

## Industry 4.0 Readiness Assessment Model for Sri Lankan Apparel Industry

G.D.E. Lakmali<sup>1</sup>, K. Vidanagamachchi<sup>2</sup>, L.D.J.F. Nanayakkara<sup>3</sup>

Sri Lankan apparel industry is the most significant and driving contributor to the country's economy by constituting a large portion of GDP. It has achieved rapid growth rates over the past four decades. In the highly competitive apparel world, manufacturers search solutions for future problems such as worker inadequacy and for minimizing the human impact at most of the stages of production to increase productivity. Therefore, there is a need for apparel manufacturers to align value chain processes with the latest technologies. After the first three industrial revolutions, the world is now experiencing the fourth industrial revolution that integrates emerging digital technologies; additive manufacturing, artificial intelligence (AI), autonomous robots, cyber-physical systems (CPS), horizontal and vertical system integration, Internet of Things (IoT), big data, simulation and augmented reality. Industry 4.0 enhances the process functions from new product development to logistics by providing real-time visibility of the production flow with predictive and prescriptive solutions to the outcomes. As an example, the factories that are enabled with machine learning are capable in monitoring critical factors such as machine life to predict the frequency of machine replacement to maintain a smooth flow of production with minimum disruptions. Before the transition to Industry 4.0, there is an urgent need for guiding companies to improve their capabilities in a purposeful, sustainable and standardized way. Current literature mentions applications of industry 4.0 in the apparel industry but has not assessed readiness to adapt it. This study proposes a readiness assessment model to assess the current readiness of the Sri Lankan apparel industry to adapt industry 4.0 technologies and practices. A systematic review of the literature was conducted to implement the readiness assessment model. A set of assessment criteria were recognized as compatible with the literature, and the strengths and weaknesses of each existing readiness model were evaluated systematically. The factors that determine the readiness for Industry 4.0 within an organizational context were identified and they were transformed into readiness dimensions under four categories; People, Process, Technology and Data. The proposed model consists of five readiness levels namely: Stranger, Beginner, Intermediate, Advanced and Elite. The model enables to measure the readiness in adapting to Industry 4.0 along with selected apparel value chain processes by specifying the minimum requirements under each dimension and level. The outcome of this study will help industry practitioners in the apparel sector to assess the current readiness level and move up the technology ladder while maximizing operational performance. Further, it is suggested to validate this model through a case study approach in a real industrial scenario where the final result of the model will reveal the overall readiness of the Sri Lankan apparel industry.

Keywords: Industry 4.0; Readiness assessment model; Sri Lankan apparel industry; Apparel value chain; Readiness assessment factors

<sup>1</sup> Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

<sup>2</sup> Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

<sup>3</sup> Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka