

Optimized Planning for Inventory and Waste Reduction: The case of Tissue Craft

Manahil Abdullah, Majid Ali, Rameesha Jamil & Hamna Tariq

Business Department, School of Management

Forman Christian College University, Lahore, Pakistan

Abstract

This research project evaluates inventory management, waste reduction, production efficiency, and continuous-improvement opportunities at Tissue Craft (Pvt.) Ltd., a Lahore-based tissue-paper converting manufacturer serving retail, hospitality, institutional, and custom-branding markets. The study examines the company's hybrid operating environment, in which high-volume standard products require forecast-based make-to-stock planning while customized tissue products demand flexible make-to-order capacity. Using illustrative operational data, the study applies a range of operations management tools, including demand forecasting, aggregate planning, Economic Order Quantity (EOQ), Reorder Point (ROP), safety stock, ABC analysis, and Material Requirements Planning (MRP).

The analysis identifies parent tissue rolls as the most critical inventory item, accounting for more than 80% of annual material value. It recommends an EOQ of approximately 535 rolls and a reorder point of 750 rolls to balance inventory costs with production continuity. Pareto analysis identifies cutting/trimming waste and setup/startup waste as the major contributors to material loss, together accounting for 72.2% of weight-based waste. Fishbone and 5 Whys analyses link these losses primarily to blade wear, weak calibration procedures, reactive maintenance, inconsistent setup practices, and limited real-time measurement.

The study proposes an integrated improvement system based on Total Productive Maintenance, SMED-based changeover reduction, Lean manufacturing, 5S warehouse practices, FIFO controls, Kaizen circles, Statistical Process Control, and phased ERP implementation. These initiatives are expected to reduce total material waste from approximately 6.75% to 4% or below, improve bottleneck OEE toward 75%, reduce inventory holding costs by 15–20%, and strengthen sustainability performance through measurable eco-KPIs. Overall, the study concludes that Tissue Craft can achieve meaningful financial, operational, and environmental improvements by adopting a data-driven, phased, and continuously improving operations-management framework.

Keyword: Operations Management, Inventory Management, Production Waste