



Service Operations Efficiency in Public Ferry Transportation at Baubau Port

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Abstract

This study examines service operations efficiency in public ferry transportation at Baubau Port using a public management perspective. The research aims to analyze the influence of administrative efficiency, operational reliability, service responsiveness, institutional coordination, and service accessibility on transportation operational efficiency. A quantitative survey approach was conducted involving 200 ferry transportation users selected through purposive sampling. Data were analyzed using descriptive statistics and multiple linear regression analysis. The findings reveal that all operational service variables significantly influence transportation operational efficiency. Operational reliability emerged as the strongest determinant, followed by service responsiveness and administrative efficiency. The study also found that institutional coordination and service accessibility positively contribute to ferry transportation performance and passenger satisfaction. The novelty of this research lies in integrating public management perspectives into regional maritime transportation analysis. The findings provide practical implications for improving operational governance, administrative systems, and passenger-oriented transportation services in regional ferry transportation management.

INTRODUCTION

Public transportation systems play a fundamental role in supporting regional integration, economic mobility, and social connectivity, particularly in archipelagic countries such as Indonesia. Maritime transportation serves not only as an economic infrastructure but also as a strategic public service mechanism that connects geographically separated regions. Ferry transportation, in particular, functions as a critical mode of inter-island mobility that facilitates passenger movement, trade circulation, tourism activities, and public accessibility. In eastern Indonesia, ferry transportation services are highly significant because many communities depend on maritime routes for daily socio-economic activities (Hadiningrat et al., 2024; Hidayat et al., 2025; Rudiatin et al., 2023). Consequently, the operational efficiency of ferry transportation services has become increasingly important within the broader discourse of public management and transportation governance (Baig et al., 2025; Jazlan et al., 2025; Mishra et al., 2024; Madubun, 2024; Dolcini et al., 2025).

The growing demand for public transportation services requires ferry operators and port authorities to improve operational effectiveness while maintaining service quality. Public transportation users increasingly expect punctuality, safety, accessibility, affordability, and efficient administrative procedures (Lodhi et al., 2024; Omotoye et al., 2025). However, operational inefficiency remains a persistent challenge in many public transportation systems in developing countries. Studies in transportation management indicate that inefficiency in service operations contributes to delays, congestion, higher operational costs, reduced passenger satisfaction, and weakened institutional trust in public services (Nguyen et al., 2021; Lee & Hensher, 2022). Within maritime transportation contexts, operational inefficiency often manifests through delayed departures, poor passenger flow management, inadequate scheduling systems, and fragmented coordination between service providers (Sowa, 2025; Ojadi & Maiyaki, 2025).

The issue of transportation efficiency has become more urgent in regional ports where infrastructure limitations and administrative constraints frequently affect service performance. One important maritime transportation hub in Southeast Sulawesi is Baubau Port, which functions as a major gateway connecting inter-island transportation routes in eastern Indonesia (Riyadi, 2024, Taharuddin et al., 2025). The port supports passenger transportation, cargo mobility, and economic interactions between Sulawesi, Buton, Maluku, and neighboring islands. The increasing intensity of ferry traffic at Baubau Port has created operational challenges related to boarding procedures, ticketing administration, vessel scheduling, loading and unloading management, and passenger service coordination. Empirical observations indicate that operational delays, limited waiting facilities, manual administrative systems, and inconsistent departure schedules continue to affect service effectiveness and passenger convenience (Otieno, 2025; Noah, 2025; Erkan & Ozdemir, 2025).

Previous studies have extensively discussed operational efficiency in transportation and port management. Research by Cullinane et al. (2019) demonstrated that port operational efficiency is closely associated with infrastructure capacity, managerial effectiveness, and technological integration. Similarly, Bouraima et al. (2023) emphasized that digital transformation and service integration significantly improve maritime operational performance and customer satisfaction. In the context of public transportation management, operational efficiency is also influenced by institutional responsiveness, organizational coordination, and service innovation (Abdulrahman & Dweiri, 2025; Yang et al., 2025; Almazrouei et al., 2024). Several scholars argue that transportation efficiency should not be viewed solely from technical and infrastructural perspectives, but also from governance and administrative dimensions that shape public service delivery.

