

Transforming Small-Scale Apparel Industry in Sri Lanka with a Low-Cost ERP Framework

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Abstract

The apparel industry is a vital sector that significantly contributes to Sri Lanka's economy. An enterprise resource planning (ERP) system integrates core functions by managing production records, tracking inventory, reducing duplicate data entries, and improving efficiency through timely recording of delays and wastes. Although several apparel ERP solutions exist globally, most apparel manufacturers in Sri Lanka avoid adoption due to high costs, system complexity, and the need for dedicated system administrators. This study introduces a low-cost ERP framework designed to support digital transformation in the small-scale apparel industry. The research adopts an experimental approach to develop an affordable, open-source solution using Laravel, MySQL, and the Filament admin panel, ensuring both cost-effectiveness and user-friendliness. The system employs agile methodology for iterative development and continuous end-user feedback. Features such as role-based access control, activity logging, and QR code-enabled forward and backward tracking strengthen security, transparency, and traceability. A pilot test in a small-scale apparel factory demonstrates notable improvements in production management, operational efficiency, and user adoption. Multi-user accessibility further supports process coordination without additional costs. These findings indicate that customized, scalable, and user-friendly ERP solutions can enable digital transformation in low-resource environments. Future iterations should incorporate HR management and accounting functions into the system, as suggested by user feedback. The proposed framework offers a replicable model for other small-scale manufacturing sectors, thereby enhancing digital inclusion and competitiveness within Sri Lanka's apparel industry.

Keywords: agile methodology, apparel industry, digital transformation, ERP system, small-scale manufacturing