

ABSTRACT

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DASHBOARD DESIGN FOR OPERATIONAL PERFORMANCE AND TRAFFIC DATA VISUALIZATION AT TANJUNG PRIOK PORT USING THE USER-CENTERED DESIGN METHOD

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Keywords : Dashboard, Operational Performance, Data Visualization, Tanjung Priok Port, User centered design

(xv + 87 + Appendices)

Tanjung Priok Port is Indonesia's busiest port, whose operational performance reports are still scattered across several Microsoft Excel files with varying table structures, inconsistent units, and several anomalous values, making evaluation of achievements against the Corporate Work Plan and Budget (RKAP) targets slow and prone to misinterpretation. This study aims to build a data visualization dashboard for the operational performance and traffic of Tanjung Priok Port using the User-Centered Design (UCD) method. The dashboard serves as an evaluation tool for the management of Tanjung Priok Port in monitoring operational performance and port traffic. The dashboard was developed using the User-Centered Design (UCD) method through four stages: Understanding the Context of Use, Specifying User Requirements, Designing Solutions, and Evaluating Against Requirements, accompanied by data cleaning on three source Excel files until structured into a ready-to-visualize dataset. The dashboard was built using the Python programming language with the Pandas library for data processing, Plotly for interactive graphic visualizations, and Streamlit as the web interface framework. The resulting dashboard is implemented across seven pages: Executive Summary, Loading and Unloading Performance, Port Traffic, Container Productivity, Non-Container Productivity, Berth Productivity, and Target vs. Realization. The visualization results show that the average performance achievement in 2025 relative to the RKAP reached 108.8%, although only 60% of individual metrics met their targets. Black-box testing on eight scenarios covering main and additional functions ran entirely as expected without any functional failures found. This dashboard has been uploaded to a GitHub repository and deployed using Streamlit Community Cloud for direct access, and it is expected to serve as an evaluation reference for management to monitor operational performance and port traffic faster than the manual Excel-based evaluations previously conducted.

Bibliography (2000-2025)