



Gil Zefoni
General Manager at the
Organization of Purchasing
and Logistics Managers
in Israel (IPLMA)

The effect of the coronavirus and other epidemics on the chain in Israel and around the world – supply chain management during a crisis

In 2020, when the world was sure that science and medicine could not be challenged at their peak, the covid-19 pandemic entered our lives. The pandemic has changed and greatly affected businesses and the global supply chain.

Covid-19 has changed consumer behavior, created new trading arrangements, and urged procurement managers to deal with supply challenges and the shutdown of lockdowns, flight restrictions, closure of production lines, global shortages of raw materials, and the fall of stock exchanges and international markets.

During the process and especially after vaccination entered our lives, a new urgency was created to fill the pandemic's gaps, minimize risk, build resilience, and connect more deeply with customers.

Connect and evaluate their offerings, processes, systems, channels, and partners.

Supply chains are at the forefront of the effort.

The regular supply of products and raw materials is the pillar of the entire productive body.

The quality and scope will determine most of all the resilience, performance, and level of functioning of a company in routine and emergencies.

If in the past we looked at operations personnel as supporters, then the COVID-19 pandemic has led the supply chain to be at the forefront of the effort.

Supply chain workers have become the spearhead of enterprises and organizations both from a business and managerial point of view.

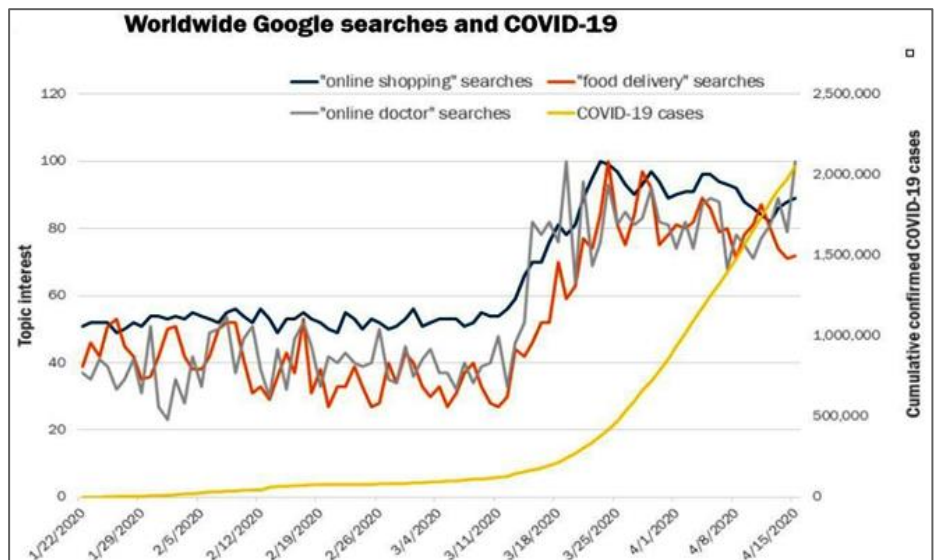
Goals:

- **Analysis of the leading causes of the impact of the coronavirus/crisis on the supply chain.**
- **Identifying the weak points to prevent and streamline crisis management for business continuity.**
- **Recommendations for implementation.**

Critical trends in the direct impact of covid-19

1. The strengthening of e-commerce

The need to remain confined to homes, unable to go out and make purchases as was customary before the pandemic, led to the acceleration and strengthening of e-commerce in companies. Many companies have realized that to survive and even increase sales volume, a rapid transition to online digital platforms for selling and buying narrow mo's must be made. Covid-19 has forced companies to create new and innovative solutions for shipping, buying, and selling. The new solutions have given consumers more choices on how to get their products.



2. Strengthening the use of 3D printers to ease the workload

The COVID-19 pandemic has forced creative solutions in moments of crisis during an immediate shortage of parts and components.

The pandemic has given a glimpse of how 3D printing can be used temporarily to ease the load on supply chains during ups and downs in demand as it was with medical equipment.

3. The strengthening of automation and artificial intelligence

In light of the increased load on online systems and the uncertainty due to the frequent and unexpected changes, there was an accelerated process for the implementation of artificial intelligence and machine learning for the purpose of continued and accelerated prediction analysis, with wide-ranging end-to-end impacts.

4. Understanding the importance of quality cybersecurity

Due to the transition to e-commerce and the increased dependence on internet systems, many companies and organizations are more vulnerable to cyber vulnerability and fraudulent attacks.

Companies have realized that they must invest considerable resources in strengthening their cyber defense systems as a central value that maintains business and logistical continuity.

The companies realized that damage caused by cybersecurity failures could lead to many financial losses and damage to Montaigne and customer reliability.

In addition, businesses have realized the importance of using AI, blockchain, and IoT to strengthen trade capabilities and at the same time secure.

