Chapter 6
IoT–Based Supply Chain for Energy Saving

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ABSTRACT

The conventional supply chain framework included smart objects to upgrade intelligence, mechanization capabilities, and intelligent decision-making. Internet of things (IoT) advances give uncommon openings to extend productivity, diminish supply chain framework costs, and optimize energy consumption. Optimizing energy utilization with the IoT makes moving forward operational productivity in any industry conceivable. The applications of IoT within the energy segment have pulled in the extraordinary consideration of customers, businesses, and indeed, governments. For case, joining sun-oriented energy into control checking systems is one of the benefits of IoT within the supply chain, which changes a supply chain administration framework into a green and energy-saving plan. Utilizing daylight as an energy source empowers commerce to spare costs while giving a nonstop control supply to guarantee gadgets work without battery substitutions. Using renewable vitality, an intelligent framework prepared with the IoT transmits less nursery gases than conventional vitality sources.

1. INTRODUCTION

The IoT transforms supply chains' operations by connecting devices, sensors, and machines to enable real-time data exchange and analysis. This technology can potentially revolutionize the energy industry by providing new energy savings and optimization opportunities. By connecting devices and systems across the supply chain, IoT can help companies monitor energy usage, identify areas of inefficiency, and implement strategies for reducing energy consumption (Xie & Chen, 2022).

The IoT allows for the integration various systems and devices, such as smart meters, sensors, and energy management systems, to provide real-time data on energy consumption and usage patterns. This data can be analyzed to identify areas of inefficiency and waste, allowing companies to implement targeted strategies to reduce energy consumption and costs. For illustration, IoT-enabled sensors can monitor temperature and humidity levels in distribution and dissemination centers, permitting companies to optimize their HVAC frameworks and diminish energy utilization. Intelligent lighting frameworks can moreover be utilized to alter lighting levels based on inhabitance naturally, decreasing pointless energy utilization (Shambayati et al., 2022; Ra et al., 2023).

In addition to energy savings, IoT can help companies improve supply chain visibility and efficiency. By connecting devices across the supply chain, companies can track inventory levels, monitor shipping and delivery times, and optimize routes and transportation methods to reduce fuel consumption and emissions. However, there are also several challenges that companies may face when implementing IoT in their supply chains. These include concerns about data privacy and security and the need for significant investment in new technologies and infrastructure (İncekara, 2023). Despite these challenges, the potential benefits of IoT for energy saving in supply chains are substantial. By leveraging real-time data and analytics, companies can identify areas of inefficiency and waste and implement targeted strategies to reduce energy consumption and costs while improving overall supply chain efficiency.

This chapter will explore the potential of IoT for energy saving in supply chains and discuss some of the critical challenges and opportunities that companies may face when implementing this technology.

2. IOT WITHIN THE SUPPLY CHAIN OF THE ENERGY SEGMENT

The energy sector is a complex industry that involves multiple processes and stakeholders, from extraction and production to transportation and distribution. IoT advances can offer assistance to optimize these forms by giving real-time information and experiences, empowering way better decision-making and moving forward

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