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THE NEXUS OF SHIPPING SERVICE RELIABILITY AND RESPONSIVENESS ON TRADE PERFORMANCE AT THE PORT OF DAR ES SALAAM, TANZANIA

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Abstract

Trade performance is critical to the efficiency of international trade, particularly in developing economies where maritime ports serve as major gateways for imports, exports, and transit cargo. This study examined the nexus between shipping service reliability and responsiveness and trade performance at the Port of Dar es Salaam, Tanzania. The study was guided by the SERVQUAL Model and adopted a pragmatist philosophy and convergent parallel mixed-methods design. Quantitative data were collected from 233 respondents using structured questionnaires, while qualitative data were obtained through semi-structured interviews with selected key informants. Quantitative data were analysed using descriptive statistics, correlation, and multiple regression analysis, while qualitative data were analysed thematically. The regression findings revealed that shipping service reliability had a significant positive influence on trade performance ($\beta = 0.236$, $t = 4.218$, $p < 0.001$). Similarly, shipping service responsiveness had a significant positive influence on trade performance ($\beta = 0.281$, $t = 5.042$, $p < 0.001$). These findings indicate that improvements in the reliability and responsiveness of shipping services are associated with enhanced trade performance at the Port of Dar es Salaam. The qualitative findings further supported the statistical results, indicating that consistent service delivery, fulfilment of customer commitments, prompt responses to inquiries,

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timely cargo information, and rapid resolution of cargo-related problems contribute to smoother cargo movement and more efficient port operations. The study concludes that shipping service reliability and responsiveness are significant dimensions of the nexus between shipping service quality and trade performance at the Port of Dar es Salaam. The study recommends strengthening shipping service reliability standards, customer-response mechanisms, cargo information systems, and performance monitoring to improve trade performance and operational efficiency.

Keywords: Shipping Service Reliability, Shipping Service Responsiveness, Trade Facilitation, SERVQUAL, Port of Dar es Salaam, Tanzania

INTRODUCTION

Trade performance has an important component of international trade competitiveness because efficient transport and logistics systems support the timely and predictable movement of goods across borders. Efficient maritime transport contributes to improved supply-chain performance and enables countries to participate more effectively in regional and global trade (UNCTAD, 2023). Seaports are particularly important in developing economies because they provide essential gateways for imports, exports, and transit cargo.

The quality of shipping services is an important component of port performance. Shipping service reliability concerns the ability of shipping service providers to consistently fulfil service commitments, deliver cargo as scheduled, and maintain safe and dependable cargo operations. Reliable shipping services enhance predictability and enable traders and other port users to plan their activities effectively (Munim et al., 2021; Zhang & Lam, 2022). At the port level, reliability is also associated with customer perceptions of service quality and operational performance (Mwendapole & Jin, 2021).

Similarly, shipping service responsiveness concerns the ability and willingness of service providers to respond promptly to customer needs, provide timely information, resolve operational problems, and offer assistance when required (Parasuraman et al., 1988; Lin et al., 2023). In maritime transport, responsive service delivery can improve communication among shipping companies, port authorities, customs agencies, freight forwarders, and traders. Effective communication and prompt responses are therefore important for supporting smooth cargo movement and efficient port operations (Munim & Schramm, 2022; Msechu et al., 2025).

The Port of Dar es Salaam is strategically important to Tanzania's international trade and also serves transit markets in neighbouring landlocked countries. Consequently, the efficiency of shipping services at the port has implications for national and regional trade. Despite

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improvements in port infrastructure and operational systems, challenges related to shipping reliability, cargo delays, customer response, and information sharing remain relevant concerns.

Existing studies have examined port performance and service quality in Tanzania, including reliability and responsiveness as dimensions of port service quality (Mwendapole & Jin, 2021). However, relatively limited empirical attention has been directed specifically toward examining the combined nexus of shipping service reliability and responsiveness with trade performance at the Port of Dar es Salaam. This study therefore addresses this gap by examining the extent to which the two service-quality dimensions influence trade facilitation.

LITERATURE REVIEW

SERVQUAL Model

The study is anchored in the SERVQUAL Model developed by Parasuraman, Zeithaml, and Berry (1988). The model evaluates service quality through five dimensions: reliability, responsiveness, assurance, empathy, and tangibles. Reliability refers to the ability to perform promised services dependably and accurately, whereas responsiveness concerns the willingness to provide prompt assistance to customers (Parasuraman et al., 1988). Although SERVQUAL contains five dimensions, this study focuses specifically on reliability and responsiveness because they directly correspond to the operational characteristics of shipping services examined at the Port of Dar es Salaam.

