely in response to industry quality requirements such as ISO or BRC. Some companies were mandated by their customers to have a formal plan outlined. Larger, multinational companies appeared to have more uniform business-disruption plans than smaller, single facility operations.

While for the most part plans did not address a pandemic, some companies did have some protocols they could draw from as a result of the SARS outbreak that hit Canada in 2003.

### GOOD PEOPLE SEEN AS THE SECRET SAUCE

Having good people was often cited as the reason why a company was able to respond quickly and effectively to the pandemic. This was especially true in smaller companies that identified as having long standing, loyal employees who pulled together to help the business weather the challenges and, in some events, charter a new business course.

In addition, respondents noted the importance of transparent and effective communication in keeping employees updated and connected, particularly during the first lockdown.

### FOCUS ON CYBERSECURITY

While businesses generally agreed that cyber security is important, they differed substantially in the focus they give it. Some respondents reported that they have invested in robust software and infrastructure in the event of a cyber attack or other system failure.

A few companies admitted to falling victim to a cyber attack, which amplified and accelerated the need to defend against a future disruption. Prioritization of cyber security varied by company.

### GLOBAL KNOWLEDGE ACCELERATES RESPONSE

Companies with suppliers or operations in China tended to have better visibility into the early stages of supply chain disruption and so were able to transfer knowledge to decision-makers at the outset. In addition, businesses that were used to pre-ordering their materials in Q4 in response to the annual closing of plants for Chinese New Year, also managed to buffer their supply relatively well.

## ▣ MOVING FORWARD

### SUMMARY OF FINDINGS

- Little focus on recovery plans
- Need for dual sourcing
- Nearshoring opportunities and complexities
- Accelerating ecommerce
- Reaching new customers

### LITTLE FOCUS ON RECOVERY PLANS

Although most companies noted they were ill-equipped to manage such a large-scale disruption as COVID-19, when interviewed more than 10 months into the pandemic, many respondents did not feel a more detailed business continuity plan would have helped them or is needed. While some believe having a business continuity plan is best practice, some respondents do not plan to develop a formal, detailed plan in the near future.

As noted earlier, many companies called out their employees as the most influential factor in weathering the challenges brought on by COVID-19, which could impact how they regard investing in a formal plan. For those who were minimally impacted by the pandemic, or managed to grow during this time, a business continuity plan may also not be high on their priority list.

## **A FEW OF THE COMPANIES EXPRESSED THEY HAD THE CAPABILITY OF PRODUCING THE SAME PRODUCTS ACROSS MULTIPLE PLANTS, EXPLAINING THEIR GOAL WOULD BE TO HARMONIZE PRODUCTION.**

### **NEED FOR DUAL SOURCING**

While increasing dual sourcing of materials was often cited as “a goal”, during the height of the pandemic, companies were at various stages along this journey. Some companies reported having dual sourcing in place for key components, whereas others were challenged by proprietary designs and processes or the time and effort it would take to put such an initiative in place.

### **NEARSHORING OPPORTUNITIES AND COMPLEXITIES**

Some respondents discussed the feasibility of nearshoring their manufacturing from China to North America with Mexico often cited. They also indicated tariffs as another factor that would play into this decision.

A few of the companies expressed they had the capability of producing the same products across multiple plants, explaining their goal would be to harmonize production. They understood that to do so, they would need to balance the investment in technology with the offset in labour costs to design and build such an operation. “At the end of the day it’s all about the money,” cited one respondent.

### **ACCELERATING ECOMMERCE**

Online shopping for a wider range of products and direct-to-consumer distribution accelerated as more shoppers sought limited contact buying methods. Throughout the conversations, companies spoke about how the pandemic is accelerating their ecommerce plans and practices. Some companies quickly launched an ecommerce platform to remain viable and have a direct-to-consumer fulfillment channel.

### **REACHING NEW CUSTOMERS**

As noted earlier, some companies began manufacturing completely new products such as ventilators and PPE to help meet the needs of frontline workers and keep employees working. Other companies focused their efforts on reaching new customer segments. When schools and daycares closed, one company opened a new B2C online platform so they could sell their foodservice directly to end consumers.



