

Chapter 2

IoE–Based Supply Chain Management

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ABSTRACT

In today's world, technology is changing and developing every moment, and the concept of the internet of everything (IoE) is actually something much broader and beyond the internet of things. In addition to communication between objects or devices, it includes communication between (people and machines) and (people with people) through technological tools. In fact, the internet of things is part of the internet of everything. IoE-based solutions can significantly help to optimize supply chain management and logistics processes and have more transparency in this field. On the other hand, the cooperation of IoE and the supply chain can also help to reduce the costs of logistics. The role of IoE in supply chain management is a strategic one because, in addition to optimizing processes, it can also bring benefits such as increasing service speed, increasing accuracy in services, etc. For these reasons, in this chapter, the basic features and advantages of smart supply chains based on IoE are examined and evaluated, and an analytical framework is also provided for it.

INTRODUCTION

The supply chain is a network of all people, resources, activities, and technologies involved in creating and selling a product. A supply chain includes everything from the delivery of raw materials from the supplier to the manufacturer to the final delivery of the product to the end user. In fact, the supply chain section in any

DOI: 10.4018/979-8-3693-0159-3.ch002

organization will be related to delivering the final product from the producer to the consumer as a distribution item. The Internet of Everything (IoE) is one of the most recent technologies discussed in the world of information technology, and in today's world, information is the first word, and knowing this important issue, the Internet of Everything was formed on the basis of information and made it completely the objects around our living environment. IoE has also been developed with the same philosophy, the process of sending data in the Internet of Things is fully automatic and based on settings and is sent at specific times, and the emergence of this phenomenon is the result of the development of wireless technologies and micro-electro systems. It is mechanical. The supply chain is introduced as an integrated approach to properly manage the flow of materials, goods, information and finance (Nozari et al., 2021).

A smart supply chain involves the use of a variety of emerging technologies including big data, IoT, blockchain, and RPA to streamline various operations within the supply chain. These technologies allow supply chain companies to reduce costs, shorten product delivery times, reduce negative environmental impacts, and achieve unprecedented levels of automation. A very important point about the connection between the Internet of Things and the supply chain that gives rise to the intelligent supply chain is that such a supply chain is a self-improving and fully flexible system that can perform well in an unpredictable environment (Mohapatra & Rath, 2022). A smart supply chain will also include seamless information sharing and, of course, continuous optimization of workflows based on real-time data. To better understand what a smart supply chain is, you should know that such a system can process many things, including sales history, weather conditions, and the types of data it receives from its sensors, thus providing much better performance in logistics and supply chain. The Internet of Things only focuses on physical objects and is a small part of the Internet of Everything. The Internet of Things is a very broad term that includes many technologies and people apart from the Internet of Things. But the Internet of Things is actually the interconnection of physical objects that send and receive data. Therefore, IoE can give more power to smart supply chains (Tavakkoli Moghaddam et al., 2022).

By connecting items with information technology through embedded smart devices or through the use of unique identifiers and carrier data that can establish intelligent communication with the support of network infrastructure and information systems, the whole production process can be optimized and the entire product life cycle can be controlled from production to consumption (Nahr et al., 2021). By tagging items and contents, more information about the status of the workshop, and the location of the status of the production machinery can be obtained. The useful information of tags as input data can serve to generate refined programs and improve logistics.

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