Shipping service reliability is reflected in consistent cargo delivery, fulfilment of customer commitments, dependable service provision, and safe cargo handling. Previous studies have identified reliability as an important determinant of port service quality and logistics performance (Mwendapole & Jin, 2021; Munim et al., 2021).

Shipping service responsiveness is reflected in prompt responses to customer inquiries, rapid resolution of cargo-related problems, timely cargo-status information, and immediate assistance. Responsiveness is particularly relevant to port environments because shipping activities involve multiple stakeholders whose operations require continuous communication and coordination (Lin et al., 2023; Msechu et al., 2025). Thus, SERVQUAL provides an appropriate theoretical basis for explaining how shipping service reliability and responsiveness may influence trade performance at the Port of Dar es Salaam.

Shipping Service Reliability and Trade Facilitation

Shipping service reliability refers to the ability of shipping service providers to deliver services consistently and according to agreed commitments. It includes predictable cargo

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delivery, dependable service operations, fulfilment of customer commitments, and safe cargo handling (Parasuraman et al., 1988).

Munim et al. (2021) found that liner shipping reliability contributes to trade efficiency by improving schedule predictability and reducing cargo-related delays. Similarly, Zhang and Lam (2022) established that reliable shipping operations improve supply-chain predictability and logistics performance. These findings indicate that reliability is important for influence the movement of goods.

In Tanzania, Mwendapole and Jin (2021) identified reliability as an important component of port service quality at Dar es Salaam Port. Their findings suggest that consistent and dependable services contribute to improved perceptions of port performance. However, existing research has placed greater emphasis on customer satisfaction and port service quality than on trade facilitation as a specific outcome.

H_1: *Shipping service reliability has a significant positive influence on trade performance at the Port of Dar es Salaam, Tanzania.*

Shipping Service Responsiveness and Trade Performance

Shipping service responsiveness refers to the ability of service providers to respond promptly to customer inquiries and operational requirements. It includes rapid problem resolution, timely information provision, and willingness to provide immediate assistance (Parasuraman et al., 1988; Lin et al., 2023).

Mwendapole and Jin (2021) identified responsiveness as an important component of port service quality at Dar es Salaam Port. Munim and Schramm (2022) similarly emphasised the importance of effective communication and coordination for port performance. More recently, Msechu et al. (2025) demonstrated the importance of service processes and stakeholder interaction in improving port service outcomes. However, limited studies have directly examined the influence of shipping service responsiveness on trade facilitation at Dar es Salaam Port. This study therefore proposes:

H_2: *Shipping service responsiveness has a significant positive influence on trade performance at the Port of Dar es Salaam, Tanzania.*

METHODOLOGY

Research Philosophy and Approach

The study adopted a pragmatist research philosophy, which supports the use of quantitative and qualitative methods according to the nature of the research problem (Kaushik & Walsh, 2022; Morgan, 2020). A mixed-methods approach was employed to obtain both

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measurable evidence and stakeholder experiences regarding shipping service reliability, responsiveness, and trade facilitation (Creswell & Guetterman, 2021).

Research Design

A convergent parallel research design was employed. Quantitative and qualitative data were collected concurrently, analysed separately, and integrated during interpretation (Creswell & Plano Clark, 2023; Schoonenboom, 2023). This design enabled the researcher to compare statistical findings with experiences obtained from port stakeholders.

Study Area and Population

The study was conducted at the Port of Dar es Salaam, Tanzania. The target population comprised stakeholders directly involved in shipping and trade performance activities, including shipping agents, freight forwarders, customs officers, port authority officials, and traders. The accessible population was estimated at 645 stakeholders.

Sample Size, Sampling and Distribution

Yamane's (1967) formula was used to determine the quantitative sample:

$n=1+N(e)^2 /N$

Where; *n* represents sample size, *N* represents population size, and *e* represents the margin of error.

With a population of 645 and a 5% margin of error:

$n=1+645(0.05)^2/645=247$

Thus, 247 respondents were targeted for the quantitative component. In addition, 10 key informants were purposively selected for qualitative interviews. Stratified random sampling was used to select questionnaire respondents, while purposive sampling was used to identify key informants with relevant knowledge and experience as shown in Table 1.

