BUSINESS CONTINUITY PLANNING AND ERP IN A PANDEMIC: INSIGHTS AND LESSONS LEARNED FROM COVID-19

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INTRODUCTION

Businesses use a variety of tools to ensure the success of their supply chains. It is critical for supply chains to be resilient, otherwise businesses can experience devastating losses of revenue and customers due to halts in productivity and/or unreliable fulfillment. However, in a global pandemic, such as we are experiencing with COVID-19, there are global supply chain disruptions that significantly impacted businesses from all sectors. In this paper, we discuss enterprise resource planning and business continuity planning as beneficial tools to help mitigate disruptions from a global disruption. Moreover, we conclude with lessons learned and insights from the current pandemic which businesses can use to better prepare for future large-scale disruptions.

WHAT IS ENTERPRISE RESOURCE PLANNING?

Enterprise Resource Planning (ERP) is a category of software used by businesses to manage day-to-day activities across numerous departments all integrated into a single system. This allows for the seamless transmission of the most up-to-date data across different departments whose roles are related such as sales and procurement teams, for example. ERP systems allow businesses to "align separate departments and improve workflows, resulting in significant bottom-line savings" (Oracle, 2020). ERP provides real-time reports, enables collaboration, and integrates financial processes for timely and accurate accounting. ERP provides many benefits to all types of businesses.

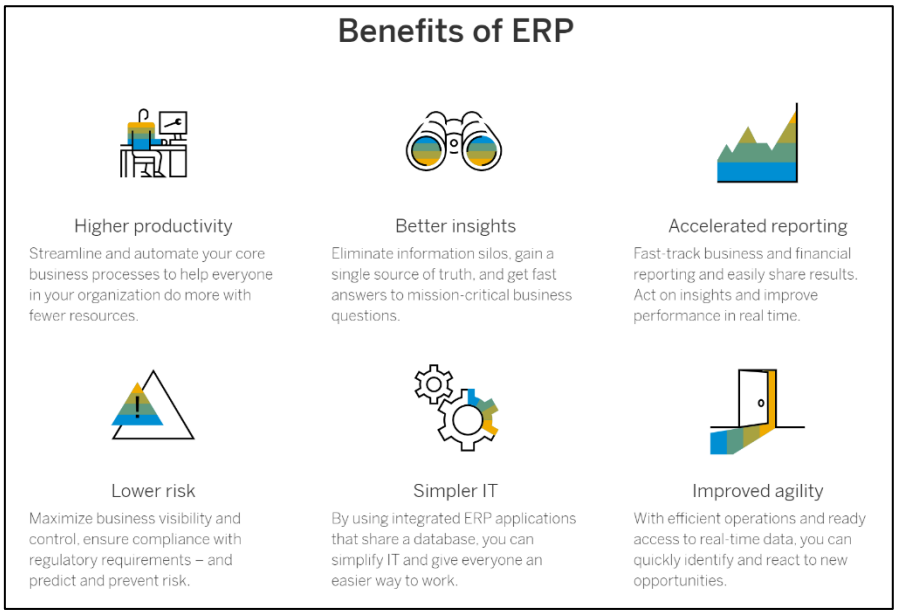

Figure 1. Benefits of ERP. (Oracle, 2020)

Typically, ERP systems consists of multiple applications, or modules, each with a consistent interface, corresponding to a single business area. Most systems are customizable, in that business can choose to implement only the modules that meet their needs. According to Wikipedia (2020), the core business areas that ERP modules may consist of are:

- financial
- management accounting
- human resources
- manufacturing
- order processing
- supply chain management
- project management
- customer relationship management
- data services

Figure 2. ERP business areas. (Subpng)

For the purposes of this paper, we will focus on the supply chain management business area.

ROLE OF ERP IN SUPPLY CHAIN MANAGEMENT

ERP is a powerful system that enhances supply chain management (SCM). SCM consists of multiple processes across different roles that are interconnected. As mentioned earlier, a benefit of ERP systems is their integrated nature facilitating seamless transfers of information across the platform. Therefore, using ERP in SCM allows for real-time communication between suppliers, procurement, production, retail/distribution, and customer business areas to enabling a smooth and efficient workflow from start to finish.

