PERANCANGAN *DASHBOARD* OPERASIONAL DENGAN *METODE ACTION DESIGN RESEARCH* DI PELABUHAN TANJUNG PANDAN

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ABSTRAK

Pelabuhan Tanjung Pandan merupakan pelabuhan utama di Provinsi Kepulauan Bangka Belitung yang melayani aktivitas logistik dan kapal niaga. Penelitian ini bertujuan merancang dashboard operasional guna mendukung pengambilan keputusan berbasis data. Permasalahan yang dihadapi meliputi keterbatasan visualisasi data pada sistem E-Persuratan, kesulitan penjadwalan kapal berdasarkan ukuran dan muatan, serta kendala pemantauan bongkar muat. Penelitian ini bertujuan mengidentifikasi kebutuhan pengguna, meningkatkan efisiensi pemantauan aktivitas bongkar muat, serta mengoptimalkan penjadwalan kapal berdasarkan ukuran dan muatan. Penelitian menggunakan pendekatan *ACTION DESIGN RESEARCH (ADR)* melalui tahapan identifikasi kebutuhan, pengembangan dashboard dengan Google Looker Studio, dan evaluasi sistem. Metode SARIMA digunakan untuk peramalan jumlah kunjungan kapal, sedangkan K-Means untuk segmentasi ukuran kapal. Evaluasi dilakukan menggunakan kuesioner SUS dan QUIS. Hasil peramalan menunjukkan nilai MAPE (*Mean Absolute Percentage Error*) sebesar 5,21%, skor QUIS meningkat dari 95,38 menjadi 152,46, serta nilai SUS meningkat dari 56,53 menjadi 76,53 yang masuk kategori "*Acceptable*". Hasil ini menunjukkan dashboard yang dirancang efektif dalam menampilkan informasi dan mendukung operasional pelabuhan.

Kata Kunci: *ACTION DESIGN RESEARCH* (ADR), *Dashboard,* Seasonal ARIMA, *K-Means Clustering*, *Looker Studio*

DESIGNING AN OPERATIONAL DASHBOARD USING THE ACTION DESIGN RESEARCH METHOD AT TANJUNG PANDAN PORT

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ABSTRACT

Tanjung Pandan Port serves as the primary port in the Bangka Belitung Islands Province, facilitating logistics activities and commercial vessels. This study aims to design and develop an operational dashboard to support data-driven decision-making processes. The identified problems include limited data visualization in the existing E-Persuratan system, difficulties in scheduling ships based on their size and cargo capacity, and challenges in monitoring loading and unloading operations. The objectives of this study are to identify user requirements, enhance the efficiency of cargo monitoring activities, and optimize vessel scheduling based on ship size and load. This research adopts the ACTION DESIGN RESEARCH (ADR) methodology, consisting of the stages of requirement identification, dashboard development using Google Looker Studio, and system evaluation. The SARIMA method is employed for forecasting vessel visits, while the K-Means clustering algorithm is utilized for ship size segmentation. System evaluation is conducted using the SUS (System Usability Scale) and QUIS (Questionnaire for User Interaction Satisfaction) instruments. The forecasting results indicate a MAPE (Mean Absolute Percentage Error) value of 5.21%, an increase in the QUIS score from 95.38 to 152.46, and an improvement in the SUS score from 56.53 to 76.53, categorizing the system as "Acceptable." These findings suggest that the developed dashboard is effective in presenting relevant information and supporting port operational activities.

Keywords: *ACTION DESIGN RESEARCH* (ADR), *Dashboard, Seasonal* ARIMA, *K-Means Clustering, Looker Studio*