# Recommendations

## ■ FOR BUSINESSES

### SUMMARY

- Review business continuity plans (BCP) in the event of unplanned disruptions
- Secure systems and data against cyber attacks
- Grow your alternative manufacturing and logistics capacity
- Focus on dual sourcing or increase inventory of critical components to enable manufacturers to weather sourcing disruptions
- Build strong supplier relationships and know their capabilities
- Develop alternate labour plans that address backfilling massive workforce losses
- Accelerate supply chain digitization; allow technology to share demand signals with trading partners and automate communications
- Consider the feasibility of nearshoring
- Boost your ability to rapidly reduce and/or change your offering

### REVIEW YOUR BUSINESS CONTINUITY PLANS

Despite the general lack of attention respondents plan to devote to developing a business continuity plan, there are clear benefits for those who invest in one. Not only does a formal plan provide a detailed roadmap for recovery that improves a company's speed and likelihood of reopening, it boosts confidence with employees, customers and suppliers. If a BCP already exists, it should be updated to reflect recent learnings from the COVID-19 pandemic. Business continuity plans do not need to be extensive or require significant investment, but they should include the following:

### Emergency Procedures

All activities pertaining to response, emergency notifications and recovery should be detailed and tested regularly using "table top" procedures and fire drills.

### Roles and Responsibilities

Companies should maintain a current list of all contacts for fire, police, environmental clean-up, commercial realtor, etc. They should also develop clear media protocols and designate a trained spokesperson to answer questions and manage the company reputation.

In addition, businesses should decide who – be it the CEO, VP of Sales or another – will reach out to customers in the event of a crisis. Companies would also benefit from building strong relationships with key government bodies and industry associations, which provide helpful sources of information during a crisis.

### Communications

When a crisis hits, internal communications must quickly and clearly focus on safety and best practices; in the case of COVID-19, this meant prioritizing sanitization and social distancing to allay employee fears about coming into work.

Given the heightened environment, respondents noted that their employees required repeated communication before they were able to absorb the messaging. Leaders also spoke of the need to engage their employees in an open dialogue to ensure they fully understood their concerns; successful companies don't gloss over difficult conversations.

Publishing FAQs on plant bulletin boards and monitors helped to keep the messaging front and center, as did encouraging employees to seek out publicly available information to stay abreast of rapidly changing directives.

## **SECURE YOUR BUSINESS AGAINST CYBER ATTACKS**

According to a 2020 CIRA (Canadian Internet Registration Authority) survey<sup>4</sup>, 25% of organizations surveyed experienced a breach of customer and/or employee data last year. As noted earlier, some respondents experienced their own breaches, so they saw firsthand the effect it had on their operations.

To mitigate risk, businesses should build a proper cyber security plan as part of their overall Information Systems BCP strategy. Part of this plan should focus on the collaborative ways employees work with one another. A July 2020 survey by VMware,<sup>5</sup> Inc. showed more than 90% of companies surveyed reported an increase in attack volumes as more employees worked from home.

Along with a detailed cyber security plan, businesses should conduct regular penetration tests on their own systems to protect against ransomware attacks and other forms of cyber attacks. They should also evaluate their software vendors based on their level of security and request regular performance checks for security. Software escrow is one avenue to consider.

## **GROW YOUR MANUFACTURING AND LOGISTICS CAPACITY**

### **Manufacturing**

COVID-19 caused entire manufacturing plants to shut down for periods of time. Respondents that did not carry enough finished product inventory to ride out the stoppage dealt with the shortage in various ways. Some respondents looked into producing products in more than one plant. Others turned to their parent company for support. Still more reached out to their suppliers for help with capacity. The overriding takeaway is the need for companies to have alternative manufacturing and logistics capacity available in the event of an emergency.

### **Warehousing**

When supply chains came to an abrupt halt, some respondents were left looking for extra space to hold finished goods. Maintaining good relationships with 3PL warehousing companies and instituting a regular request for information (RFI) provides businesses with valuable and updated information about warehouse capacity, locations, capabilities and contacts. In the event of a disruption it is very important to seek out and commit to available space quickly. This is especially important for smaller companies that may lose out to larger companies when space is at a premium.

### **Transportation**

Along with manufacturing and warehousing, transportation proved to be an issue for some respondents during the height of the pandemic. Equipment was stuck in storage, in yards or at ports, and available capacity is fixed in the short term. Businesses are best served by thinking through a transportation plan that considers both day-to-day transportation needs and emergencies.

### **Collaboration**

The extreme nature and impact of the pandemic also saw competitors coming together to assist one another during the crisis. The Government of Canada recognized this need, and on April 8, 2020, it released a statement<sup>6</sup> through the Competition Bureau of Canada allowing companies to collaborate “in good faith” for a period of time in keeping with certain policies and guidelines.

