Chapter 13
Digital Transformation: Impact of 5G Technology in Supply Chain Industry

Likhit Verma
Ericsson, USA
Mohit Lalwani
Oracle, USA

ABSTRACT

Supply chain industry is undergoing massive digital transformation. However, the pace of transformation has been rather slow. One of the challenges in the transformation is that there is so much dependency among various digital technologies that if one is implemented without the other, it might lead to no value creation at all. Furthermore, some of these technologies are dependent on other technologies that are still in its early phase of adoption. The existing technologies (namely artificial intelligence, machine learning, augmented reality, internet of things, virtual reality, big data) are critical enablers for the digital supply chain network; however, to unleash the full potential of these technologies, an extensive data sharing and analysis is required. This will only be possible if there is a robust telecom network. 5G with its features of low latency, high bandwidth, higher speeds, and low power requirements is expected to fill the void and hence expedite the digital supply chain transformation.

INTRODUCTION

Leaders win through logistics. Vision, sure. Strategy, yes. But when you go to war, you need to have both toilet paper and bullets in the right place at the right time. In other words, you must win through superior logistics. ~ Tom Peters

In today’s globalized world, organizational success is not just dependent on its own internal efforts, but it also largely depends on how effectively the organization can orchestrate a vast, global network of supply chain to deliver goods and services to its consumers. With the growing complexity of supply chains,
and the number of stakeholders involved, it is even more important to be able to track products in real
time by accessing data and making a quick decision within the supply chain. This requires a massive
transformation of the supply chain network.

Supply Chain Visibility Platforms, Big Data Analytics, IoT and Cloud technologies are some of the
technologies that are leading the change in this Digital Supply chain transformation. However, the
change has been rather slow. According to a survey by Capgemini Consulting and GT Nexus, 70% of
executives mentioned that they have started a digital supply chain transformation, but only 5% are very
satisfied with progress so far (Nextus, 2016).

One of the challenges in the transformation is that there is so much dependency among these vari-
obious technologies that if one is implemented without the other, it might lead to no value creation at all.
Furthermore, some of these technologies are dependent on other technologies that are still in its early
phase of adoption.

In this chapter, we not only discuss the role of these existing technologies (namely Artificial Intel-
ligence, Machine Learning, Augmented reality, Internet of Things, Virtual reality, Big Data) in digital
supply chain transformation but also describe an upcoming technology that is expected to impact these
technologies and hence in the transformation of next-generation Digital Supply Chain – 5G.

The flow of the chapter is as follows:

- Digital supply chain transformation
- Key technologies that are enabling digital supply chain transformation (along with its use cases).
- Next generation wireless technology: 5G and how it impacts the digital supply chain transforma-
tion and its applications in supply chain industry
- 5G as an enabler to other Digital Supply chain technologies

DIGITAL SUPPLY CHAIN TRANSFORMATION

Beginning from the first industrial revolution until now, various industries including the supply chain have
gone through various transformations. Refer to Figure 1 for various stages of the industrial revolution.

- **Industry 1.0:** It was all about manual labor. Water-and steam-powered machines were used to
help workers perform their job.
- **Industry 2.0:** Electricity became the prime source of power for industries. Mass production of
goods using assembly lines became a commonplace
- **Industry 3.0:** Inventions of computers and software lead to the automation of tasks that were
previously performed by humans.
- **Industry 4.0:** Connects the internet of things (IOT) with manufacturing techniques to enable
systems to share information, analyze it and use it to guide intelligent actions. It incorporates
technologies including Big Data, artificial intelligence and other cognitive technologies, advanced
materials, and augmented reality.
Related Content

Impact of Product Characteristics on Supply Chains: An Analytical Literature Review
www.igi-global.com/article/impact-product-characteristics-supply-chains/76918?camid=4v1a

Traceability in the Supply Chain
www.igi-global.com/article/traceability-in-the-supply-chain/218812?camid=4v1a

Technologies Enabling Omni-Channel: Understanding Key Success Factors for IT Framework
Rohit Das (2018). Supply Chain Management Strategies and Risk Assessment in Retail Environments (pp. 78-96).
www.igi-global.com/chapter/technologies-enabling-omni-channel/193298?camid=4v1a

Determining Optimal Price and Order Quantity Under the Uncertainty in Demand and Supplier’s Wholesale Price
www.igi-global.com/article/determining-optimal-price-order-quantity/48510?camid=4v1a