Studies on maritime transportation in developing countries have further revealed that inefficient public transportation systems often originate from bureaucratic complexity, weak inter-agency coordination, limited digitalization, and inadequate human resource management. Research conducted by Hensher et al. (2022) highlighted that operational responsiveness and service reliability are key determinants of public transportation performance. In addition, public service scholars argue that transportation management increasingly requires collaborative governance approaches that integrate operational management with user-oriented service systems (Wirtz & Müller, 2023; Bäßmann et al., 2026; Sienkiewicz-Małyjurek Szymczak, 2024). These findings indicate that operational efficiency in ferry transportation is multidimensional and strongly connected to public management practices.

Despite the growing literature on transportation efficiency, existing studies remain dominated by analyses of large commercial ports, logistics networks, and urban

transportation systems. Limited attention has been given to operational efficiency in regional ferry transportation services, especially within archipelagic regions characterized by institutional limitations and uneven infrastructure development. In the Indonesian context, most maritime transportation studies focus on connectivity, logistics distribution, or infrastructure investment rather than operational service management at local ferry ports (Sibali & Jainuddin, 2024; Barasa & Purba, 2024). Consequently, empirical evidence regarding operational efficiency in regional ferry transportation services remains insufficient.

Another important limitation of previous studies concerns the lack of integration between public management perspectives and maritime transportation operations. Many studies primarily employ technical or engineering-based approaches while underexploring the administrative, organizational, and governance dimensions influencing service operations. Ferry transportation services involve complex interactions between port authorities, ferry operators, administrative personnel, operational systems, and passengers. Therefore, evaluating operational efficiency requires a broader analytical framework that incorporates public service responsiveness, institutional coordination, administrative effectiveness, and operational reliability. This perspective remains relatively underdeveloped in current maritime transportation literature.

The state of the art of this study lies in its emphasis on operational efficiency analysis using a public management framework within regional ferry transportation services. Unlike previous studies that focus mainly on infrastructure performance or transportation policy, this research examines operational service processes, institutional coordination, and administrative effectiveness at Baubau Port. The study integrates transportation management and public service governance perspectives to provide a more contextual understanding of ferry transportation efficiency in regional maritime systems.

This study addresses the research gap concerning the limited empirical examination of service operation efficiency in regional public ferry transportation in eastern Indonesia. Existing literature inadequately explains how public management practices influence operational effectiveness in ferry transportation services at regional ports. In addition, previous studies rarely explore operational efficiency through qualitative public service dimensions such as responsiveness, reliability, accessibility, and institutional coordination. These limitations create the need for a comprehensive analysis that connects operational management with public service governance in ferry transportation.

This study aims to analyze service operations efficiency in public ferry transportation at Baubau Port by examining operational service performance, administrative efficiency, and institutional coordination in ferry transportation management. The novelty of this research lies in the integration of public management and maritime transportation perspectives to evaluate operational efficiency in regional ferry services. The study contributes theoretically by expanding the literature on public transportation management within maritime public services and contributes practically by offering policy recommendations for improving operational effectiveness and public service quality in regional ferry transportation systems.

METHODS

Research Design

This study employed a quantitative research approach using a survey design to analyze service operations efficiency in public ferry transportation at Baubau Port. Quantitative research was selected because the study aimed to measure the relationship between operational service dimensions and transportation service

efficiency using statistical analysis. The survey approach enabled the researchers to obtain empirical data from ferry transportation users and operational personnel regarding their perceptions of service performance, administrative effectiveness, operational reliability, and institutional coordination. According to Stamenkov (2023), quantitative methods are appropriate for examining causal relationships and testing theoretical constructs through measurable indicators

The study adopted an explanatory research design to investigate the influence of operational service variables on public ferry transportation efficiency. The research framework was developed based on public transportation management theory and public service governance perspectives, emphasizing operational reliability, administrative efficiency, service responsiveness, institutional coordination, and accessibility as determinants of transportation service efficiency.

Research Location and Population

The research was conducted at Baubau Port, which serves as one of the major ferry transportation centers in eastern Indonesia. The port was selected because of its strategic role in supporting inter-island transportation activities and regional economic mobility. Increasing passenger movement and operational complexity at the port provided an appropriate setting for examining transportation service efficiency within a public management context.

The population of this study consisted of ferry passengers and operational service users at Baubau Port. These included individuals who had directly experienced ferry transportation services, ticketing procedures, boarding management, and passenger service operations. The study focused on service users because they represent the primary recipients of public transportation services and possess direct experience regarding operational service quality and efficiency.