<sup>4</sup> <https://www.cira.ca/cybersecurity-report-2020>

<sup>5</sup> <https://www.vmware.com/uk/company/news/updates/vmware-carbon-black-global-threat-report-release.html>

<sup>6</sup> <https://www.canada.ca/en/competition-bureau/news/2020/04/competition-bureau-statement-on-competitor-collaborations-during-the-covid-19-pandemic.html>

## **IMPLEMENT DUAL SOURCING**

### **Key components**

Dual sourcing is a common best practice used by companies to reduce the risk of supply disruption. As some respondents discovered, relying on a single supplier for key components leaves them exposed.

### **Evaluation**

By examining the single sourcing of all critical parts, businesses can evaluate the level of risk. Whenever possible, this evaluation should consider the geographical location of their suppliers. Supply chain disruptions can be regional in the form of natural disasters, tariffs, border issues, etc. So, diversifying your supply chain footprint will help to mitigate exposure.

### **Practice**

Once a new supplier is identified, it's advantageous to award some of the volume to the second supplier. Working through design and production issues together in advance of a crisis may far outweigh the potential cost increase associated with adding a supplier to the mix. When dual sourcing is not an option, businesses may benefit by increasing the inventory of their critical parts so they are on hand in the case of a major disruption.

## **BUILD STRONG SUPPLIER RELATIONSHIPS**

Supply chains are made up of people. When disruption happens and priorities shift, the relationship a company has with its suppliers is what helps pull the business through. In the case of the pandemic, some respondents turned to their suppliers for assistance in securing additional manufacturing space and procuring PPE and other supplies.

It's also good practice to conduct regular assessments to ensure suppliers maintain a business continuity plan that addresses any constraints they may have and provides some visibility into their next tier of suppliers.

## **DEVELOP ALTERNATE LABOUR PLANS**

### **Shortage**

The pandemic revealed major shifts in labour requirements depending on a company's product type, industry and customer base. Many respondents faced sudden absenteeism as employees stopped showing up

for work out of fear of contracting the virus. Demand spikes also meant some businesses faced an immediate need for more labour.

### **Cross-training**

By cross-training employees, businesses are able to maintain a flexible operation for critical roles. Not only is this helpful during a disruption, cross-training also makes your operation more responsive to changing customer requirements. Risk is further mitigated by having back-up agencies or other sources of temporary labour available.

### **Working from home**

Working from home full time was generally accepted and adopted by respondents and it became a useful strategy to keep businesses running. Once social distancing rules are no longer required, companies should formalize a work-from-home policy that suits their culture and company goals. It should include the necessary hardware, IT support and security measures businesses might not have had time to fully detail when they were forced to enter lockdown.

## **ACCELERATE SUPPLY CHAIN DIGITIZATION**

The pandemic has accelerated digitization. Respondents explained that they are investing more heavily in technology to help employees work efficiently from home, and some are advancing their ecommerce plans quicker than predicted.

Digital tools are helping businesses make faster decisions and get closer to their customers, as well as:

- Providing inventory visibility throughout the supply chain
- Building relationships with end consumers using an ecommerce storefront
- Communicating quickly with suppliers using EDI or other systems interfaces
- Tracking inbound and outbound shipments
- Expanding on-line marketing programs for customers (e.g. webinars)
- Screening and documenting office visitors more accurately using visitor management software
- Implementing remote learning with employees

## **CONSIDER THE FEASIBILITY OF NEARSHORING**

As global supply chains ground to a halt during COVID-19, some respondents wondered whether nearshoring – transferring their business operation or supplier to their home country or a nearby one – would improve their supply resilience. When considering its feasibility, businesses need to take into account implications of cost, quality and complexity, making the initiative more of a medium to long term decision.

Some of the strategies respondents discussed as an alternative to nearshoring included:

- Automate to reduce labour needs if moving from a lower cost labour market to a higher one
- Standardizing and simplifying components so more suppliers can be considered
- More focused incentive programs for manufacturers to repatriate offshore production<sup>7</sup>

## **BOOST YOUR ABILITY TO RAPIDLY REDUCE AND/OR CHANGE YOUR OFFERING**

In addition to changes in demand, many respondents experienced a change in their product mix. High volume manufacturers immediately focused on their “A” SKUs or quickly changed packaging or product format, with some food manufacturers quickly switching from the halted food service industry to the in-demand at-home channel. Other companies used their production facilities to produce much-needed PPE, sanitizers or ventilators.