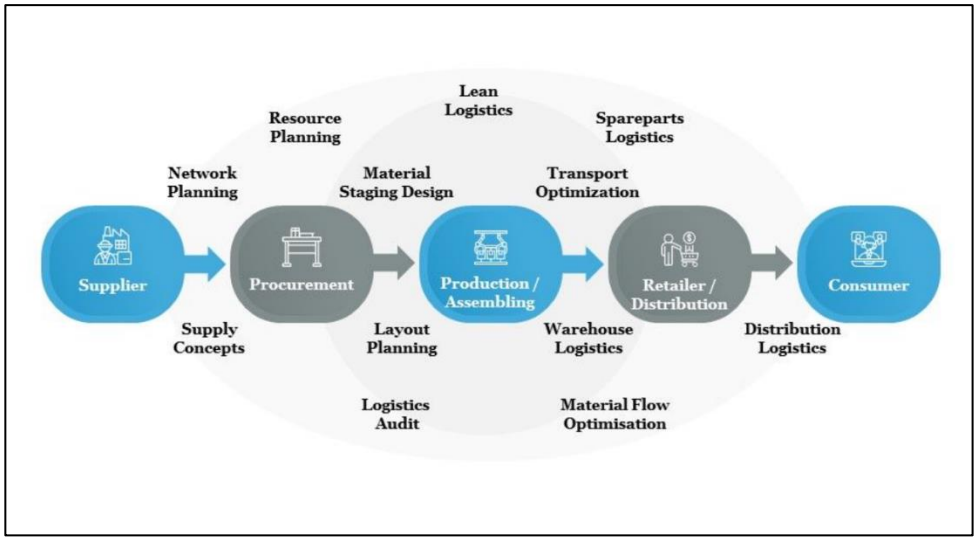

Figure 3. Procurement and supply chain management process. (Slideteam)

Moreover, ERP provides tools for demand and planning, procurement, production, and shipment (Deskera) all while integrating the financial expenses of the SCM process into the modules for the finance and accounting roles. These modules allow businesses to have a competitive advantage by having a lean inventory with effective forecasting, mitigate bottlenecks in production, and creates transparency across the business aiding in decision-making (Deskera). All-in-all, ERP can help businesses scale their SCM operations as they grow and sidestep disruptions in their supply chains. The latter is increasingly important in the COVID-19 era and instant gratification global economy.

WHAT IS BUSINESS CONTINUITY PLANNING?

Business continuity planning (BCP) refers to maintaining business operations or resuming them soon after a major disruption such as natural disaster, global pandemic, cyberattacks etc. A business continuity plan consists of the procedures and instructions to be followed by the company, in the event of such disasters. It covers business processes, assets, human resources, business partners, etc.

A business impact analysis (BIA) is another part of a BCP which identifies the impact of a sudden loss of business functions, usually quantified in a cost. This analysis also helps evaluate whether to outsource non-core activities in the BCP. The BIA enables looking at the entire organization's processes and determining which are the most important.

The BCP generally has the following steps:

- Identify the scope of the plan.
- Identify key business areas.
- Identify critical processes.
- Identify how the business areas are associated.
- Determine manageable downtime for each critical process.
- Create a plan to maintain operations.

ROLE OF ERP SYSTEMS IN BUSINESS CONTINUITY PLANNING

The current COVID-19 pandemic has forced the industries to adapt working with unprecedented conditions, from addressing work-from-home policies to managing extreme fluctuations in demand and uncertain supply chains. This situation has emphasized on a least used aspect of ERP during normal conditions — business continuity. ERP systems possess the ability to mitigate rapid business changes due to unforeseen circumstances. Though ERP plays a central role during a local event, such as a fire or flood, the complete dependency on ERP solutions to maintain fundamental

business continuity has never been experienced in such a comprehensive state. ERP systems are keeping the industries up and running with its ability to maintain the business operations through remote access, automated reporting capability, electronic data exchange, and real-time remote facility controls.

For a better understanding, let us consider how ERP is utilized for business continuity in a manufacturing environment.

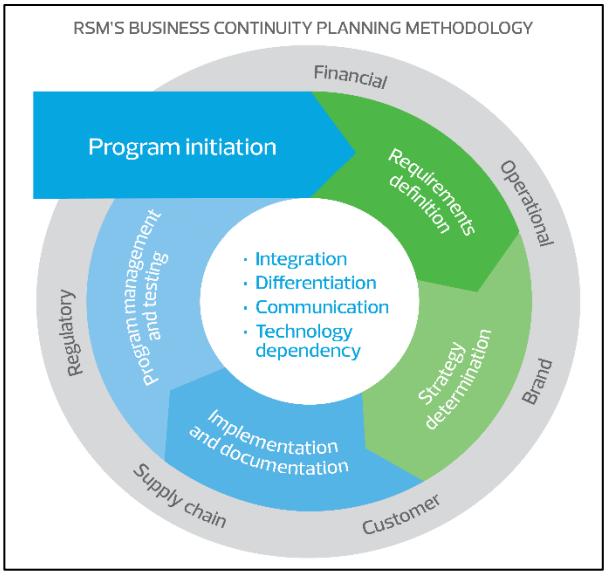

Figure 4. RSM's business continuity planning methodology. (RSM)

