

Analysis Of The Impact Of Maritime Transportation On Tanzania's Economic Growth

(A Case of Maersk Shipping Line)

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Abstract

This study examines the impact of maritime transportation on Tanzania's economic growth, with a specific focus on Maersk Shipping Line. Maritime transport plays a critical role in facilitating trade, employment, and investment key drivers of economic development in coastal nations like Tanzania. The objectives of the study were threefold: to evaluate the role of maritime transport in supporting Tanzania's economic development, to identify the challenges and constraints facing the maritime transport sector, and to propose policy and strategic interventions to enhance the performance of the sector. A methods approach was employed, combining quantitative data collected through structured questionnaires with qualitative data obtained via interviews. A total of 45 respondents from Maersk Shipping Line participated in the study. Data were analyzed using descriptive statistics, including mean scores and standard deviations, and reliability was tested using Cronbach's Alpha, which yielded an overall reliability score of 0.842, indicating strong internal consistency. The findings revealed that maritime transport contributes significantly to Tanzania's GDP, facilitates trade and regional integration, supports employment creation, and attracts foreign direct investment. However, the sector faces challenges such as port congestion, outdated infrastructure, regulatory inefficiencies, and a shortage of skilled manpower. Based on these findings, the study recommends policy reforms, investment in port modernization, human capital development, and the adoption of digital systems to improve maritime operations. This research contributes to the understanding of how efficient maritime transportation can drive economic transformation in Tanzania and provides actionable insights for policymakers and industry stakeholders.

1.0 Introduction

Maritime transportation is a vital pillar of Tanzania's economy, facilitating international trade, regional integration, and industrial growth. As a coastal nation with access to the Indian Ocean, Tanzania plays a strategic role in the movement of goods to and from East and Central Africa. The country's major ports Dar es Salaam, Tanga, and Mtwara serve as crucial gateways for both imports and exports, supporting key sectors such as manufacturing, agriculture, and mining (World Bank, 2021).

Tanzania's economy heavily depends on maritime trade, with over 90% of the country's international commerce conducted through sea transport (Tanzania Ports Authority, 2022). The maritime sector not only enables foreign trade but also generates employment

opportunities and attracts foreign direct investment (FDI). The expansion and modernization of port infrastructure have led to increased efficiency in cargo handling, contributing to improved trade flows and economic growth (African Development Bank, 2020).

However, despite its potential, the maritime sector faces significant challenges, including port congestion, inefficiencies in customs clearance, high operational costs, and limited private sector participation. These barriers hinder trade competitiveness and slow down economic progress (United Nations Conference on Trade and Development [UNCTAD], 2021). Addressing these challenges through improved logistics, investment in smart port technologies, and policy reforms could significantly enhance Tanzania's position as a regional trade hub.

Tanzania's strategic coastal location along the Indian Ocean presents immense opportunities for economic growth through maritime transportation. The country's ports especially the Port of Dar es Salaam serve as vital trade gateways, not only for Tanzania but also for its landlocked neighbors like Uganda, Rwanda, and the Democratic Republic of Congo. However, despite growing trade volumes, the maritime sector has yet to reach its full potential in driving economic progress.

Several persistent challenges hinder the efficiency of Tanzania's maritime transportation system. Congestion at ports leads to delays in cargo handling, while slow customs clearance processes create bottlenecks that increase the cost of doing business. Outdated infrastructure, coupled with high operational expenses, further reduces the competitiveness of Tanzanian ports compared to other regional hubs (World Bank, 2021). These inefficiencies make trade more expensive and less predictable, discouraging foreign investors and slowing economic expansion.

Addressing these challenges is crucial for Tanzania to fully harness the economic benefits of its maritime sector. By modernizing port facilities, improving logistics efficiency, and fostering public-private partnerships, the country can enhance trade competitiveness, attract more foreign direct investment, and create job opportunities. This study seeks to explore the impact of maritime transportation on Tanzania's economic growth, highlighting key barriers and proposing solutions that will strengthen the sector's contribution to national development.

2.0 Literature Review

2.1 Empirical Review of Relevant Studies

World Bank (2021) – The Role of Ports in Economic Growth

This study highlights the significant contribution of port infrastructure to economic growth, particularly in East Africa. It emphasizes that efficient port operations reduce transaction costs, boost trade, and attract FDI. For Tanzania, the Port of Dar es Salaam plays a central role in facilitating regional trade, accounting for over 90% of the country's international trade. However, the study also points out inefficiencies such as congestion and delays, which hinder Tanzania's competitiveness compared to other regional hubs like Kenya and Mozambique.