Table 1: Sample Distribution

Stakeholder Category	Population	Quantitative Respondents	Key Informants
Shipping agents	75	29	2
Freight forwarders	180	69	2
Customs officers	80	31	2
Port authority officials	60	23	2
Traders	250	95	2
Total	**645**	**247**	**10**

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Data Collection

Structured questionnaires containing five-point Likert-scale items were used to collect quantitative data. The scale ranged from 1 = Strongly Disagree to 5 = Strongly Agree (Taherdoost, 2022). Semi-structured interviews were used to obtain qualitative information from key informants. Interview data provided explanations concerning shipping operations, responsiveness, reliability, and trade performance (Busetto et al., 2020). Documentary review was also used to examine relevant academic literature, institutional reports, and policy documents (Mishra & Alok, 2022).

Data Analysis

Quantitative data were analysed using SPSS Version 27. Descriptive statistics, Pearson correlation, and multiple regression analysis were employed. Qualitative interview data were analysed using thematic analysis following the procedures of Braun and Clarke (2021).

Validity and Reliability Results

Content validity was established through expert involvement to crosscheck questionnaires clarity and relevance (Andrade, 2021). Construct validity was assessed using factor loadings. Factor loadings above 0.50 were considered acceptable. All factor loadings exceeded the recommended minimum of 0.50, confirming acceptable construct validity (Mohajan, 2020). As illustrated in Table 2. On the other hand, all Cronbach's Alpha coefficients exceeded 0.70, indicating satisfactory internal consistency as demonstrated via table 2.

Table 2: Construct Validity Results

Construct	Items	Factor Loading Range	Decision
Shipping Service Reliability	SSR1-SSR4	0.682-0.841	Valid
Shipping Service Responsiveness	SRP1-SRP4	0.714-0.872	Valid
Trade Performance	TP1-TP6	0.705-0.881	Valid

RESULTS

Shipping Service Reliability

The findings in table 3 show that respondents generally agreed that shipping service reliability contributes to trade facilitation. The overall mean was 4.15 (SD = 0.74)**.** SSR4 recorded the highest mean of 4.23**,** indicating strong agreement regarding the importance of safe cargo handling. SSR3 recorded the lowest mean of 4.06**,** although respondents still agreed

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that fulfilment of customer commitments was important. The relatively low standard deviations indicate reasonable consistency in respondents' perceptions.

Table 3: Descriptive Statistics for Shipping Service Reliability

Code	Statement	Mean	Std. Deviation
SSR1	Shipping service providers consistently deliver cargo as scheduled.	4.18	0.71
SSR2	Shipping services are dependable in handling cargo without unnecessary disruptions.	4.11	0.76
SSR3	Shipping service providers accurately fulfil commitments made to customers.	4.06	0.79
SSR4	Cargo is handled safely with minimal loss or damage during shipping operations.	4.23	0.68
Overall	**Shipping Service Reliability**	**4.15**	**0.74**

Shipping Service Responsiveness

Table 4: Descriptive Statistics for Shipping Service Responsiveness

Code	Statement	Mean	Std. Deviation
SRP1	Shipping service providers respond promptly to customer inquiries.	3.24	0.88
SRP2	Shipping service providers resolve cargo-related problems quickly.	3.18	0.91
SRP3	Customers receive timely updates regarding cargo movement and shipping status.	3.29	0.86
SRP4	Shipping service providers are willing to provide immediate assistance when required.	3.22	0.89
Overall	**Shipping Service Responsiveness**	**3.23**	**0.89**

Table 4 shows that the respondents were generally neutral regarding shipping service responsiveness, with an overall mean of 3.23 (SD = 0.89). SRP3 recorded the highest mean (3.29), while SRP2 recorded the lowest (3.18). The results suggest that responsiveness remains an area requiring improvement, particularly with respect to rapid resolution of cargo-related problems.

Regression Analysis

Shipping Service Reliability and Trade Facilitation

Table 5 illustrates that, the model explained 61.4% of the variation in trade performance, indicating substantial explanatory power.

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Table 5: Model Summary for Shipping Service Reliability

Model	R	R Square	Adjusted R Square	Std. Error
1	0.783	0.614	0.609	0.521

Table 6: Regression Results for Shipping Service Reliability

Variable	B	Std. Error	Beta	t	p-value	Decision
Constant	1.245	0.281	0.282	4.431	<0.001	Significant
SSR1	0.218	0.047	0.261	4.638	0.003	Significant
SSR2	0.031	0.041	0.036	0.754	0.452	Not Significant
SSR3	0.176	0.044	0.214	4.000	0.003	Significant
SSR4	0.209	0.046	0.248	4.543	0.002	Significant

Table 6 shows that regression model was statistically significant ($F = 90.73$, $p < 0.001$). SSR1, SSR3, and SSR4 significantly predicted trade performance, while SSR2 was not statistically significant. Therefore, H_1 is supported**.**