Moving forward, businesses should invest time into planning their customer allocation strategies in advance. Understanding who your priority customers are at times when demand far exceeds supply and emotions are running high allows for smarter allocation decisions.

## **FOR GOVERNMENT**

### **SUMMARY**

#### **Municipal Governments**

- Continue to build strong relationships with manufacturers in the Region
- Make advice available by bringing the manufacturing community together to share best practices and resources, acting as a conduit of knowledge during a disruption
  - Lead BCP workshops to assess risks and preparedness
  - Facilitate manufacturers conference calls during disruptions
  - Facilitate conversations with provincial and federal governments
- Facilitate the move to ecommerce and digitization

#### **Federal / Provincial Governments**

- Increase cybersecurity funding and resources for both the public and private sectors, focusing on workforce training and professional development, research and development (R&D), and technology adoption
- Establish a supply chain focal point within government and a national early warning system
- Introduce smart, enabling supply chain policies
- Review emergency financial programs for effectiveness
- Invest in workforce training programs aimed toward future economic activity

<sup>7</sup> <https://www.thestar.com/news/canada/2020/04/30/can-canada-move-its-manufacturing-back-from-china-its-complicated.html>

## **▣ MUNICIPAL GOVERNMENTS**

### **BUILD RELATIONSHIPS WITH REGIONAL MANUFACTURERS**

In the event of another major disruption, governments can help keep business moving by knowing who to reach out to (in most cases, the key contact is the VP of Operations or Supply Chain), and keep the manufacturer contact list up-to-date.

It's also important to explore new avenues to expand regional business networks. Associations such as Supply Chain Canada, Food, Health and Consumer Products of Canada, Canadian Manufacturers and Exporters to name a few<sup>8</sup> are particularly helpful groups to discover new businesses and foster relationships. Retaining supply chain advisory expertise may also be useful.

Municipalities can also support local manufacturers within their jurisdiction by facilitating awareness of, and access to, Provincial and Federal funding programs.

### **MAKE ADVICE AVAILABLE BY BRINGING THE MANUFACTURING COMMUNITY TOGETHER**

#### **Lead informative workshops**

Especially at the beginning of the pandemic, respondents were in critical need of information. In fact, some companies cited the newsletters some municipalities provided in the early months as particularly helpful. Local governments have the opportunity to lead informative workshops for companies in their regions on a number of important topics, such as how to:

- build a business continuity plan
- effectively map their supply chain
- conduct a risk assessment
- prepare for an emergency
- facilitate other industry recommendations included in this report in such areas as cybersecurity preparedness, workforce development and supply chain partnerships

#### **Facilitate manufacturer conference calls during disruptions**

During the pandemic, Supply Chain Canada created a Task Force of supply chain executives and policy makers that acted as a forum to share experiences and learn from those working in all parts of the supply chain. A similar call could be set up regionally to address local issues such as bus service, workforce planning and government programs.

By bringing businesses together, local governments can share best practices, facilitate introductions between manufacturers, provide an overview of the government resources available, and explain critical updates.

#### **Facilitate conversations with provincial and federal governments**

Recent reports continue to reveal the importance for all levels of government to act quickly in a crisis and maintain open communications channels. As an example, respondents that knew about COVID-19 in the early days through greater visibility into China or via their global operations were able to move faster when the World Health Organization classified the virus outbreak as a pandemic. By working with the Federal Government departments, such as Global Affairs' foreign affairs ambassador network or the Trade Commissioner's Service to provide notification of pending supply chain disruption events, local governments can act as a bridge, connecting local industry with global trends and companies.

It is important for all levels of government to collaborate in sharing information regarding supply chain disruption impacts and potential mitigation measures.

An opportunity also exists for municipal governments to work with key industry stakeholders (e.g. industry associations, Chambers of Commerce etc.) to develop, advocate for, and facilitate relevant Provincial and Federal supply chain policies, funding programs or B2B partnering initiatives.

