Chapter 7
Use of Information Technology in the Supply Chain Management of the Pharmaceutical Industry:
A Literature Review

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ABSTRACT

An efficient supply chain management helps to increase the productivity of a business. Use of information technology and concepts like artificial intelligence, blockchain, and cloud computing have integrated the different aspects of supply chain with its stakeholders. Published literature in the field of SCM, IT, and the pharmaceutical industry has been reviewed, and different aspects of innovation, technique, risks, advancements, factors, and models have been taken into consideration to form a comprehensive chapter focusing on the role of information technology in the supply chain management of the pharmaceutical industry. The chapter finds that IT has made a significant impact in improving the efficiency of SCM. But its successful implementation and collaboration with other firms is the key to success for an efficient SCM. Within each category, gaps have been identified.

INTRODUCTION

A digitalized world with Industry 4.0 technologies has set high standards for companies (Kumar et al., 2020). The extensive use of blockchain (Wu et al., 2019), Internet of Things (IoT), Artificial Intelligence (AI) (Kaplan & Haenlein, 2020, Nishant et al., 2020), cloud computing (Lin & Lin, 2019) have changed the dimensions in which business is conducted (Toorajipour et al., 2021) in the 21st century. The synergy between humans and machines has never been better before. The integration of Industry 4.0 with healthcare sustainable supply chain 4.0 is paving the future for a better supply chain network Daú (2019).

An efficient supply chain is essential for increasing organizations' efficiency. The advancements made in Information Technology (IT) helps in improving greening methods (Jarmoszko et al., 2013), demand forecasting (Sarhani and Afia 2014) and connectivity or hyper-connectivity (Linke, 2013). Improvement in coordination (Ghahremani and Tarokh, 2011) and reduction in business risks (Hietajärvi and Karvonen, 2016) is possible with the integration of IT.

The complex nature of the pharmaceutical industry and its importance for an efficient supply chain is essential in distributing and disseminating life-saving drugs to patients at the right time through proper channels. The quality of health care in hospitals can be greatly improved by increasing the efficiency in its supply chain Nsamzinshuti and Ndiaye (2014). This text explores the possibilities of an efficient supply chain in the pharmaceutical industry with the use of integrated IT systems. Published literature in the field of supply chain and information technology have been referred to identify the gaps.

METHODOLOGY

Using the keywords "SCM", "supply chain management", "information technology", "IT", "healthcare", "role of IT", "SCM of pharmaceutical industry", "pharmaceutical industry", "role of IT on SCM" and "role of IT on pharmaceutical industry" in search of databases such as Google Scholar, EBSCO, Scopus and ScienceDirect, resulted in 216 published papers for review. Only papers pertaining to recent developments in SCM were considered, followed by papers involving developments in IT that affected SCM, and finally papers pertaining to pharma. For each of the categories, new technologies and frameworks were investigated, and research gaps were identified. Figure 1 shows the frequency distribution of journals in terms of years:

The published literature has been methodologically categorized into three broad groups: SCM, IT and Pharmaceutical Industry which are further divided into different subgroups and then analyzed accordingly. Research gaps within each category have been identified so that future research could be done in those areas. Table 1 and figure 2 lists the distribution of papers by topic area:

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www.irma-international.org/article/analyzing-impact-coordinated-decisions-within/2797

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