


Chapter 4

Supply Chain Information System for Sustainability and Interoperability of Business Service

Kamalendu Pal

 <https://orcid.org/0000-0001-7158-6481>
University of London, UK

ABSTRACT

With the realization of environmental and social sustainability in developing and using apparel products and services, stakeholders – particularly consumers- are more concerned regarding these issues in business operations. In order to address new developments and changing trends, apparel businesses are compelled to identify and implement innovative and sustainable solutions for regular activities. This chapter assesses how the textile and apparel supply chains can comply with the United Nations' sustainable development goals. In particular, verifying the source of raw materials and maintaining visibility of merchandise products and related services while moving through the value-chain networks is challenging and maintains interoperable business sustainability. Information systems play a vital role in maintaining operational sustainability. This chapter presents a blockchain-based Internet of Things (IoT) infrastructure powered by service-oriented computing architecture as a solution for information processing for maintaining sustainable supply chain operations.

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INTRODUCTION

In recent decades, supply chain operations have observed a few exclusive trends, such as the globalization of product manufacturing and service offerings, optimized product life cycles, digitalization business processes, and multifaceted customer experiences, leading to the evolution of highly complicated supply chains. Incorporating social and environmental responsibility-related issues in regular business operations is becoming increasingly essential to companies' and supply chains' success (Choi et al., 2019). Companies are responsible for their activities affecting their businesses' environment, society, economy, and supply chains business partners. The United Nations' new sustainable development goals for 2030 have come into force since 2016, which initiated seventeen sustainable development goals (SDGs, 2023). The SDGs will demonstrate the new objectives of economic, social, and environmental developments, such as ending poverty, economic growth, and environmental protection are the few important ones. As a result, sustainability within the operations of organizations and the supply chain has become a contemporary issue and an essential agenda of research communities. The use of sustainability business operational practices not only enhances the environmental and social performance of companies and their supply chains but also provides an opportunity for businesses to acquire a new set of competencies, which can help them get a competitive advantage by deploying sustainability initiatives within and outside of the organizational boundaries (e.g., business partners operations).

In this way, supply chain sustainability is a central theme of most business organizations. The main objective of sustainable supply chains is to create and maintain long-term economic, social, and environmental value for all stakeholders involved in delivering products and services to specific markets. Consequently, all businesses today appreciate the value of supply chain management (SCM) and sound operational practices, and the advantages of digitization of its business processes have become a popular topic in both sustainable commercial operations and academic research purposes (Pal, 2019). Research has shown that sustainability has become necessary for businesses considering social and environmental issues in their strategies. It is also essential that businesses and their supply chains accelerate the shift from focus to sustainability and use technologies to digitalize business processes (Pal, 2019). In addition, business organizations are already making significant investments in digital supply chains because they recognize that digitalization will give them five big prizes: integration, transparency, productivity, sustainability, and, ultimately, the opportunity to transform their supply chain operating model.

Moreover, sustainability is essential for accessing global markets and accomplishing high profits (Pal, 2021). For example, while sustainable shipment management was considered a cost in the past, now, thanks to modern technologies (e.g., IoT, radio

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