### **FACILITATE THE MOVE TO ECOMMERCE AND DIGITIZATION**

The pandemic has impacted consumer behavior, some of which is likely to persist once the pandemic concludes. Companies are changing the way they operate as a result by accelerating their ecommerce strategies and launching ecommerce platforms to remain viable by offering a fulfillment channel for end consumers. Small businesses without a digital presence are particularly challenged by the prospect of taking their business online. Local governments can support companies in this endeavour by providing access to information and resources for companies undergoing a digital transformation. Funding, advice and supports that help businesses go digital, set up an online store, and operate in international markets can help businesses weather a storm and adopt to a digital model to better serve clients. In response to COVID-19 York Region municipalities launched/expanded similar programs targeting main street small businesses.

<sup>8</sup> <https://www.canada.ca/en/environment-climate-change/corporate/transparency/briefing-materials/corporate-book/national-industry-organizations.html>



A FEW OF THE COMPANIES EXPRESSED THEY HAD THE CAPABILITY OF PRODUCING THE SAME PRODUCTS ACROSS MULTIPLE PLANTS, EXPLAINING THEIR GOAL WOULD BE TO HARMONIZE PRODUCTION.

## ▣ FEDERAL/PROVINCIAL GOVERNMENTS

### INCREASE CYBERSECURITY FUNDING AND RESOURCES

The need to safeguard digital supply chains is a prominent challenge accelerated by the impact of the pandemic. In increasingly digitized and interconnected supply chains, cyber attacks have a common theme of occurrence in hardware, services, or software from third-party providers. The use of technologies fundamental to supply chains requires a shift to a culture of resilience to secure supply chain infrastructure. Governments should work with industry, academia, and non-profit organizations to create and disseminate resources for training the supply chain workforce of the future on data protection, adaptability, and risk management to support businesses in achieving security against cybercrime. Likewise, government needs to work with the private sector and civil society to encourage greater research and development in the areas of supply chain cyber security and the safe adoption of cutting-edge technologies.



### **ESTABLISH A SUPPLY CHAIN FOCAL POINT WITHIN GOVERNMENT AND A NATIONAL EARLY WARNING SYSTEM**

The implementation of a national early warning system can identify major threats before they occur and cause supply chain disruptions, thereby reducing the financial harm businesses suffer and the impact to the economy as whole. Vital to this initiative is the creation of a focal body within the federal government tasked with the coordination and oversight of all regulation that directly affects the efficiency of the Canadian supply chain. This body would bring together public and private sector expertise, with an end-to-end supply chain view over all of Canada's key sectors and industries. This body of supply chain experts would be best placed to establish an early warning system, allowing for the planning and the identification of suggested measures to safeguard companies against major disruptions and economic loss. A national early warning system will enable companies to make informed decisions through greater visibility.

Government may also consider implementing macro, country-wide supply chain scorecards that show key operational metrics for international supply chain infrastructure such as port activity, airports, railways, and highways.

### **INTRODUCE SMART, ENABLING SUPPLY CHAIN POLICIES**

To improve the resilience of supply chains, the government's focus should be to generate smart policies that enable and facilitate the development of supply chains, and the adoption of world-class technologies and best practices. In practice, this means the elimination or reduction of unnecessary and restrictive regulations that hinder operational efficiency and inhibit innovation. For instance, in the case of critical supply chain infrastructure, on top of widespread business closures, some parts of Canada were also being impacted by port and railway stoppages due to labour disruptions. This should never happen during a crisis; ensuring goods can continue to flow safeguards the health and safety of citizens and creates a more favourable investment environment for global manufacturers. There is an opportunity for government to co-create, in collaboration with the private sector, a national mechanism to set policy priorities for improving supply chain efficiency in Canada based on objective performance data.

### **REVIEW FINANCIAL PROGRAMS FOR EFFECTIVENESS**

Many manufacturers provided positive feedback on the Emergency Wage Subsidy Program (CEWS), however they had mixed reviews on the unintended consequences of the Canada Emergency Response Benefit (CERB). Some felt it caused labour disruption by incentivizing workers to stay at home even when employment was available. Governments need to assess the full range of intended and unintended consequences when implementing future financial assistance programs, and government aid must be made available in a timely manner, with easy-to-understand guidelines.

### **INVEST IN WORKFORCE TRAINING PROGRAMS AIMED TOWARD FUTURE ECONOMIC ACTIVITY**

COVID-19 has had a fundamental impact in the way we live, work and relate to one another. It has accelerated the Fourth Industrial Revolution, forcing us to rethink future economic activities and the jobs that will support them. Investing in reskilling our workforce will increase our ability to manage agile and resilient supply chains and future crises. We must support the introduction and acceleration of the education system for jobs in the supply chain industry: an education that is not just about textbook thinking but rather about reimagining the possibilities. At the university level we have a steady stream of professionals coming out of advanced learning today, but we need more talent flowing from colleges and trade schools, even high schools, where an education work stream could introduce young people to the importance of supply chain to our economy, and to the thousands of career opportunities that exist in logistics, customs brokerage, distribution, and sea, air and land transportation.