Sampling Technique and Sample Size

The study applied purposive sampling techniques to select respondents who met predetermined criteria related to ferry transportation usage. Respondents were selected based on their experience using ferry transportation services at Baubau Port within the previous six months. Purposive sampling was considered appropriate because the study required respondents with direct knowledge and experience regarding ferry transportation operations (Campbell et al., 2020). A total of 200 respondents participated in the survey. The sample size was considered adequate for quantitative statistical analysis and hypothesis testing. Data collection was conducted over a two-month period through direct distribution of structured questionnaires to ferry passengers at the port waiting area and boarding terminals.

Data Collection Technique

Primary data were collected using structured questionnaires designed based on operational efficiency and public transportation management indicators derived from previous studies. The questionnaire used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument measured respondents' perceptions regarding administrative efficiency, operational reliability, service responsiveness, institutional coordination, accessibility, and overall transportation service efficiency.

Secondary data were obtained from institutional reports, transportation statistics, ferry operation records, and official documents related to ferry transportation services at Baubau Port. These secondary data supported the interpretation of survey findings and provided contextual understanding regarding operational service conditions at the port.

Table 1. Research Variables and Measurement Indicators

Variable	Indicators
Administrative Efficiency	Ticketing process, service procedures, document management
Operational Reliability	Departure punctuality, boarding process, service continuity
Service Responsiveness	Staff responsiveness, complaint handling, passenger assistance
Institutional Coordination	Coordination between operators and port authorities
Service Accessibility	Waiting facilities, passenger information, transportation access
Service Operations Efficiency	Overall operational performance and service effectiveness

Source: Developed by the authors based on public transportation management literature.

Data Analysis Technique

The collected data were analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive statistical analysis was conducted to describe respondents' demographic characteristics and perceptions regarding ferry transportation service efficiency. Inferential statistical analysis was subsequently applied to examine the relationships between operational service variables and transportation efficiency.

Multiple linear regression analysis was used to determine the influence of administrative efficiency, operational reliability, service responsiveness, institutional coordination, and accessibility on service operations efficiency. Regression analysis is widely used in quantitative public management research to examine the magnitude and significance of relationships between independent and dependent variables.

The regression model applied in this study can be expressed as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where:

Y = Service Operations Efficiency

X_1 = Administrative Efficiency

X_2 = Operational Reliability

X_3 = Service Responsiveness

X_4 = Institutional Coordination

X_5 = Service Accessibility

α = Constant

β = Regression Coefficient

ε = Error Term

Validity and Reliability Testing

Instrument validity was tested using Pearson Product Moment correlation analysis. Questionnaire items were considered valid if the correlation coefficient exceeded the minimum significance threshold of 0.30. Reliability testing was conducted using Cronbach's Alpha coefficient to evaluate the internal consistency of the measurement

instrument. According to Izah et al. (2023), a Cronbach's Alpha value greater than 0.70 indicates acceptable reliability. In addition, classical assumption tests consisting of normality, multicollinearity, and heteroscedasticity tests were conducted before regression analysis to ensure the appropriateness of the statistical model. These procedures were applied to improve the accuracy, consistency, and credibility of the quantitative findings.

RESULTS AND DISCUSSION

This section presents the empirical findings of the study concerning service operations efficiency in public ferry transportation at Baubau Port. The results are organized systematically according to the variables and analytical procedures described in the methodology section. The presentation includes respondent characteristics, descriptive statistical analysis, validity and reliability testing, classical assumption testing, multiple linear regression analysis, and coefficient of determination analysis. These findings explain the influence of administrative efficiency, operational reliability, service responsiveness, institutional coordination, and service accessibility on ferry transportation operational efficiency.

Respondent Characteristics

The study involved 200 respondents consisting of ferry transportation users at Baubau Port. Respondent characteristics were analyzed to identify demographic composition and transportation usage patterns among service users.

Table 2. Respondent Characteristics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	118	59.0
	Female	82	41.0
Age	18–25 Years	46	23.0
	26–35 Years	71	35.5
	36–45 Years	52	26.0
	>45 Years	31	15.5
Education	High School	89	44.5
	Diploma/Bachelor	93	46.5
	Postgraduate	18	9.0
Ferry Usage Frequency	1–2 Times/Month	85	42.5
	3–5 Times/Month	73	36.5
	>5 Times/Month	42	21.0

Source: Primary data processed by the authors, 2026

Table 2 indicates that male respondents dominated the study population with 59.0%, while female respondents represented 41.0%. Most respondents were between 26–35 years old, indicating that ferry transportation services were largely utilized by productive age groups. The majority of respondents possessed diploma or bachelor educational backgrounds, suggesting that ferry transportation services are used by individuals from diverse educational categories. The frequency of ferry transportation usage also demonstrates that most respondents regularly used ferry transportation services at Baubau Port. This condition indicates that respondents possessed adequate operational experience related to ferry transportation services, thereby strengthening the credibility of the collected data.