Empowering employees working from home

Almost all businesses across industries are minimizing the number of people coming into their plants and offices and instead encouraging them to work from home. In a manufacturing or production facility, the front-office and executive roles such as those on administration, planning and designing, are able to access their ERP system at home and continue to run the business operations remotely while maintaining full visibility of the business and constant interaction with the customers and suppliers.

Keeping production on track

Running a factory production floor remotely is an entirely different challenge. Though some factories can run lights out, many facilities must be staffed with operators and material handlers. Manufacturing ERP systems helps to reduce the number of onsite production floor staff by precisely scheduling work, arranging raw materials, machines, and monitoring equipment for output, managing quality and maintenance issues in real-time. Real-time remote access and production monitoring enables keeping production on track and informs the production, sales, and service teams on order status, shipping, delivery, and service updates, aiding in production continuity with a minimum of onsite workers.

Managing demand fluctuations

The demand fluctuations have affected the production inertia of many businesses. Supplies of raw materials must be adapted, schedules and tooling changes must be made, and different personnel are required at different times. Meanwhile, offshore factory closures have impacted inbound supply of materials and components from suppliers.

Manual compensation and planning for abrupt changes or identifying new suppliers could take weeks—leading to delays beyond the range that could be afforded by manufacturers. However, with ERP systems, re-planning, re-scheduling, and re-provisioning are almost instantaneous and can be accomplished from remote locations. Also, the manufacturing ERP systems can be used for demand pattern analysis and demand planning as it makes working with the network of suppliers and negotiating new agreements easier and effectively, with combining procurement with

members of the network of suppliers and buying components immediately, while also keeping the costs under control.

SUPPLY CHAIN MANAGEMENT DURING COVID-19

As a result of globalization, supply chains across the world are substantially interconnected. With the emerging market trends and economies to account for a considerable ratio of the global GDP, the goods/products must have to go through more than one stage to reach the end consumer. The COVID-19 outbreak has led to various events from nationwide lockdowns to closed air and ocean transport, which brought about an unprecedented disruption in the supply chains of most economies.

Supply shock

When the coronavirus was beginning to take its toll on China, most industries faced a supply shock as the first part of their supply chain disruption. There were disruptions in the availability of both finished goods and semi-finished components from China. This condition forced the companies to work on feasible production based on the demand that could be met.

Demand shock

As the outbreak in China turned out to be a pandemic, with nations instituting lockdowns, the crisis was deepening with new demand shocks. People began stocking up on consumer staples to handle the restrictions on the movements and ended up buying months' worth of stock in a single day. Even a perfectly forecastable product such as toilet paper, was nowhere to be available in the stores. However, consumer staple supply chains have made extraordinary efforts in working on the planning models to restock the store shelves.

Long term shift in global supply chains

The shocks could result in short-term changes in the global supply chain. However, the pandemic might also lead to long-term structural shifts, which is evident from the ongoing events. Based on certain forecast, China might lose it central position in global supply chains. The reasons include the widescale nationwide industrial shutdown in February and March, which came out as a shock for all China-centric supply chains.

The pandemic has also planted a trend in the companies across various countries to shift their supply chains closer to their home country, with a part of the operations inside the home country.

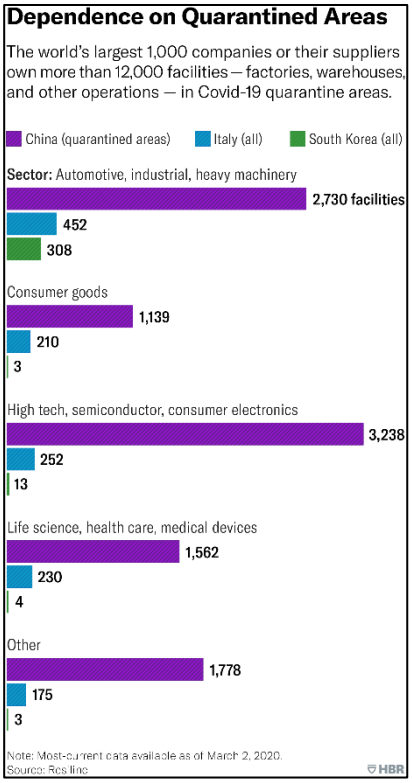

Figure 5. Dependence on quarantined areas. (HBR, 2020)

The coronavirus pandemic has exposed the vulnerability of global supply chains and highlights the risks of relying on a single country's manufacturing facilities. The effect of coronavirus pandemic is intense as a huge number of companies source their raw materials and components from China.

