MANUFACTURING MANAGEMENT SYSTEM: ADMINISTRATIVE, AUTOMATED QUALITY CONTROL AND INTEGRATED COMMUNICATION TOOLS

ABSTRACT

AUTHORS
Abdulwahid Abdul
Rennix Alonzo
Chriselda Dalanan
Kent Russel Olanda
Joshua Andrei Redondo

RESEARCH ADVISER
Rommel J. Constantino, DIT

AFFILIATION
Bestlink College of the Philippines

DISCIPLINE
Information Systems

KEYWORDS
quality control automation; manufacturing management system; administrative efficiency; internal communication; document management; mern stack

ARTICLE ID
AASGBCPJMRA-B80066

The manufacturing industry continues to face challenges in managing administrative tasks, maintaining consistent quality control, and ensuring clear interdepartmental communication. This study introduces the Manufacturing Management System—a comprehensive platform developed using the MERN stack—designed to streamline administrative processes, automate quality assurance, and enhance internal collaboration. The system aims to improve operational efficiency, ensure data accuracy, and support real-time decision-making within manufacturing enterprises. The development of the Manufacturing Management System followed the Agile Scrum methodology, which enabled a flexible, iterative, and user-centered approach. The project was divided into multiple sprints, each dedicated to the design, implementation, and testing of specific system functionalities. Regular sprint planning sessions, daily stand-up meetings, and sprint reviews facilitated ongoing collaboration between the development team and stakeholders, allowing for continuous feedback and system refinement. The system was structured into modular components to support incremental delivery. These modules included Account Management, which handled user registration, authentication, and role-based access; Document Management, which allowed for the uploading, storing, and retrieval of essential records; Legal Management, which managed compliance documentation and internal audit tracking; and Initiating Workflow, which automated internal processes such as approvals and task routing. The system's implementation resulted in significant improvements in operational workflows. Automated quality control reduced manual inspection time by 40%, while centralized documentation and task routing minimized redundancy. User testing revealed high satisfaction levels among administrative personnel and improved coordination between departments. Real-time data visibility and integrated communication tools contributed to more efficient decision-making and overall system usability. The study demonstrates that an integrated management platform tailored for manufacturing operations can enhance productivity, ensure compliance, and improve administrative oversight. Future developments may include integration with machine-generated data and mobile compatibility to support real-time monitoring and greater flexibility. These enhancements are expected to further optimize manufacturing operations and promote data-driven management.

RECOMMENDED CITATION

Abdul, A., Alonzo, R., Dalanan, C., Olanda, K. R., & Redondo, J. A. (2025). Manufacturing Management System: Administrative, Automated Quality Control and Integrated Communication Tools. *Ascendens Asia Singapore – Bestlink College of the Philippines Journal of Multidisciplinary Research Abstracts, 7*(3), 59.