Photo by Miguel Á. Padriñán



5. Increasing the use of IoT systems in the production and supply chain

The Internet of Things (IoT) continues to revolutionize supply chains by increasing real-time visibility and tracking for both raw materials and end products.

This makes networks more responsive and competitive.

Cheap and reliable sensors, which provide large amounts of data, are essential for the large-scale implementation of IoT systems.

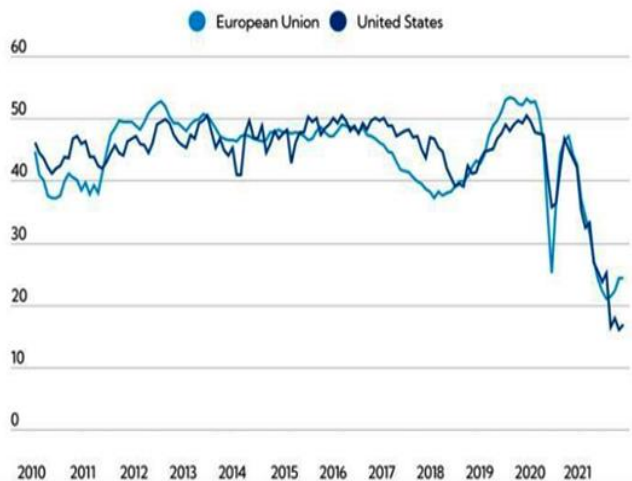
6. Harm and impact on production capacity

Following the various government directives, many companies in Israel and around the world were forced to close their production lines.

Undelivered order backlog lapels created bottlenecks in production systems and thus had an impact.

Backlogs and bottlenecks: supply chain turmoil

Suppliers' delivery times in the US and EU have slowed considerably – a lower index reflects longer delivery times. (Manufacturing PMI, suppliers' delivery times)



Significant on the availability of parts and materials for supply on the one hand and delay in the supply and availability of finished products on the other.

With so many shipments and fewer ships ready to load, there have been significant delays at ports around the world.

Even nowadays, there is a very significant difficulty in transporting and transporting products around the world. The delivery lines have become significantly more expensive, and many companies are thinking of a significant margin of safety at the delivery time in order not to lag behind in the contractual delivery dates with customers.

Figure 1. Businesses Have Little Inventory to Sell

Inventory-to-sales ratio (days of sales in inventory)

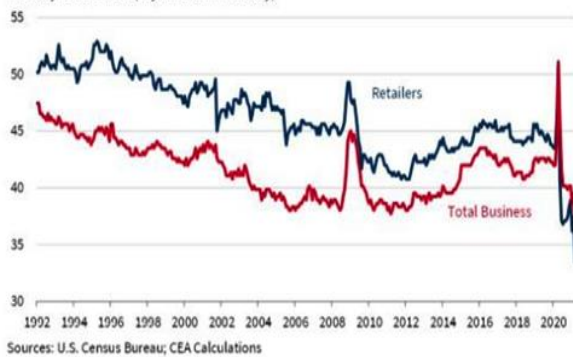
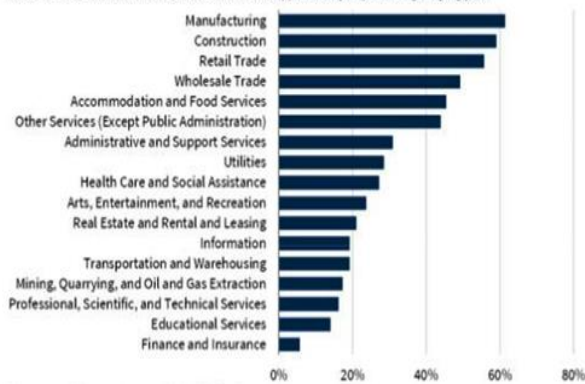


Figure 2. Supply-Chain Disruptions By Sector

In the last week, did this business have domestic supplier delays? (percentage saying yes)



Recommendations for the company's CEO

1. Gather data to generate forecast and inventory levels

The pandemic created great difficulty in managing inventory levels, for some products there was a sharp jump in demand, and they were snatched from the shelves. Manufacturers do not know how demand will behave and, accordingly, how much to produce.

The supply chain behaves according to the whip phenomenon – which is characterized by increasing fluctuations in inventory as a response to changes in customer demand as they move along the supply chain. Inventory oscillates in larger and larger "waves" in response to customer demand.

Each supplier takes a margin of safety and time to be on the safe side, and thus a wave is created on a wave.

The usual demand patterns are erroneous, which leads to the inability to produce a demand forecast that will instruct manufacturers on how much to produce.

So without accurate sea data, the replenishment policy of the plants may be incorrect and result in production in higher quantities than necessary.

The instability will lead to the fact that in some industries there will be a transition to inventory management using the Just In Case method that will hold larger inventories closer to their reach.

This is instead of the prevailing Just in Time approach. In general, there has been a trend in recent years to hold domestic inventory.

