Chapter 3
The Effect of Industrial Automation and Artificial Intelligence on Supply Chains With the Onset of COVID-19

Aditya Saxena
Amity University, Noida, India

Devansh Chauhan
Amity University, Noida, India

Shilpi Sharma
Amity University, Noida, India

ABSTRACT

This chapter discusses the various impacts of industrial automation and artificial intelligence in supply chains with the onset of COVID-19. The term industrial automation is influenced by rapid globalization and the various industrial revolutions that have caused the dire need for automation of industrial tasks to reduce human efforts. The chapter dives into the multiple fields affected by COVID-19 and how automation was used to deal with the situation, stabilize the supply chains, and maintain the profitability of organizations. Digital globalisation has led to the development of global supply chains. The use of technologies and cognitive automation and its effects have been discussed in the chapter. Machine learning has been used to get insight into the factors that affect supply chains and help their functioning.

DOI: 10.4018/978-1-6684-4991-2.ch003

INTRODUCTION

Supply chains and the way they function are always affected by events, and even the smallest of events may threaten their entire production line and profitability. To achieve stability and continuous profit regardless of how much a threat the future imposes creates an opening for the predictive applications of artificial intelligence to will be used. To understand the concept and implications of the topic, we first need to understand Digital Globalization and Industry 4.0 (Stentoft, J., & Rajkumar, 2020). We conducted a pilot search as part of the first phase to better our understanding of the examined field and the existing literature.

Digital globalization can be defined by the generation and exchange of data and information that primarily affects our ways of doing business and communication. We have done a complete systematic analysis of the situations and concluded about the exact impacts of covid to various supply chains and how it is different from the other pandemics that hit us earlier. This chapter also covers the various supply chains that were affected and what automation was used to maintain the profitability with the onset of covid (Schilirò, D, 2020).

BACKGROUND

Simple globalization can be termed as the interdependence of world economies.

Information, ideas, and innovations are being sent throughout the world via digital flows, widening involvement in the global economy and boosting digital globalization. The flow of data ensures that the digital era continues to grow and is forcing small businesses, freelancers, and even big government organizations to go digital and thus become more global and accessible to the people. Digital globalisations have led to the development of global supply chains. Take an example of a simple laptop; it is possible that the computer was designed in another place, parts were imported from another site, and used in another location. Global supply chains refer to using different areas for various supply chain tasks to reduce the cost price. Figure 1 is used to depict the multiple features of globalization.

Digitization and four the Industrial Revolution leading to Dependencies on AI:

Digitization paired with artificial intelligence is being used to automate industries and reduce human effort. The fourth industry evolution is deeply interconnected with the usage of artificial intelligence. Our entire ecosystem revolves around the objects of the internet of things(IoT), the need to automate tasks and the need for fast flow of data to enhance the working of these devices is dire. Various technical methods are used in digitization, such as predictive analysis, machine learning, extensive data analysis, and artificial intelligence are some of the many tools that help in automating and decision making.