Descriptive Statistics of Research Variables

Descriptive statistical analysis was conducted to measure respondents' perceptions regarding the operational service dimensions examined in this study. The variables

included administrative efficiency, operational reliability, service responsiveness, institutional coordination, service accessibility, and service operations efficiency.

Table 3. Descriptive Statistics of Research Variables

Variable	Minimum	Maximum	Mean	Standard Deviation	Category
Administrative Efficiency	2.10	4.85	3.62	0.71	Good
Operational Reliability	2.05	4.72	3.48	0.76	Moderate
Service Responsiveness	2.35	4.90	3.71	0.69	Good
Institutional Coordination	2.14	4.80	3.55	0.73	Good
Service Accessibility	1.98	4.67	3.39	0.81	Moderate
Service Operations Efficiency	2.22	4.88	3.58	0.74	Good

Source: Primary data processed by the authors, 2026

Table 3 shows that service responsiveness obtained the highest mean score of 3.71, indicating that respondents generally perceived ferry transportation personnel as responsive in handling operational services and passenger needs. Administrative efficiency also demonstrated relatively positive evaluations, particularly regarding ticketing procedures and administrative management.

Operational reliability and service accessibility produced comparatively lower mean scores. Respondents frequently reported concerns related to departure punctuality, waiting time consistency, and passenger facility limitations. These findings indicate that operational consistency and infrastructure support remain operational challenges within ferry transportation services at Baubau Port.

Validity Test Results

Validity testing was conducted using Pearson Product Moment correlation analysis to evaluate whether the questionnaire items appropriately measured the intended variables.

Table 4. Validity Test Results

Variable	Item Code	Correlation Coefficient	Critical Value	Result
Administrative Efficiency	AE1	0.542	0.300	Valid
	AE2	0.687	0.300	Valid
	AE3	0.781	0.300	Valid
	AE4	0.715	0.300	Valid
	AE5	0.694	0.300	Valid
Operational Reliability	OR1	0.571	0.300	Valid
	OR2	0.744	0.300	Valid
	OR3	0.804	0.300	Valid
	OR4	0.726	0.300	Valid
	OR5	0.689	0.300	Valid
Service Responsiveness	SR1	0.603	0.300	Valid
	SR2	0.822	0.300	Valid
	SR3	0.768	0.300	Valid

	SR4	0.715	0.300	Valid
	SR5	0.693	0.300	Valid

Source: Primary data processed by the authors, 2026

The results in Table 4 demonstrate that all questionnaire items exceeded the minimum correlation threshold of 0.300, indicating that all measurement items were statistically valid and suitable for further analysis.

Reliability Test Results

Reliability testing was conducted using Cronbach's Alpha coefficients to evaluate the consistency of the research instrument.

Table 5. Reliability Test Results

Variable	Cronbach's Alpha	Reliability Standard	Result
Administrative Efficiency	0.824	0.70	Reliable
Operational Reliability	0.836	0.70	Reliable
Service Responsiveness	0.847	0.70	Reliable
Institutional Coordination	0.811	0.70	Reliable
Service Accessibility	0.798	0.70	Reliable
Service Operations Efficiency	0.856	0.70	Reliable

Source: Primary data processed by the authors, 2026

Table 5 indicates that all variables possessed Cronbach's Alpha coefficients above 0.70, confirming that the research instrument demonstrated acceptable reliability and internal consistency.

Classical Assumption Test Results

Classical assumption tests were conducted before regression analysis to ensure the suitability of the statistical model.

Normality Test

The normality test was conducted using the Kolmogorov-Smirnov method.

Table 6. Normality Test Results

Variable	Significance Value	Standard	Result
Regression Residuals	0.087	>0.05	Normally Distributed

Source: Primary data processed by the authors, 2026

The significance value of 0.087 exceeded the minimum threshold of 0.05, indicating that the regression residuals were normally distributed.

Multicollinearity Test

Multicollinearity testing was conducted using Tolerance and Variance Inflation Factor (VIF) values.

