

Abstract

Industry 4.0 Challenges Facing the Agri-Supply Chain: A Literature Review[†]

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The world is moving fast, and organizations are facing new risks, uncertainties, and threats within their supply chains. Food security, waste minimization, and sustainability are new strategic requirements agri-organizations must address and focus on. Nevertheless, due to globalization and changes in the market post-COVID-19, supply chains are becoming more complex and agri-organizations must change their business processes and operations to become more competitive, responsive, and agile.

To be more customer-oriented, efficient, and sustainable, agri-organizations have been adopting new innovative technologies such as RFID and the Internet of Things. Recently, the concept of Industry 4.0 (I4.0) has drawn significant attention from specialists, academics, and decision-makers. I4.0 technologies can enhance supply chain performance by bringing new cost-effective, green lean features and solutions that can improve internal and external event traceability, process automation, waste management, data sharing, and KPI monitoring.

However, there are many challenges to the adoption of I4.0 technologies. Therefore, it is very important to study these challenges facing the agri-supply chain.

The main aim of this research is to analyze the literature through a systematic approach to highlight and identify the challenges agri-supply chains are facing while deciding on implementing I4.0 technologies. Using a set of 64 publications, including journal papers, conference papers, reviews, and books chapters, selected from the well-known database Scopus for the last 7 years, a systematic literature review was conducted. The SLR highlights and considers several I4.0 technologies and their applications affecting the agri-supply chain.

The results of this study are based on a thorough analysis of the added-value outcomes of implementing different I4.0 technologies in the agri-food supply chain. Over a dozen challenges are remarked upon in the literature. These challenges are categorized into three main areas in the agri-food supply chain: infrastructural, technical and operational. The most critical challenges detected—within most observations—are technological architecture, security and privacy, and internet- and IoT-based infrastructure.

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