# Annex

## **INDUSTRY INSIGHTS** **CROSS-MUNICIPAL**

### **AUTOMOTIVE COMPONENTS MANUFACTURING**

#### **Impact**

When COVID-19 first hit North America, major auto manufacturers closed their final assembly plants, immediately halting all inbound flow of materials. Given the auto industry supply chain operates in a just-in-time environment, the impact was felt immediately by auto parts suppliers. Purchase order or production “releases” immediately stopped flowing to suppliers, forcing them to also shut down. The drop in demand continued to trickle down to the next tier of suppliers; however, when the auto industry started back up, suppliers such as steel and electronic components could not keep up with the sudden surge in demand, creating shortages and further issues for auto parts suppliers.

The slowdown in demand was offset for some suppliers by the increase in demand in other related industries such as recreational power sports products (ATVs, snowmobiles, etc), which expanded rapidly after an initial shutdown. However, again there were issues in the supply chain as port congestion (Long Beach, CA) and port labour issues (Port of Montreal) created bottlenecks for critical inbound components. Reports of transit times from China increasing from four to seven weeks resulted in suppliers using expensive air freight for critical components.

#### **Actions**

Like many manufacturing companies, PPE was in short supply. The auto suppliers that shut down initially used the break to source PPE for employees. Those that remained open found it difficult to source PPE and were forced to use non-traditional or alternate sources of supply, such as their own parts suppliers, cleaning services and personal contacts.

Employee communications were immediate using internal websites, emails, one-on-one meetings, and group discussions.

For the most part, layoffs occurred immediately. When companies started back up after six to eight weeks, some employees were still afraid to return to work, causing a labour shortage; this was offset by overtime, supplemental staff and a reduction or elimination of the yearly plant shutdown over the December holiday period.

Inside the plants, employee safety was prioritized by implementing social distancing efforts such as changing the plant workflows, shift hours and break areas, as well as using pre-shift health screening and mandatory PPE.

#### **Readiness**

The auto suppliers typically had business continuity plans in place as a common industry requirement within their quality management system (e.g. ISO-TS16949). However, these plans did not necessarily consider the next level of suppliers nor pandemics. Some suppliers had alternative production agreements with competitors, which although expensive, provided much needed emergency capacity.

#### **Future State**

A major disruption such as the pandemic has the automotive industry revisiting safety stock levels, dual sourcing and supplier locations. They are also ensuring digital technologies are deployed with key trading partners to allow for collaborative forecasting, inbound purchase order visibility, shipment delays, etc..

## **FOOD & BEVERAGE/AGRICULTURE & PROCESSING**

### **Impact**

During the height of the pandemic, food & beverage companies had different experiences depending on their sales channels. For companies that sell through the food service channel (e.g. restaurants, hospitality, travel, etc.), the demand impact was severe and abrupt as this channel closed quickly. Although there was some demand (e.g. take out) as the sector adapted, for the most part demand is a fraction of what it was pre-pandemic.

In the retail sector, grocery stores and mass merchants pulled forward purchase orders to meet the panic buying that occurred in the marketplace. Demand then dropped, followed by a subsequent product mix change as the pandemic forced people to eat at home more frequently.

Generally, surface transportation was not affected, although there were a few instances of trucking delays at the U.S. border. For those importing ingredients, the Port of Montreal strike was very disruptive.

There were no reported issues with freight availability or an increase in costs, however temperature-controlled warehousing was in tight supply as companies repositioned inventory and adjusted to the new demand.

Generally, it was reported that the demand shifts and resulting stabilization of operations took about two months after the initial pandemic lockdown.

### **Actions**

By the nature of their businesses, food manufacturing companies already have certain amounts of PPE and cleaning standards in place. However, extra PPE required for other non-production staff was difficult to obtain and hand sanitizer was in short supply.

In the plants, work shift hours were staggered to decrease employee overlap, workflows were altered for improved traffic flow, along with physical distancing barriers and processes. Some companies reported paying a COVID-19 shift premium, as well. Employees were moved to work from home where appropriate, with no real issues reported in setting up the infrastructure. Employees from employment agencies were laid off or their hours were reduced.

