



Performance Evaluation on the Operational Aspects of the Ketapang Ferry Port, East Java Province

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Ketapang Crossing Port is a Class I Crossing Port located in East Java Province as one of the main gateways for the flow of goods and services in Java and Bali. This study discusses the Operational Performance of Ketapang Port in accordance with the Decree of the Director General of Land Transportation Number 539 of 2022 with the aim of being able to determine the weight of operational performance at the port and be able to determine indicators that must be improved in the operational performance of the port using quantitative research methods. The research conducted at Ketapang Port per pier with an indicator, namely the Ship Movement Time recorded in the normal period and the Eid transportation period of 19.04. The unloading/loading time reviewed from the research is 18.49 normal period and Eid transportation 15.89 and the BOR value obtained is at the Performance Value for facility utilization in the normal period of 21.89 and the Eid Transportation period 22.84. There is a comparison of each operational performance indicator of the Ketapang Crossing Port, East Java, namely a decrease in operational performance in the vehicle unloading/loading indicator and an increase in operational performance in the facility utilization indicator.

Keyword: *Performance, Operational, Time, Processing, Unloading, Loading, Port*

1. INTRODUCTION

Transportation is one of the important aspects of the life of the Indonesian people because it plays a role in the distribution of people and goods that affect regional development. Sea transportation has a strategic role as the backbone of national transportation, as it determines the smooth flow of goods and logistics costs. The port as a sea transportation terminal supports activities such as loading and unloading goods, boarding and disembarking passengers, and where ships are docked. Ketapang Port in Banyuwangi Regency is a vital route connecting Java and Bali, so the quality of operational services at this port greatly affects the smooth mobility, especially considering Bali as an international tourist destination.

However, there are problems related to the operational performance of Ketapang Port, such as damage to the pier due to loading and unloading activities, ineffective

traffic management, and long queues during the Eid transportation season. LCM docks are damaged faster due to erosion of loading and unloading activities, so they require optimal repair. Evaluation of land facilities, traffic management, and completeness of facilities is very important so that the quality of service is in accordance with user needs. Port operational performance indicators include ship service time, facility utilization, and human resource and information technology support to improve service effectiveness.

Previous research has shown similar problems in other ports, such as Tanjung Priok Port which experiences delays in loading and unloading, Hunimua Port which faces queues of vehicles, and Tanjung Api-Api Port with ship movement problems. Therefore, a thorough evaluation of port operational performance is needed based on official guidelines such as the Decree of the Director General of Land Transportation Number KP-DRJD 539 of 2022. Based on this background, this study took the title "Performance Evaluation on the Operational Aspects of the Ketapang Crossing Port, East Java Province" to assess the effectiveness of services and support continuous performance improvement.

2. METHODOLOGY

This research method uses a quantitative method because the data to be processed is ratio data which is the focus of this study to determine the magnitude of the influence between the variables being studied (Sutrisno, Slamet Prasetyo et al. 2024). The quantitative data in this study are Maneuver Time, Average Time of Vehicle Boarding, Average Time of Vehicle Getting Off Ship, Time of Waiting Time for Vehicles to Board, and Dock Occupancy Rate.

3. DISCUSSION

The proposed Battery Management System (BMS)-based charging system is designed to utilize energy generated from a solar photovoltaic (PV) source for efficient and controlled battery charging. The overall system consists of a PV module, a DC–DC converter (charger controller), a lithium-ion battery pack, and a BMS unit.

The calculation of the survey of ship maneuver time for 20 days at 5 piers for the normal period and the Eid transportation period at Ketapang Port, East Java, with a calculation of 2 days per pier. The following is an illustration to calculate the time of the ship's movement that will carry out the movement:

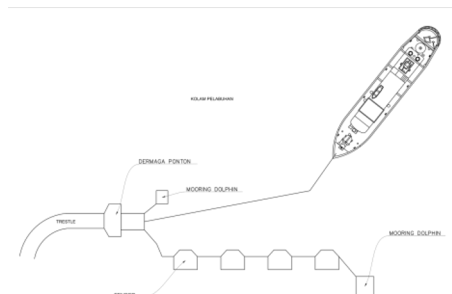


Figure 1 Illustration of Survey for Calculation of Ship Motion Time

Based on the criteria for assessing the time of movement carried out in March for the normal period and Eid transportation from March 11, 2025 to March 31, 2025 so that the average time of ship movement obtained after conducting a survey at the Port of Ketapang, East Java, namely there is a comparison of the acquisition of values in the time of ship movement per pier, so that there is a need for an increase in the indicator of the time of ship movement during the normal period and the transportation period Eid. The following is an analysis based on the recapitulation of ship movement time per pier listed in Appendix 1: Ship Movement Time. The results of the recapitulation of the ship's motion time can be seen in Tables 1 and 2 as follows:

Based on the presentation of the above data, the average time for ship movement in the normal period and Eid transportation at 5 piers in March at Ketapang Port, East Java, at Pier 4 with a value of 80 has the longest movement time found in the survey results, namely 5 minutes 53 seconds normal period and 6 minutes 12 seconds for the Eid transportation period with an assessment of the ship movement time of 80.

Based on the criteria for assessing the time of vehicles boarding the ship which was carried out in March for the normal period and Eid transportation from March 11, 2025 to March 31, 2025 so that the average time to board the vehicle obtained after conducting a survey at the Port of Ketapang, East Java, namely there is a comparison of the acquisition of values at the time of boarding the vehicle on the ship per pier, So there is a need for an increase in the indicator of the time to board the vehicle during the normal period and the Eid transportation period.

