

The Impact of Lean Manufacturing Practices on Operational Performance in the Apparel Industry in Sri Lanka: The Mediating Effects of Agile Manufacturing

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Global business organisations prioritise performance improvement amid a complex, unstable business climate due to globalisation, rivalry, and client expectations. Adapting to complex, dynamic, and uncertain environments requires approaches such as lean manufacturing practices and agile manufacturing practices. Sri Lanka's apparel and textile manufacturing sector, vital for GDP growth, is experiencing a decline in exports, necessitating new procedures and equipment adoption. In terms of the regional setting, the Sri Lankan apparel and textile industry is relatively new to adopting lean manufacturing practices and agile manufacturing. The common mistake is not implementing the Toyota Production System immediately without incorporating a lean manufacturing philosophy through appropriate customization to industry and organisational settings. Lean manufacturing practices, such as Total Productive Maintenance, Pull System, Just-In-Time, and Total Quality Management, are applied in the apparel industry to identify and eliminate waste, increase efficiency, and improve overall operational performance. Successful Lean manufacturing implementation necessitates not only adopting the tools but also embracing the underlying philosophy of Lean. This study assesses the impact of lean manufacturing practices on operational performance in the Sri Lankan apparel industry, examining the mediating effect of agile manufacturing. A cross-sectional, deductive, quantitative approach was utilised for this study. Data was collected from 104 manufacturing plants that have adopted lean and agile manufacturing practices, and the collected data was analysed using the SPSS software package. The study revealed a strong positive association with implementing lean manufacturing practices on operational performance and a strong mediating effect of agile manufacturing on the relationship between those variables of a manufacturing firm. Meanwhile, the study aims to address knowledge gaps in the apparel industry by improving procedures and understanding lean manufacturing practices. It supports academics, helps middle- and lower-level management and reduces labour hours, making it significant for future researchers and Sri Lankan apparel companies.

Keywords: Total productive maintenance (TPM), Pull system, Just-in-time (JIT), Total quality management (TQM), Agile manufacturing, Operational performance (OP)