Table 7. Multicollinearity Test Results

Variable	Tolerance	VIF	Result
Administrative Efficiency	0.652	1.534	No Multicollinearity
Operational Reliability	0.474	2.108	No Multicollinearity
Service Responsiveness	0.581	1.721	No Multicollinearity
Institutional Coordination	0.689	1.452	No Multicollinearity
Service Accessibility	0.824	1.213	No Multicollinearity

Source: Primary data processed by the authors, 2026

Table 7 demonstrates that all VIF values were below 10, confirming the absence of multicollinearity problems among the independent variables.

Heteroscedasticity Test

Heteroscedasticity testing was conducted using significance probability analysis.

Table 8. Heteroscedasticity Test Results

Variable	Significance Value	Standard	Result
Administrative Efficiency	0.312	>0.05	No Heteroscedasticity
Operational Reliability	0.287	>0.05	No Heteroscedasticity
Service Responsiveness	0.351	>0.05	No Heteroscedasticity
Institutional Coordination	0.264	>0.05	No Heteroscedasticity
Service Accessibility	0.409	>0.05	No Heteroscedasticity

Source: Primary data processed by the authors, 2026

The significance values exceeded 0.05, indicating that the regression model was free from heteroscedasticity problems.

Multiple Linear Regression Analysis

Multiple linear regression analysis was conducted to examine the influence of operational service variables on service operations efficiency.

Table 9. Multiple Linear Regression Results

Variable	Regression Coefficient	t-value	Significance	Result
Constant	1.284	3.117	0.002	Significant
Administrative Efficiency	0.241	3.862	0.000	Significant
Operational Reliability	0.318	4.917	0.000	Significant
Service Responsiveness	0.276	4.105	0.000	Significant
Institutional Coordination	0.197	3.214	0.002	Significant
Service Accessibility	0.154	2.673	0.008	Significant

Source: Primary data processed by the authors, 2026

The regression results indicate that all independent variables significantly influenced service operations efficiency. Operational reliability demonstrated the strongest influence with a regression coefficient of 0.318, indicating that departure punctuality, operational consistency, and service continuity were dominant determinants of ferry transportation efficiency.

Administrative efficiency and service responsiveness also significantly influenced operational efficiency. Respondents perceived that efficient administrative procedures and responsive staff performance improved service experiences and operational effectiveness. Institutional coordination and service accessibility also contributed positively to ferry transportation operational performance.

Coefficient of Determination

The coefficient of determination analysis was conducted to measure the explanatory power of the regression model.

Table 10. Coefficient of Determination Results

Model	R	R Square	Adjusted R Square
Regression Model	0.782	0.611	0.601

Source: Primary data processed by the authors, 2026

Table 10 demonstrates that the Adjusted R Square value reached 0.601, indicating that 60.1% of the variation in service operations efficiency could be explained by administrative efficiency, operational reliability, service responsiveness, institutional coordination, and service accessibility. The remaining 39.9% was influenced by other external variables outside the research model. Overall, the findings demonstrate that operational efficiency in ferry transportation services at Baubau Port is strongly influenced by multidimensional operational and administrative factors. Operational reliability emerged as the most influential determinant, followed by service responsiveness and administrative efficiency (Moh'd Anwer, 2022; Arifeen & Islam, 2025). These findings indicate the importance of integrated operational management and effective public service governance in improving ferry transportation efficiency.

Public Service Governance and Operational Efficiency in Ferry Transportation

The findings of this study demonstrate that operational reliability represents the most influential determinant of service operations efficiency in public ferry transportation at Baubau Port. This result indicates that departure punctuality, operational consistency, and service continuity are central elements shaping public perceptions regarding ferry transportation performance. The finding aligns with previous transportation management studies emphasizing that operational reliability is a primary predictor of transportation service quality and passenger satisfaction (Hensher & Mulley, 2021; Nguyen et al., 2021). Ferry transportation users tend to evaluate service efficiency based on schedule certainty and operational stability because maritime transportation activities are highly dependent on coordinated service processes.

The significant influence of administrative efficiency further confirms that public transportation performance is not solely determined by physical infrastructure but also by administrative governance and service procedures. Efficient ticketing systems, passenger verification, and document management contribute positively to operational effectiveness and passenger convenience. This finding supports the argument proposed by Altaf & Shabir (2023) that public service efficiency increasingly depends on institutional capability to simplify bureaucratic procedures and improve administrative responsiveness. The result also corresponds with studies conducted by Larsen & Wickholm (2024), which emphasized that administrative modernization and digital service integration enhance maritime transportation performance and reduce operational delays.

