

**DESIGN AND CONSTRUCTION OF A WEB-BASED INVENTORY
INFORMATION SYSTEM USING THE FIRST-IN FIRST OUT (FIFO)
METHOD AT PT GEMILANG**

Dhony Manggala Putra, S.E., M.M. as a counselor

Alifia Salsabilla

Study Program of Informatics Engineering

Major of Information Technology

ABSTRACT

The inventory management process and determination of stock rotation at PT Gemilang are currently dominated by semi-manual methods using Microsoft Excel, which are highly vulnerable to workflow inefficiencies and data recording discrepancies. These operational constraints cause officers to spend approximately 15 to 20 minutes merely determining the oldest batch of stock manually before distribution. This research aims to develop a web-based inventory management information system named WakulStok, which is capable of recapitulating inbound and outbound commodity flows while calculating inventory rotation automatically and accurately. This system is designed using the SDLC (*Software Development Life Cycle*) Waterfall model by integrating the Laravel framework, MySQL database, barcode scanner feature, and automated implementation of the *First-In First-Out* (FIFO) algorithm based on an ascending data sorting mechanism of arrival time.

Using a comprehensive functionality testing scenario, this study applies *Black Box Testing* and *User Acceptance Testing* (UAT) methods involving 18 user respondents across various operational to managerial access levels. The test results demonstrate highly valid system performance in executing automated cross-batch FIFO inventory deductions, real-time remaining stock validation, and structured categorization of inbound-outbound transaction histories. The system

implementation successfully cuts the time required to determine stock rotation from 20 minutes to instant and automated processing. Consequently, the WakulStok information system proves to be highly feasible and effective as an optimization tool for structured, transparent, and accurate warehouse inventory management.

Keywords: Inventory Management Information System, First-In First-Out (FIFO), Laravel Framework, Black Box Testing, User Acceptance Testing (UAT).