Shipping Service Responsiveness and Trade Performance

Table 7: Model Summary for Shipping Service Responsiveness

Model	R	R Square	Adjusted R Square	Std. Error
1	0.789	0.623	0.617	0.514

The model indicates that shipping service responsiveness explained 62.3% of the variation in trade performance**.**

Table 6: Regression Analysis for Shipping Service Responsiveness (N = 233)

Variable	B	Std. Error	Beta	t	p-value	Decision
Constant	1.18	0.27	0.23	4.37	<0.001	Significant
SRP1	0.21	0.05	0.25	4.20	<0.001	Significant
SRP2	0.17	0.05	0.20	3.42	0.001	Significant
SRP3	0.23	0.05	0.27	4.60	<0.001	Significant
SRP4	0.19	0.05	0.22	3.80	<0.001	Significant

Table 7 reveals the regression results indicating that all four shipping service responsiveness indicators significantly and positively influence trade performance at the port of Dar es Salaam. Prompt responses to customer inquiries (SRP1), quick resolution of

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cargo-related problems (SRP2), timely cargo status updates (SRP3), and immediate customer assistance (SRP4) were all significant predictors. Among the indicators, SRP3 had the strongest influence (β = 0.27)**,** followed by SRP1 (β = 0.25), SRP4 (β = 0.22), and SRP2 (β = 0.20). Overall, the findings demonstrate that improving responsiveness, communication, and problem resolution can enhance trade performance and operational efficiency at the port.

DISCUSSION OF FINDINGS

Shipping Service Reliability and Trade Performance

The findings demonstrate that shipping service reliability has a significant positive influence on trade performance at the Port of Dar es Salaam. Specifically, consistent cargo delivery, fulfilment of customer commitments, and safe cargo handling were significant predictors, whereas general dependability without disruptions was not statistically significant. This suggests that reliability contributes to trade performance mainly through tangible outcomes that improve cargo predictability, security, and confidence among port users.

The findings are consistent with the SERVQUAL Model of Parasuraman et al. (1988), which defines reliability as the ability to provide promised services accurately and dependably. Empirically, Mwendapole and Jin (2021) found that reliability is an important dimension of seaport service quality in Dar es Salaam, although their results also indicated a substantial gap between customer expectations and actual reliability. Similarly, Msechu et al. (2025) found that port-service processes, resources, and outcomes significantly influence customer satisfaction at Dar es Salaam Seaport, reinforcing the importance of consistent and efficient service delivery. More broadly, recent research by Zhang and Lam (2022) associates shipping reliability with logistics performance and supply-chain effectiveness, suggesting that predictable maritime services are important for maintaining efficient cargo flows.

The findings are also supported by recent research on container-port service quality. The study reported by *Transport Policy* (2025) demonstrates that port service quality plays an important role in customer satisfaction and port competitiveness, although the study emphasises that service-quality effects depend on combinations of different service-quality conditions rather than a single dimension operating independently. This provides a useful explanation for the present finding that some reliability indicators were significant while general dependability without disruptions was insignificant.

However, the present findings contrast with Mwendapole and Jin (2021) in an important respect. Their Dar es Salaam study found that reliability had a negative service-quality gap and was associated with customer dissatisfaction, whereas the current study establishes a positive

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and significant influence of specific reliability outcomes on trade performance. The difference may arise because the two studies examined different dependent variables: customer satisfaction in the former and trade performance in the present study. Similarly, the 2025 container-port service-quality study indicates that service quality operates through complex configurations, suggesting that reliability does not necessarily produce the same outcome across all contexts.

The qualitative evidence strengthens the quantitative findings. One key informant explained: “Cargo deliveries have become more consistent than before, allowing traders to plan their business with fewer delays.” (KI6, Tanzania Ports Authority, 25/06/2026). Another respondent stated: “Shipping companies that honour their delivery commitments improve customer confidence and speed up cargo movement through the port.” (KI2, Shipping Agency, 26/06/2026)

Overall, the findings establish that shipping service reliability enhances trade performance through consistent delivery, fulfilment of commitments, and cargo safety. The convergence of quantitative and qualitative evidence supports SERVQUAL while also indicating that reliability should be assessed through specific operational outcomes rather than as a general, undifferentiated construct.

Shipping Service Responsiveness and Trade Performance

The findings further demonstrate that shipping service responsiveness significantly influences trade performance at the Port of Dar es Salaam. Prompt responses to customer inquiries, rapid resolution of cargo-related problems, timely cargo-status updates, and immediate assistance were all significant positive predictors. This indicates that responsive shipping services improve communication, coordination, information availability, and the continuity of cargo operations.

