

Determinants of Quick Changeover Bucket Loss During Style Transitions in Sri Lanka's Apparel Industry

D.T.H.L.A. Dharmadasa^{1,*} and R.A.M. Madhuwanthi²

ESOFT Metro Campus, Kurunegala, Sri Lanka^{1,2}

*Corresponding author: lakshaniad@gmail.com

Abstract

Sri Lanka's apparel and textile industry is the country's most dynamic contributor to the national economy with a national target of achieving USD 8 billion in apparel exports by 2025. Improving operational efficiency is therefore essential. Frequent style changes on production lines create major inefficiencies, resulting in productivity losses termed Quick Changeover (QCO) bucket loss. This study examines these inefficiencies through a case study at MAS Intimates Casualline, where a 35% drop in efficiency was recorded during style transitions. The research followed a positivist philosophy and quantitative method with a deductive approach under a cross-sectional time horizon. Using simple random sampling, primary data was collected from 325 employees directly involved in QCO activities, yielding 297 valid responses. A structured online questionnaire was used, and reliability testing confirmed strong internal consistency (Cronbach's Alpha = 0.821). Regression analysis showed that machine pre-setting, operator pre-training, and critical operation identification were significant drivers of QCO bucket loss reduction. Machine pre-setting and critical operation identification had the strongest effects, while operator pre-training showed a weaker but still significant impact. Operator absenteeism forecasting was not statistically significant. Pearson's correlation further supported these findings. The study recommends adopting pre-configured machine layouts, developing multi-skilled operator pools using skill matrices, training operators based on Standard Minute Values (SMV), leveraging IOT for real-time monitoring, and introducing performance-based QCO incentives. Although this case study is limited to MAS Intimates Casualline, the insights provide practical guidance for lean transformation across Sri Lanka's apparel sector, promoting smarter, faster, and more efficient production line changeovers.

Keywords: bucket loss, lean manufacturing, quick changeover, SMED techniques, standard minute value