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Industrial Engineering and Operation Management in Ready-Made Garments Industry

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Abstract

The today's competitive advantage of Ready-made garments (RMG) industry depends on the ability to improve the efficiency and effectiveness of resource utilization through proper adoption of industrial engineering techniques. RMG industries have historically adopted fewer technological and process advancement. This is especially true for less developed regions like East African Community (EAC) although significant amounts of textile and apparel products are produced in these regions. In most RMG industries, industrial engineering techniques have not been given enough attention even though they need to compete globally and survive in this extremely competitive and dynamic business environment. Presently, only very few garment industries have comprehended the functions of industrial engineering department. One of the basal reasons for this shortage is that the garment industries suffer much from substantial inadequacy of information and literature on the practical application of industrial engineering techniques in garment manufacturing. In this paper, the application of industrial engineering tools: ABC classification, process mapping, time study, and brainstorming were demonstrated in a garment manufacturing factory. The empirical data obtained were utilized to determine the standard minute value (SMV) and prepare operation bulletin for trousers. The results from the present study are very useful to the garment industry for setting up a realistic production target, and measure production capability of trouser assembly line as well as improving its efficiency.

Keywords: Industrial engineering, Time study, Garment industry, processing mapping, Standard minute value, Operation bulletin, Operation management, SAM

1. Introduction

Ready-made garment (RMG) industry is not only one of the oldest, largest, labor-intensive, low skilled, low value and most global industries but also the typical "beginner" industry for countries engaged in export-orientated industrialization (Abtew et al., 2019; Hamja et al., 2019). In 2016, the East African Community (EAC) pledged to phase out imports of second-hand clothing within three years to promote the development of the domestic garment sector (Wolff, 2020) (Calabrese et al., 2017). But that can be hardly achieved without proper implementing the industrial engineering (IE) and operation management (OM) functions in this sector.

The implementation of the IE and OM functions in RMG industry are very crucial for sustainability in the business and need proper monitoring of success (Islam et al., 2017). The OM aims at addressing problems related to low levels of sales and low turnover, over inventory and high manufacturing costs in textile-clothing companies in order to improve productivity and competitiveness (Maralcan & Ilhan, 2017). It mainly strategizes at promoting the supply chain integration, adequate demand forecasting methods, lean manufacturing principles, implementation of information technologies, and production planning techniques for the long, medium and short term (Cano & Zuluaga-mazo, 2019). On the other hand, IE focuses at reducing the production time which automatically reduces inventory cost to a minimum (Jana & Tiwari, 2018; Khatun, 2013). In RMG industry, the IE and OM functions are under IE department (Jana & Tiwari, 2018).