NEXT GENERATION OF TECHNOLOGY
DEVELOP YOUR VISION FOR THE DIGITAL SUPPLY CHAIN ROAD MAP

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What is supply chain?

A supply chain is a network between a company and its suppliers to produce and distribute a specific product to the final buyer. It is an entire system of producing and delivering a product or service, from the stage of sourcing the raw materials to the final delivery to end-users.[1]

Development and future of supply chain

Over the past decade the supply chain has been impacted by various factors including material shortages, geopolitical and trade instability, natural disaster and, most notably, the COVID-19 pandemic. In light of this constantly developing landscape, supply chain leaders must be able to make the right business decisions to prepare their organisations for the future. Failure to prepare for the landscapes in which future supply chains will operate is likely to result in an inability to foresee and deal with disruption. However, a recent Gartner survey found that 70% of respondents don't look beyond three years when developing a vision for their digital supply chain roadmaps. Gartner predicts that four factors are likely to impact the future supply chain.

Factor No.1: The shifting labour supply

Rapid growth in emerging economies, and more moderate growth in developed economies, is likely to have an impact on supply chain talent planning, meaning that programmes to attract and retain talent will become increasingly necessary.

Factor No.2: Artificial Intelligence

The most recent Gartner forecast predicts that AI will create USD5trillion of business value by 2025. This is likely to have dramatic implications for the automation and streamlining of supply chain operation over the coming decades.

Factor No.3: Digital sharing

Digital sharing is likely to become increasingly common, with a dramatic impact on collaboration, simulation and decision making. For example digital twins, which create a digital representation of not just physical products or assets, but also process characteristics, are likely to assist with the experimentation and modelling test for critical variables.

Factor No.4: Sustainability

As waste creation becomes increasingly unacceptable, supply chain leaders have to embrace a circular economy in which a used product is returned, recycled and then reused in some way.[2]

One way in which supply chain leaders could strategise for the future of supply chain in line with the above factors is to place more emphasis on predictive analytics. This is likely to create faster, less expensive supply chains. Similarly increasing investment in automation will be critical in the successful future of supply chain management. By automating some common and mundane tasks, supply chain leaders will be able to ensure the value stream they are managing is operating at maximum efficiency. Importantly, a consistent day to day focus on innovation will prove key when dealing with inevitable future supply chain disruptors.[3] Further to the above factors, below is a non-exhaustive list of some of the things which supply chain managers might find useful to consider when planning their innovation strategies.

IOT

The Internet of Things (**IOT**) is a name for the aggregate collection of network-enabled devices. These devices use internet protocol, which allows them to communicate with one another. The goal behind the IOT is to have devices that self-report in real time, improving efficiency and bringing important information to the surface more quickly than a system depending on human intervention.[4]

IOT devices have, and will continue to, revolutionise supply chain management by allowing for the location of goods to be authenticated at any time. IOT devices can be attached to storage containers or products. They will then transmit a location, which can be picked up by satellites and used to track the movement, and speed, of goods through the supply chain. Goods tracking and route planning can identify where goods are delayed in transit, as well as for planning alternative routes to speed up the supply chain. IOT devices can also monitor storage conditions of raw materials and products, as well as for locate goods in storage and administer goods immediately upon receipt.[5]

1   https://corporatefinanceinstitute.com/resources/knowledge/strategy/supply-chain/

2   https://www.gartner.com/smarterwithgartner/4-factors-that-will-impact-the-future-supply-chain

3   https://www.jabil.com/blog/future-of-supply-chain.html

4   The Internet of Things (IoT): An Overview (investopedia.com)

5   How the Internet of Things Is Transforming Supply Chain Management | Blume Global

Smart factory development

A smart factory is an interconnected network of machines, communication mechanisms and computing power. A smart factory uses advanced technologies such as artificial intelligence and machine learning to analyse data, drive automated processes and learn as it goes.[6] These innovations stand to drastically reduce waste and enhance efficiency. The smart factories currently being developed are fully digitised spaces where AI and machine learning provide fine-grained data on every aspect of the operation.[7]

Two of the biggest improvements that smart factories are likely to bring to manufacturing are the way that this technology will be able to streamline the delivery process and improve product quality.[8] The use of smart factories is expected to increase the on-time delivery of finished products by 13 times, while quality indicators are expected to improve at more than 12 times the rate of improvement since 1990.[9]

Global sourcing

Global sourcing refers to seeking goods and services beyond one's borders i.e. from the global market. It is a procurement strategy in which companies try to find the most cost-efficient place globally for manufacturing goods. This results in the procurement of higher quality goods at a cheaper price, and companies being better able to compete. Most companies choose a global sourcing strategy because costs are lower abroad.[10] Global sourcing is also an effort to improve certain aspects of manufacturing such as supplier selection and performance, speed to market, estimation of product costs, trade compliance and auditing.

Chip limitation

The global chip shortage has disrupted companies throughout 2021 and, as we enter 2022, the shortage is showing no signs of easing. Millions of products including cars, washing machines and smartphones, rely on chips in order to function. Therefore, chips are an integral feature of modern society.

The COVID-19 pandemic was one of the key factors behind the global chip shortage. When the pandemic began, companies anticipated large drops in their turnovers, so they cut back on purchases, including chips. This resulted in orders for chips being drastically reduced, and production limited. However, the pandemic also caused a large worldwide increase in consumer demand. By working and consuming entertainment from home, users began to increase their level of online orders, especially in electronics. The fact that chips have a lengthy production process and very few companies in the world carry out chip production, coupled with the transport and mobility difficulties caused by the pandemic, resulted in a mismatch between market supply and demand.[11]

The global supply chip shortage has had a dramatic impact on manufacturers around the world. Jaguar Land Rover (**JLR**) lost GBP9million in the last three months of 2021, seeing its retail sales fall 37.6% compared to a year earlier. JLR's chief executive said in a statement that "whilst semiconductor supplies have continued to constrain sales this quarter, we continue to see very strong demand for our products underlining the desirability of our vehicles." JLR also said that it expects the chip supply shortage to continue throughout 2022.[12]

Supply chain managers have been changing their practices in response to the chip shortage. For example, General Motors has announced new efforts to build more direct working relationships with semiconductor suppliers, having been forced to close four of its plants after shortages halted operations. Chip makers Intel and TSMC have announced plans to build new plants in the US. However, there are currently no estimates as to when these will be completed. The White House says it "continues to look to industry to take further steps to improve transparency, trust, and communication to address supply chain bottlenecks".[13]

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6   What Is a Smart Factory? | Smart Manufacturing and Cyber-Physical Systems | SAP Insights

7   The smarter way towards smart factories - Business Reporter (business-reporter.co.uk)

8   AI AND MANUFACTURING: HOW A MOVE TO SMART FACTORIES CAN REVOLUTIONISE THE MANUFACTURING INDUSTRY - Finance Derivative

9   smart_factories-how_can_manufacturers_realize_the_potential_of_digital_industrial_revolution.pdf (capgemini.com)

10   Global sourcing - definition and meaning - Market Business News

11   Global chip shortage: what caused it? is there a solution? (keyplan.es)

12   Global chip shortage: Jaguar Land Rover loses £9m - BBC News

13   Chip crisis is changing firms' supply chain strategy - Supply Management (cips.org)

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