

Chapter 9

Evaluation of Logistics 5.0 vs. Logistics 4.0

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ABSTRACT

The logistics industry faces an adaptation process and is impacted by advances in technology, just like other industries. For this adaptation process to be accomplished correctly, the state of technology in today's age must be accurately understood and applied. Essentially, the concept of Logistics 5.0 refers to the methods in which logistics is used in Industry 5.0. The notion needs to be taken seriously by both the government (to offer incentives and opportunities for businesses to compete in this area) and the private sector (to investigate current developments and ensure their implementation in order to stay ahead of its competitors). The purpose of this research is to introduce the concept of Logistics 5.0 and explain how it works, as well as to inform the general public, executives in businesses, and academics on the subject. The study compared Logistics 5.0 to Logistics 4.0 and explains the changes it made.

INTRODUCTION

Following the introduction of Industry 4.0, when Industry 4.0 applications were realized, the idea of Industry 5.0 emerged, and numerous concepts were created (Xu et al., 2021). A requirement for companies that want to survive in the logistics industry, the notion of Logistics 5.0 has also been characterized as a component of the concept

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of Industry 5.0. Therefore, the applications in Logistics 5.0 aim to incorporate the “human” factor into Logistics 4.0 processes. This new phenomenon, Logistics 5.0, is very important. Because Logistics 5.0, the logistics of the future, must be used in order to keep up with the rest of the world. In order to be sustainable and advance their level of development, nations must react to Logistics 5.0 and include these actions into their strategic plans. Countries must provide incentives to companies and make an effort to encourage them in order to make this harmonization process easier and faster. However, in order to determine how far these can be taken, it is important to comprehend the organizations’ perceptions of Logistics 5.0.

In the literature, there are studies related to Logistics 5.0. Bolatan (2021) explains the transactions from Logistics 4.0 to Logistics 5.0 in the study and clarifies the Society 5.0. Trstenjak et al. (2022) develop the strategic plan based on a decision support system to accurately implement the requirements and technologies of Logistics 5.0. The literature review is done in the other study whose results are that there are a lot of gaps in the literature about Industry 5.0 in terms of supply chain (Frederico, 2021). Jafari et al. are doing bibliometric analysis about differences between Industry 4.0 and Industry 5.0 in terms of smart logistics in their study (Jafari et al., 2022). Fornasiero and Zangiacomì propose new models for the supply chain to facilitate adaptation to the new technologies of Industry 5.0 (Fornasiero and Zangiacomì, 2021). Karmaker et al. examine the challenges of applying Industry 5.0 in supply chain interruption created because of the Covid 19 pandemic (Karmaker et al. 2023). Minculete et al. explain the Industry 5.0 based on the information society and clarify the supply chain management 5.0 based on the past and the future economic difficulties (Minculete et al, 2021). Nayeri et al. develop the decision support system to examine the responsive supply chain 5.0 based on Industry 5.0 in the healthcare system, therefore the responsive supply chain 5.0 is introduced in the study (Nayeri et al. 2023a). Yuan et al. studied the supply chain innovation announcements on shareholder value within the context of Industry 4.0 and Industry 5.0 (Yuan et al., 2022). Varriale et al. examine the relationship between digital technology involving 3D printing, artificial intelligence, blockchain, computing, digital applications, geospatial technologies, Internet of Things, immersive environments, open and crowd-based platforms, proximity technologies and robotics and sustainable supply chain management (Varriale et al. 2023). Nayeri et al. develop decision support systems based on multi criteria decision making and mathematical modelling to decide the selection of the new technologies of Industry 5.0 used in supply chain (Nayeri et al. 2023b). Chowdhury et al. discuss the challenges encountering in industrial systems the transaction from supply chain 4.0 to supply chain 5.0 (Chowdhury et al. 2022).

As it can be seen, the studies in the literature have focused more on specific issues and research, and there is no study that focuses only on the difference between Logistics 4.0 and Logistics 5.0 and provides detailed explanations of the

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