Service responsiveness also emerged as a significant factor influencing operational efficiency. Responsive communication, complaint handling, and passenger assistance were perceived positively by ferry users, indicating that human resource performance remains critical in public transportation services. This finding is consistent with public management theories emphasizing citizen-centered service delivery and organizational responsiveness in public sector institutions (Babaei et al., 2024). The result suggests that operational efficiency in ferry transportation is strongly influenced by interpersonal service interactions between operational staff and transportation users. Unlike many transportation studies that focus primarily on technical efficiency indicators, this research highlights the importance of human-centered operational management within maritime public services.

Institutional coordination between port authorities and ferry operators also demonstrated a significant positive effect on transportation operational efficiency.

This finding confirms that ferry transportation management requires integrated governance mechanisms involving multiple operational actors. Previous studies by Hensher et al. (2022) similarly revealed that fragmented institutional coordination contributes to transportation inefficiency, service inconsistency, and operational delays. The present study extends this discussion by demonstrating that coordination effectiveness is particularly important within regional ferry transportation systems where operational resources and infrastructure capacities remain relatively limited.

The lowest regression coefficient among the independent variables was service accessibility, but it was still statistically significant. This result shows that passenger facilities, transportation information systems and waiting area conditions, which are still affecting operational efficiency, are not yet the key factors affecting service performance. This outcome contrasts with the findings of research on accessibility in urban transportation systems, where accessibility is often the most significant driver of passenger satisfaction (Zhao et al., 2024). The disparity might be due to the differences in the operation of regional ferry transportation systems in eastern Indonesia where transportation users believe that operational reliability and services coordination is a more critical issue than infrastructure modernization.

This study is innovative because it incorporates the public management perspectives into the analysis of operational efficiency of ferry transportation in a regional maritime context. The current maritime transportation research is largely focused on technical and infrastructural or logistics-related analyses, while the present work illustrates that operational efficiency is also influenced by administrative governance, institutional responsiveness and organizational coordination (Bulková et al., 2026). Theoretically, the study extends the literature of public transportation management in the field of public service governance dimensions by applying them into the analysis of operational aspects of ferry transportation system.

Regional transportation policymakers and port management authorities also have significant implications for policy and practice from a practical perspective. Integrated operational changes such as the creation of a more consistent timetable, administrative streamlining, staff responsiveness and institutional coordination are needed to enhance the efficiency of ferry services. The digitalisation of ticketing systems, operation monitoring systems and passenger information services could make a significant impact on the enhancement of transportation performance and public service quality (Gil & Vallejo, 2024; Pencheva et al., 2025; Bieler et al., 2022; Krishnamoorthy & Venugopal, 2025).

There are also a few restrictions to note. Second, the study only examined Baubau Port's ferry transportation services, which does not apply to other regional maritime transportation contexts. Second, the study mainly used quantitative survey methods and was based on passengers' perceptions, which may not reflect the operational aspects from a managerial or technical point of view. Comparative studies of ports at the regional level are thus encouraged, and future studies could be designed to include mixed methods analysis combining operational performance, organizational analysis, and policy analysis. The potential of digital transformation, maritime infrastructure modernization and environmental sustainability for the operational efficiency of ferry transport in developing archipelagic areas could also be further explored via research.

CONCLUSION

The results of this study indicate that service reliability, administrative efficiency, service responsiveness, institutional coordination and service accessibility are significant factors affecting the efficiency of service operations in public ferry transportation of Baubau Port. Operational reliability was the most dominant factor,

suggesting punctuality, operational consistency and service continuity are key drivers of transportation efficiency. There was also a significant improvement in passenger perceptions of the performance of public transportation due to administrative effectiveness and responsive service interactions.

From a theoretical point of view, the study adds to the public management field by incorporating public management into the analysis of maritime transportation operational efficiency, and it suggests that besides technical infrastructure, the transportation efficiency of the ferry is determined by the governance responsiveness and the institutional coordination. From a practical standpoint, the results indicate that the transportation authorities should focus on the consistency of operations, digitization of administrative processes, integrated coordination mechanisms and passenger-oriented service enhancements to improve transportation performance. There are a few caveats. The study was limited to Baubau Port, and largely depended on the perception of passengers, which makes it hard to generalize the results. Further research is encouraged to compare the performance of the different regional ports and apply multi-method approaches by combining operational performance indicators, managerial perceptions and digital transportation governance aspects.

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