Based on the presentation of the data above, the time to raise vehicles in the normal period and the Eid transportation period in March at Ketapang Port, East Java for 20 days at 5 piers, it was found that at the LCM Pier with a value of 60 had a longer time to raise vehicles, namely in the normal period of 2 minutes 03 seconds and the Eid transportation period with a value of 60, which was 2 minutes 09 seconds.

Based on the criteria for assessing the time of vehicles disembarking from the ship which was carried out in March for the normal period and Eid transportation from March 11, 2025 to March 31, 2025 so that the average time of disembarking the vehicle obtained after conducting a survey at Ketapang Port, East Java, namely there is a comparison of the acquisition of values at the time of disembarkation of the vehicle from the ship per pier, So there is a need for an increase in the indicator of the time of vehicle disembarkation from the ship during the normal period and the Eid transportation period.

Based on the presentation of the above data on the time of unloading vehicles at Ketapang Port, East Java, the normal period in March for 20 days at 5 piers, it can be concluded that at Pier 1 with a value of 40, the normal period is 4 minutes 32 seconds and the Eid transportation period at LCM Pier with a value of 20 has a longer time to unload the vehicle, which is 6 minutes 08 seconds.

The calculation of the survey of vehicle queue time for 20 days at 5 piers for the normal period and the Eid transportation period at Ketapang Port, East Java, with a calculation of 2 days per pier. The following is an illustration to calculate the vehicle queue time.

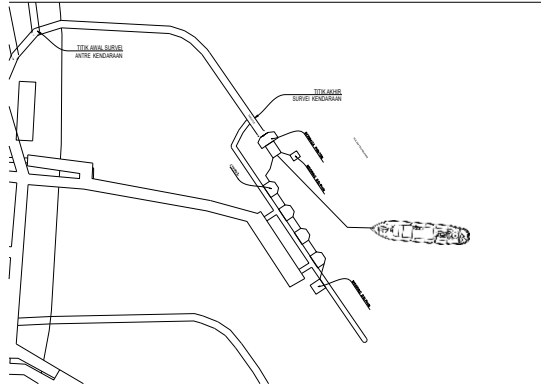


Figure 2 Illustration of Vehicle Queue Time Survey Calculation

Based on the criteria for assessing the time of vehicles queuing up to the ship carried out in March for the normal period and Eid transportation from March 11, 2025 to March 31, 2025 so that the average vehicle queue time obtained after conducting a survey at Ketapang Port, East Java, namely there is a comparison of the acquisition of values at the time of disembarkation of vehicles from the ship per pier. So there is a need for an increase in the indicator of vehicle queue time to ship during the normal period and the Eid transportation period.

Based on the presentation of the above data, the average queue time for vehicles to board the ship in the normal period in March at Ketapang Port, East Java for 20 days found that the results of the survey of vehicle queue times in the normal period at the LCM Pier with a value of 80 got higher results, namely 9 minutes 08 seconds and the Eid transportation period with a value of 80, which was 9 minutes 36 seconds.

Ketapang Port operates for 24 hours, in normal periods at Ketapang Port using an operating pattern for piers 1, 2, and 3 with 15 ships with 5 ships per pier and for the operating pattern of piers 4 with 4 ships and at the LCM pier which is 9 ships in, so, the total number of ships operated in the normal period is 28 ships.

In the Eid transportation period at Ketapang Port uses a ship operation pattern, namely an operation pattern for piers 1,2,3 with 15 ships with 5 ships operating per pier and for the operation pattern of pier 4 and LCM pier using an operation pattern of 15 ships, with 4 ships at pier 4 and 11 ships at the LCM pier so that the ships operated during the Eid transportation period are 30 ships:

The calculation of the BOR value is carried out by utilizing secondary data available at Ketapang Port, East Java. The data collected included the length of time (hours) of dock operation per day and the number of days ready for port operations for one year (excluding maintenance and repair times). Ketapang Crossing Port operates for 24 hours with different pier operating hours. Ketapang Crossing Port, East Java started operations as follows:

At Ketapang Port, East Java, the use of pier 4 and LCM is used for cargo above 100 tons and ships of more than 1000 GT. Based on Tables 4.30 and 4.31, the normal period of docking time for piers 1-3 is 24 minutes, which is 0.4 hours, pier 4 is 26 minutes or 0.43 hours, while for LCM piers it is 28 minutes or 0.46 hours.

4. CONCLUSION

Based on the results of the analysis carried out, the conclusions that can be drawn are as follows: The performance level of the Ketapang Crossing Port, East Java related to the factors of ship operational services at the time of ship movement (Maneuver Time) obtained a value of ship movement time with an average value in the normal period of 19.04 and an average value in the Eid transportation period of 19.04. The performance level of the Ketapang Crossing Port, East Java related to the ship's operational service factors at the time of loading and unloading (boarding, disembarking, and queuing vehicles on board) is reviewed from the indicator values that have intervals in the normal period and Eid transportation, namely the average value of unloading/loading in the normal period of 18.49 and the average value of unloading/loading in the Eid transportation period of 15.89. The performance level of the Ketapang Crossing Port, East Java is seen from the performance indicators of operational services on the utilization of facilities in the normal period, which is an average of 21.89 and the Eid Transportation period, which is an average of 22.84.

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