



INTEGRATED INVENTORY WITH PROCUREMENT AND PRODUCTION  
MANAGEMENT SYSTEM

UNDERGRADUATE THESIS  
Submitted as one of the requirements to obtain  
Sarjana Komputer

By:  
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FACULTY OF COMPUTER SCIENCE  
INFORMATION SYSTEM STUDY PROGRAM  
CIKARANG  
AUGUST, 2025

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**Integrated Inventory with Procurement and Production Management System**

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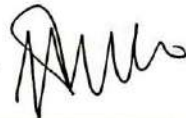
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## **ABSTRACT**

Enterprise Resource Planning (ERP) systems usually face common challenges in delivering real-time inventory data and handling rigid Bill of Materials (BOM), especially when applied to dynamic and fast-moving production environments. These limitations can result in critical issues during production planning, such as inaccurate material calculations, undetected inventory shortages, and ultimately, stop production process.

This thesis purpose is to present the design and implementation of an Integrated Inventory with Procurement and Production Management System, developed to address these common problems within the manufacturing process. The system integrates key modules that manage inventory, procurement, and production altogether. The Production Control Module is at the core of this solution, offering two crucial features: Dynamic BOM Calculation and Real-Time Resource Validation.

The Dynamic BOM Calculation ensures that production orders are always aligned with the actual material requirements by scaling the BOM automatically based on the order quantity. This negates the risks of human error and ensures material accuracy. Supporting this, Real-Time Resource Validation feature is implemented which retrieves up-to-date inventory data to verify whether the required raw materials are available before a production order is released, effectively reducing the risk of shortages during execution.

In addition to production control, the system also includes an integrated Procurement Module that informs users on low-stock alerts by giving an alert directly linked to material thresholds. Approval process and purchase order creation are also

managed in the system, creating a smooth connection between material planning and procurement operations. By combining production planning, inventory management, and procurement into a single application, this system enhances decision-making and improves material traceability. The resulting platform demonstrates how customizable ERP-like systems can be tailored to meet the specific needs of manufacturing operations, particularly in environments where adaptability and responsiveness are critical.

## **ACKNOWLEDGMENTS**

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