

THE IMPACT OF DIGITAL SUPPLY CHAIN ON LEAN METHODS USED IN APPAREL INDUSTRY IN SRI LANKA (SPECIAL REFERENCE TO WESTERN PROVINCE)

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ABSTRACT

Apparel manufacturers in Sri Lanka have adopted lean methodologies to enhance their operational efficiency, reduce waste, and improve product quality. The advent of digital advancements has significantly transformed supply chains in the apparel industry. Although numerous studies have focused on digitalization and supply chain practices within the Sri Lankan apparel sector, this study specifically aimed to examine the impact of the digital supply chain on lean methods used in the apparel industry in Sri Lanka, with special reference to Western Province. This study's methodology included a review of relevant literature, primary data collection using a self-created questionnaire, and correlation analysis. The respondents were managerial and executive-level employees from apparel industries in Western Province. Using simple random and systematic sampling methods, a sample size of 302 managerial and executive-level employees was determined from a population of 1,400 employees currently employed across 300-350 apparel industries in the Western Province of Sri Lanka. The sample and population data for the study were derived from EDB and pilot studies. Reliability and validity tests were conducted to ensure data accuracy and consistency. Data were collected through an online questionnaire and analyzed using Pearson's correlation analysis and multiple regression analysis to test the five hypotheses. The findings revealed a high correlation among all five variables and a significant positive relationship between digital supply chain components—digital information technology, digital suppliers, digital manufacturing systems, digital logistics and inventory, digital customers, and lean methods. All five hypotheses were accepted under multiple regression analysis, except for digital suppliers, which showed a regression value of 0.074, indicating that it was not a significant predictor. In conclusion, this study identified the impact of the digital supply chain on the lean methods used in the apparel industry. These findings suggest that digital information technology, digital manufacturing systems, digital logistics and inventory, and digital customers are significant predictors of lean methods. The study recommends that the apparel industry should thoroughly examine, implement, and pay more attention to every digital supply chain practice to improve lean methods effectively.

Keywords: Digital information technology, digital logistics, digital manufacturing system, digital suppliers, digital supply chain