2. Create transparency

The crisis has shown that manufacturers and companies selling finished products are unfamiliar with their entire supply chain. The companies are familiar with the production and delivery schedules of suppliers who are in direct contact with their manufacturer, but they usually do not have much knowledge of suppliers and subcontractors further down the chain as an example of vehicle manufacturing companies that have announced a decrease in production output for cars in light of a considerable shortage of chips.

Manufacturers should map their entire supply chain optimally to understand and prepare for crises. Manufacturers incorporate in their agreements with suppliers indices and tools for dealing with crises. Creating transparency will strengthen the relationship with suppliers, and you will be able to minimize the risks in the next crisis.

3. The impact of manpower shortages and a recommendation to switch to automation and robotics

Another effect of the crisis is, of course, on the personnel situation. Taking employees on unpaid leave and the Ministry of Health's guidelines for maintaining distance have reduced the number of workers throughout the economy, as well as in factories and production lines, and are causing a significant reduction in productivity. Enterprises that previously worked only one shift have switched to two or three. Tasks that can be performed remotely are done from home. In logistics centers and distribution centers of retail chains, the challenge is even greater.

The sharp increase in demand for deliveries has created a lot of congestion in logistics centers, where the shortage of workers causes a delay in delivery times of a week or more.

The clear recommendation for Ain is the attempt to minimize as much as possible the dependence on workers and manpower and the transition to automation and robotics. Implementing machines or mechanized automation reduces dependence on manpower and enables operational flexibility as much as possible and reduces the damage caused by manpower shortages due to a crisis or a decision by a Force Majeure.

4. Examining the possibility of returning production in Israel from the East

Production capacity in large part of the industrial sectors in Israel and around the world has been negatively impacted both by a decline in demand and by a reduction in workers, shortages of raw materials, components, and sub-complexes. Another trend that will accelerate is the trend of digitization and the assimilation of advanced manufacturing technologies. This trend is also true for the industry in Israel. In the Israeli industry, a trend of encouragement has begun through special grants, starting with the transfer of production lines from abroad to Israel, through expanding the criteria of an advanced production grant track for medium-sized companies up to NIS 400 million throughout the country, and encouraging employment of workers.

The recommendation, in this case, is to examine whether the transfer of a production line from abroad to Israel is likely to contribute the required contribution and savings, and on the other hand, to examine whether the expected delays and the consequences of production in the East versus production in Israel are still tolerable in the face of the return of production lines in Israel.

5. Consolidation of shipments following the increase in transport prices

In the field of global ocean freight, the shutdown of most economic activity in China at the beginning of the year had a dramatic impact.

China accounts for about 40% of the world's total maritime activity, mainly in terms of exports of raw materials and imports of energy products. The shutdown of economic activity led to a sharp decline in the transport cost index, and accordingly to the cancellation of cruises by shipping companies, mainly from Chinese ports. At the beginning of March 2021, a gradual return to routine began at China's seaports, with the encouragement of the government.

The ports of Haifa and Ashdod are open and functioning, but the waiting times are long. Refrigeration results from the need to transport medicines and other medical products from China around the world that require refrigeration (at the expense of refrigeration-controlled raw materials and products). The unexpected changes in the cancellations and returns of direct air routes between Israel and China and Hong Kong, and between Israel and major European countries, have led to a significant reduction in the availability of transportation services, an increase in demand for cargo flights, and accordingly an increase in air freight prices.

In the field of land transport, there is a noticeable increase in truck transportation and a reduction in the transport bin due to an imbalance in back-and-forth transport.

Long transport lines within countries or between countries, for example in Europe or the United States, transport goods back and forth.

The current crisis is liable to upset this balance by the fact that there are no returns of products and some factories are closed.

In this case, we recommend ZIM to the purchasing manager to conduct an in-depth examination of his future shipments and try to consolidate (subject to his forecasts and demand for production) several shipments into one uniform shipment.

The shipping and aviation companies prefer to price large transports (in terms of profit) than small transports that require them to adjust and consolidate. A purchasing manager who will act in accordance with the forecast (As much as possible) and combining several types of transport into one transport may reduce the damage in delaying shipments and even reduce the financial expense.

6. Managing duplicate warehouses

Before the covid-19 era, the lean inventory culture was the right and logical way, and many organizations implemented it.

The current crisis has brought with it the need to change the direction of thinking and adopt a different strategy, one that will strengthen the management mechanisms, create a more stable and resilient system, and make it possible to deal with uncertainty in a variety of scenarios.

In light of the changing reality, there is a need for double inventory management in several warehouses.

Practical recommendations for implementation:

- Regularly monitor new suppliers, new materials, and more.
- Insure yourself against loss of revenue due to supply chain disruptions.
- Work together with your regular suppliers to develop additional sources of supply.
- Strengthen the management of your shipping providers, and see if you're working with those who are best for crisis management (rather than routine).
- Manage your shipping budget – it will be significantly larger than we're used to. Weigh in each shipment the price against the availability/risk – prices and availability will vary from week to week.

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