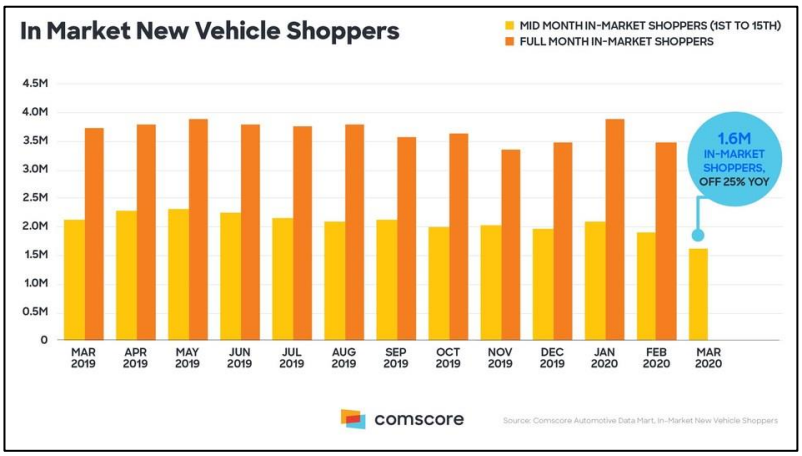

Figure 6. In market new vehicle shoppers. (Comscore)

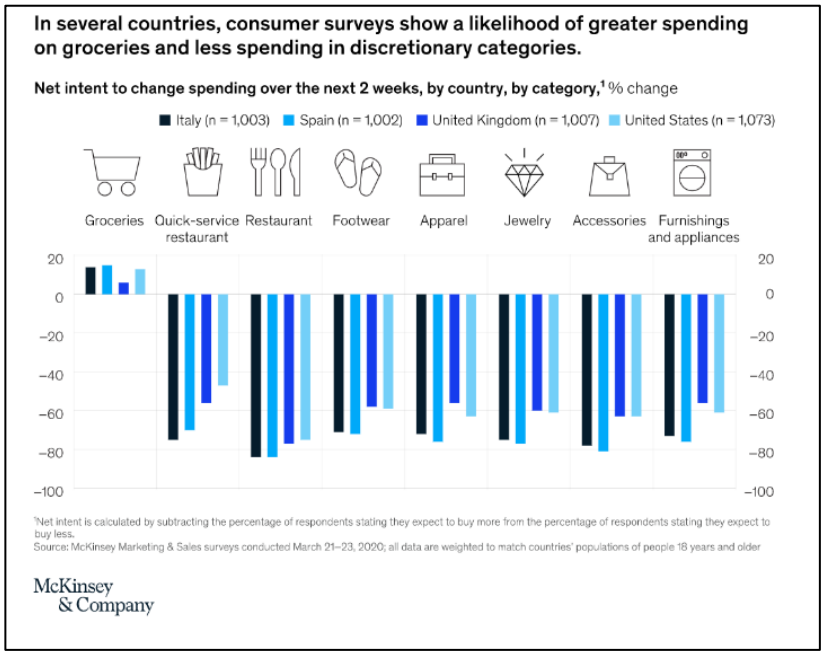

Figure 7. Net intent to change spending over the next 2 weeks, by country, by category. (McKinsey & Company, 2020)