The change in product mix caused inventory challenges as companies focused their production efforts on “A” and “B” SKUs. Specific packaging and corrugate for “C” and “D” SKUs were subsequently not consumed; as companies sought to purchase additional materials, the corrugate market experienced delays (2X lead times) and price increases.

Allocation processes for customer orders were put in place where product was in short supply. Companies prioritized ongoing communications to keep customers updated on supply, issues and actions.

Companies that experienced a demand drop used the downtime for projects and facility upgrades. Some also focused on seeking alternate sales channels through ecommerce, however this opened up challenges with logistics planning, temperature-controlled storage, and final-mile delivery.

### **Readiness**

The food industry is guided by strict quality control programs for the production of their product (Quality Management System, BRC Global Standard for Food Safety, ISO – International Organization for Standardization, etc.), however pandemic response was usually not included in those plans. Senior leaders told us that the quality of their staff and their ability to quickly react were key factors for resilience and continuing operations.

### **Future**

Food processors see a need to review key components that are single sourced and to expand their supplier portfolio. They are also considering secondary manufacturing and warehousing options and expanding or upgrading e-commerce offerings, particularly in B2C, and improving order fulfillment processes to support.

By the nature of the industry, many raw material food inputs cannot be stored for extended periods of time, so dual sourcing is an area of focus going forward.

### **MUNICIPAL INDUSTRY SPOTLIGHTS (STUDY CO-SPONSORS)**

NB: while this Report surveyed companies from throughout York Region, this section highlights municipalities where the noted sectors are particularly strong and from which the largest share of companies within the sector were surveyed.

## **CITY OF MARKHAM - ELECTRONICS AND ELECTRICAL MANUFACTURING**

### **Impact**

The electronics industry is a truly global industry with manufacturing and testing processes taking place in various countries all over the world. In the York Region, several PCB (printed circuit board)/EMS (electronic manufacturing services) companies focus on prototypes, low-volume, high-value added products and pre-mass market products with inputs from China and other countries.

Prior to the pandemic, much of the electronics business was already in a state of flux, due in part to the U.S./China tariff disputes. Approximately 65% of the world's printed circuit boards are made in China, according to the IPC, a trade association for printed circuit boards. As a result of these tariffs, companies needed to react either by adding premiums to their products or relocating production to countries outside of China. When the pandemic hit, an already strained supply chain was disrupted further with logistical delays and production delays.

For the electronic companies we spoke with, the impact on demand varied depending on the industry of their end customers. In some cases, end-customer demand dropped substantially (perhaps tied in with travel or entertainment industries), whereas demand for consumer electronics increased. Lead times on inbound components from China increased from a normal one month to three to four months. There were also cases of "surcharges" from suppliers.

### **Actions**

Sourcing PPE was an initial priority, particularly sanitizers and alcohol. Since several companies already had suppliers based in China, many received PPE with their shipments, as suppliers attempted to support their customers as best they could. Where possible, electronics companies moved employees to work from home. Setting up I.T infrastructure was generally not an issue.

Labour planning was an issue as companies had to work closely with their customers to understand demand and then ensure labour was available to meet production requirements. In some cases, demand increased dramatically. However, a subset of workers stayed home because they were afraid to come to work and were enticed by the CERB payments, which forced these companies to find labour quickly, in some cases using students, friends or agency workers to fill the gaps. One company found alternate manufacturing capacity at a supplier. Other companies slowed down completely and were forced to lay off workers temporarily.

Companies also used their expertise to produce or supply components for the manufacturing of PPE such as ventilators, masks or sanitizers.

### **Readiness**

Due to the nature of the business, electronics companies often have multi-tier sourcing for key components and complex supply chains. Companies are used to joint forecasting with suppliers and customers, collaborative planning, and open communication among trading partners given the importance of visibility across the global supply chain. Many cited a strong people culture, able to communicate effectively, as key to their resilience.

### **Future**

Electronics companies continue to review their supplier base and expand where possible with a preference for North American suppliers. Where feasible, businesses are considering how automating helps balance the impact of moving from a lower labour cost jurisdiction to a higher one. They are also leveraging information systems for inventory and lead time visibility.