The finding strongly supports the SERVQUAL Model, in which responsiveness refers to employees' willingness to assist customers and provide prompt services (Parasuraman et al., 1988). Mwendapole and Jin (2021) provide particularly strong support because their Dar es Salaam study found responsiveness to have a significant positive effect on customer satisfaction ($\beta = 0.62$, $p = 0.016$). They also reported that responsiveness had the largest service-quality gap, indicating that customers expected faster responses and assistance from port officials. This closely corresponds with the present study, where responsiveness was found to be an important determinant of trade performance.

Msechu et al. (2025) similarly identified communication problems and slow cargo-handling processes as important challenges affecting service quality at Dar es Salaam Seaport.

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Their findings showed that process, resource, and outcome dimensions of port service quality significantly influenced customer satisfaction. Recent international evidence also supports the importance of port service quality for user satisfaction and competitiveness. The 2025 *Transport Policy* study demonstrates that different combinations of container-port service-quality conditions can produce stronger customer-satisfaction outcomes, reinforcing the importance of responsiveness alongside other service-quality dimensions.

Nevertheless, there are contrasting findings in the literature. Msechu et al. (2025), for example, found that outcomes were the strongest predictor of customer satisfaction, followed by resources and processes, rather than responsiveness as an independent construct. Likewise, Mwendapole and Jin (2021) found that responsiveness significantly influenced satisfaction, but their findings were based on customer satisfaction rather than trade performance. These differences suggest that the importance of responsiveness may depend on the outcome being measured and the institutional context of the port. The qualitative findings provide further explanation for the statistical results. One respondent observed: “Responding quickly to customers' inquiries helps prevent unnecessary delays in cargo clearance and delivery.” (KI3, Shipping Agency, 29/06/2026)

Another key informant explained: “When cargo-related issues are addressed immediately, vessels and cargo continue moving without prolonged delays.” (KI2, Tanzania Ports Authority, 04/07/2026). A further participant noted: “Providing regular cargo status updates enables importers and clearing agents to prepare for cargo collection and clearance in advance.” (KI1, Tanzania Ports Authority, 26/06/2026)

Overall, the findings confirm that shipping service responsiveness contributes significantly to trade performance through prompt communication, rapid problem resolution, timely information sharing, and immediate customer assistance. The agreement between the quantitative and qualitative findings provides strong empirical support for the SERVQUAL and demonstrates that responsiveness is particularly relevant in port environments where cargo movement depends on continuous coordination among multiple stakeholders.

Thus, the study concludes that shipping service reliability and responsiveness significantly enhance trade performance at the Port of Dar es Salaam. Reliability ensures consistent and safe cargo handling, while responsiveness enables prompt communication, problem resolution, and customer support. Together, these dimensions improve operational efficiency and contribute to smoother maritime trade, consistent with SERVQUAL theory and previous empirical studies.

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CONCLUSION AND RECOMMENDATIONS

The study concludes that shipping service reliability and responsiveness significantly enhance trade performance at the Port of Dar es Salaam. Reliability contributes to smoother cargo flows through consistent delivery, fulfilment of service commitments, and safe cargo handling, while responsiveness facilitates timely communication, rapid problem resolution, cargo-status updates, and immediate customer assistance. The convergence of quantitative and qualitative findings demonstrates that these service-quality dimensions are important determinants of efficient and predictable cargo movement. The findings therefore provide empirical support for the SERVQUAL Model, while highlighting that shipping service quality should be assessed in terms of specific operational outcomes that directly influence maritime trade performance. Overall, strengthening reliability and responsiveness among shipping service providers can contribute to improved operational efficiency, reduced cargo-related delays, greater customer confidence, and more effective trade performance at port of Dar es Salaam.

The study recommends that shipping companies, Tanzania Ports Authority, customs authorities, clearing and forwarding agents, and other port stakeholders strengthen shipping service reliability and responsiveness through consistent cargo delivery, safe handling, prompt communication, rapid problem resolution, and timely cargo-status updates. Stakeholders should also improve coordination and regularly monitor service performance to enhance efficiency and trade facilitation at the Port of Dar es Salaam.

LIMITATIONS OF THE STUDY

- **Cross-sectional design:** Data were collected at one point in time, limiting assessment of changes over time.
- **Single-port focus:** The study focused only on the Port of Dar es Salaam, limiting generalization to other ports.
- **Self-reported data:** Findings relied largely on respondents' perceptions, which may be influenced by individual experiences and expectations.

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