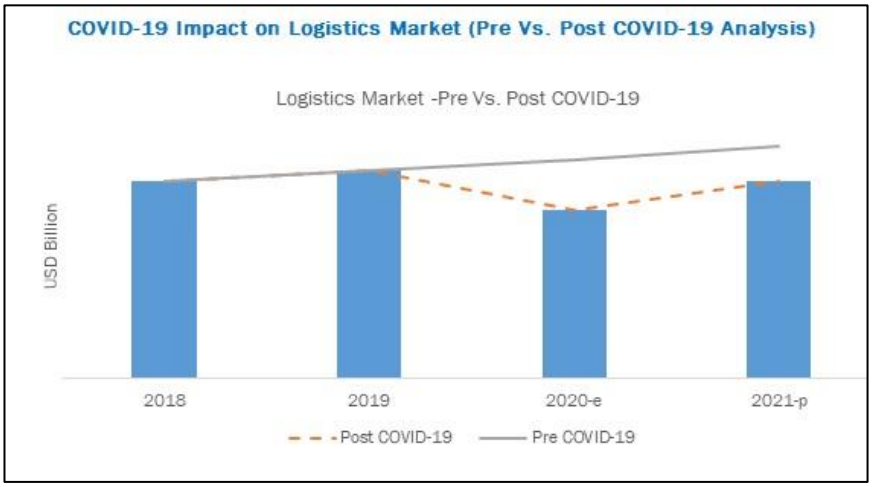

Figure 8. COVID-19 impact on logistics market. (Markets and Markets, 2019)

The graphs depict the sector wise dependence on quarantine areas, pre and post Covid-19 analysis of the logistics market, in market vehicle shopping and country wise spending analysis on various categories of items. They also indicate a decrease in the purchase of non-essential items like jewelry, apparel, fancy restaurants, and the like, as well as an increase in the demand for groceries.

INSIGHTS GAINED FROM LESSONS LEARNED

The COVID-19 pandemic has significantly impacted many industries around the world. While the impacts may not be completely avoidable for a supply chain disruption of this magnitude, the use of ERP systems could prove beneficial based on some insights from lessons learned during this pandemic. One major benefit of ERP systems is that it can help map businesses' supply networks, allowing them to be better prepared and informed in near real-time. Having an organized and integrated system with information on suppliers, products, and other data readily available, management can quickly assess the impacts of a disruption and respond quickly, possibly by mobilizing other locations or suppliers to make up the expected delays from the disruption (Choy, Rogers, & Vakil, 2020).

The reason many businesses do not have supply networks mapped is the cost and time to do so. However, "companies will discover the value of the map is greater than the cost and time to develop it" (Choy, Rogers, & Vakil, 2020). Using an ERP system, businesses can determine which products are their top revenue producers and then use Bill of Materials (BOM) tools in the system to focus on the tiers of suppliers needed to produce those products. Additionally, once a supply network map is in place, ERP software enables users to switch production sites or suppliers to avoid disruptions from a major disruption, and to figure out updated shipping times from alternate locations (Choy, Rogers, & Vakil, 2020).

While ERP may not be the best mapping system, most supply network mapping tools easily integrate with ERP. Mapping ensures "a well thought out and flawlessly executed point solution does not generate unintended consequences across the supply chain" which "is the purpose for

mapping the interdependencies at the process, technology and organization levels" (Lepercq, 2007).

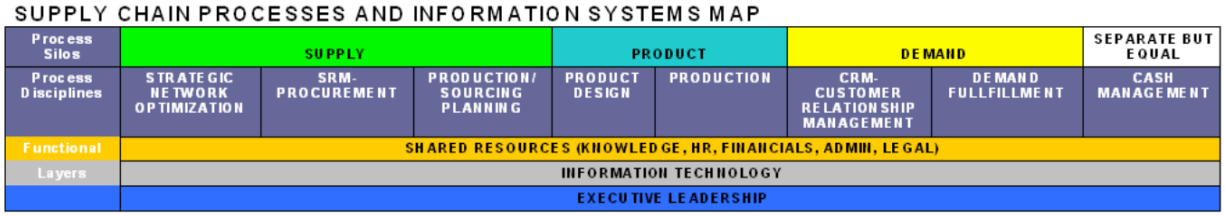

Figure 9. Supply chain processes and information systems map. (Lepercq, 2007)

According to Lepercq (2007), the "integrated supply chain" can be broken-down into three "key process silos": supply, product, and demand, as list along the top of the image, with "cross-functional layers" listed along the bottom. Lepercq (2007) explains that the cross-functional layers include shared resources, which support business operations; IT, to maintain the information systems integral to business; and executive leadership, who strategize and coordinate the business' activities. Many of the modules within ERP cater to these cross-functional layers, for example, Product Data Management (PDM), Capacity Planning, Manufacturing Resources Planning (MRP), Financials, Asset Management, and Procurement to name a few.

In conclusion, with fully integrated ERP systems in place, along with BCP and supply network mapping, businesses may have the best opportunity to avoid and respond to large scale supply chain disruptions using the data and flexibility ERP systems provide users. Overall, businesses have been impacted by global quarantines and facility lockdowns due to COVID-19, but with the right tools and planning they can lessen the blow to their supply chains caused by modern day disruptions, including a global pandemic.

Resources

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