## **CITY OF RICHMOND HILL - PHARMA/MEDICAL DEVICES MANUFACTURING**

### **Impact**

Pharma/medical device companies had different experiences depending on the nature of their products and sales channels. For example, some companies with products used in hospitals did not see a noticeable drop as usage/consumption continued during the pandemic. Other companies noticed a decrease in demand as hospitals varied procedures or treatments due to the pandemic. Still others saw an increase in demand as people sought products related to flu and immune systems, but this stabilized by mid- 2020.

PPE was already in place due to the nature of their manufacturing processes, but hand sanitizer and alcohol for cleaning was difficult to source due to the sudden demand. Also, the increased use of some specialized PPE at hospitals added additional demand to an already limited supply.

Some companies experienced lead time issues with co-manufacturers due to lockdown or COVID-19 cases. No major issues with supply were reported, as most suppliers continued to operate. Typically, any issues were caused by suppliers experiencing a slowdown due to limited workforce availability from local lockdowns.

### **Actions**

Employees that could work remotely were either sent home (or given the option to do so). Those that were required to work on site were socially distanced with revised traffic flows per regional health authority guidelines. Employees were offered PPE and hand sanitizer to take home for personal use.

Work shifts were staggered where possible to avoid employee overlap. Some companies reported offering COVID-19 shift bonuses.

### **Readiness**

Companies in this industry often carry extra inventory of critical and difficult to source components for multiple months so they can meet their customers' need for uninterrupted supply.

This industry is highly regulated and therefore operates under strict guidelines and protocols (Health Canada, ISO, etc.), so they have business continuity plans in place. Many of these even considered a response to a pandemic.

### **Future**

Like other industries, the pharma/medical devices industry anticipates an acceleration in e-commerce, specifically in the over-the-counter space. Some companies are developing B2C sites – not to bypass their existing distributors, but rather to help build a relationship with end consumers.

Others are considering increasing inventory levels of PPE and are reviewing secondary suppliers for either pre-qualification or dual sourcing.

Reviewing raw material inventories was also mentioned to ensure a good balance between investment and risk.

## **CITY OF VAUGHAN - BUILDING MATERIALS MANUFACTURING**

### **Impact**

Many construction projects were put on pause at the start of the pandemic, but these generally opened up quickly as construction was deemed an essential service across Canada. Most long-term construction projects continued to proceed so demand for those building materials was not strongly impacted. For the most part, the construction industry, including building materials suppliers, emerged relatively unscathed.

Building material supply chains typically are not deep, with many producers converting base materials directly into finished products. Construction materials such as aluminum, rubber and glass typically have multiple, North American based suppliers available. However, some of these suppliers experienced slowdowns due to COVID-19 cases or shutdowns in local jurisdictions, which increased lead times for their products substantially.

At the onset of the pandemic, suppliers to the commercial building sector experienced a slowdown but experienced a dramatic increase in residential activity, forcing a mix change in product offerin.

### **Actions**

Like many manufacturing companies, PPE was in short supply. Building suppliers that shut down initially used the break to source PPE for employees. Those that remained open found it difficult to source PPE and were forced to use non-traditional or alternate sources of supply, such as their own parts suppliers, cleaning services and personal contacts. One company, unfortunately, experienced bureaucratic issues at the border importing PPE because of paperwork, causing critical delays. Yet another company designed and manufactured their own face shields using 3D printers until more face shields became commercially available.

Companies “spared no expense” as they hired security guards to screen employees as they arrived for work or manufactured their own office space partitions to ensure proper social distancing.

For those companies that experienced an initial slowdown, labour was downsized, with agency employees typically the first to be laid off. These companies also used the downtime with the assistance of government wage subsidies to work on plant projects instead of laying off full time employees.

Some salaried employees worked from home; others (both salaried and hourly) continued to work at the office. Those working on very large construction projects felt it was important to have employees at the office. Accommodations were made in the plants for people workflow, employee shifts, social distancing and sanitization.

### **Readiness**

We did not hear about extensive business continuity plans, especially for those make-to-order companies servicing the large construction projects. Some had the luxury of multiple manufacturing plants in the GTA that could produce similar products, which is key to supply chain resilience. However, strength of supplier relationships was often cited as critical to on-going operations during times of disruption.

A few companies had already been hit by ransomware attacks so their cyber attack prevention strategies were already in place.

### **Future**

The building materials industry typically doesn't have a deep supply chain with multiple levels of suppliers. However, companies mentioned they will review their dual sourcing strategy for any potential gaps, with some citing Mexico as an option for components currently sourced in China.