African Development Bank (2020) – Improving Maritime Transport for Economic Development in Africa

This report explores the relationship between maritime transport infrastructure and economic development across African countries. The study finds that well-developed ports contribute to trade growth, job creation, and regional integration. Specifically, for Tanzania, the report notes that port modernization efforts have led to improvements in cargo handling capacity, though the country still faces challenges in port logistics and customs procedures. The study stresses the importance of investing in modernizing port infrastructure to remain competitive.

UNCTAD (2021) – Transport Costs and Economic Development in Africa

This empirical study shows how high transport costs affect the economic growth of African countries. For Tanzania, the study identifies shipping costs, port inefficiencies, and long turnaround times as key barriers to trade. The report concludes that improving maritime transport efficiency could significantly reduce transport costs and boost Tanzania's exports, particularly in agricultural products and minerals.

Tanzania Ports Authority (2022) – Port Performance and Economic Impact Study

This study examines the direct impact of port operations on Tanzania's economy. It highlights the Port of Dar es Salaam as a major trade gateway for both Tanzania and its landlocked neighbors. The study found that improvements in port facilities and logistics have led to increased cargo throughput, job creation, and FDI inflows. However, it also notes that outdated infrastructure and congestion at the port continue to limit potential growth. The report advocates for strategic investments in port capacity expansion and the adoption of digital technologies to streamline operations.

Mwandosya & Komba (2020) – Maritime Transport and Regional Integration: The Case of East Africa

This study analyses the role of maritime transportation in fostering regional integration and economic growth in East Africa, with a particular focus on Tanzania. It argues that Tanzania's maritime sector has a substantial impact on regional trade, particularly for landlocked countries. However, it identifies inefficiencies in port operations, limited intermodal transport links, and inadequate regulatory frameworks as key challenges to regional integration and trade facilitation. The study suggests that enhancing regional cooperation and modernizing port infrastructure are essential for improving maritime transportation in Tanzania.

3.0 Research Methodology

Research Design

This study is Case study research design, In the context of analysing the impact of maritime transportation on Tanzania's economic growth, the research design structured to capture both quantitative and qualitative dimensions, providing a comprehensive understanding of the issue.

Research Approach

The study follows a quantitative research approach, grounded in the positivist epistemological stance, which emphasizes the objective measurement of data (Babbie, 2020).

Data Analysis

In this study, quantitative data collected through surveys and structured questionnaires were analyzed using statistical tools such as SPSS software version 27. Descriptive statistics were used to summarize key variables, while correlation and regression analysis were conducted to examine the relationship between maritime transport indicators and economic growth outcomes.

4.0 Results, Discussions and Findings

4.1 The Role of Maersk Shipping Line's Operational Efficiency in Supporting Tanzania's Economic Development

The Role of operational efficiency of Maersk Shipping Line contributes to Tanzania's economic development, specifically through GDP growth, facilitation of trade, employment generation, and attraction of foreign direct investment (FDI). The analysis is based on Likert-scale responses from stakeholders, complemented with literature to provide a broader perspective.

Table 4. 1: Responses on Maersk Shipping Line’s Operational Efficiency in Supporting Tanzania’s Economic Development

Statement	Mean Score	Standard Deviation
Maersk’s operational efficiency contributes significantly to Tanzania’s GDP	3.91	0.72
Maersk facilitates trade and regional integration through port operations	4.38	0.49
Maersk supports employment generation in Tanzania	4.11	0.88
Maersk’s infrastructure and logistics investments boost foreign direct investment	3.96	0.85

Source: Field data, 2025

Contribution to GDP

The analysis revealed a mean score of 3.91 and a standard deviation of 0.72, suggesting that the majority of respondents agreed that Maersk’s operational efficiency significantly contributes to Tanzania’s GDP. The relatively high mean indicates strong agreement, while the moderate spread of responses reflects varying degrees of exposure among stakeholders, such as policymakers, port operators, and business owners.

Maersk, as the world’s largest container shipping line, plays a pivotal role in Tanzania’s economy by facilitating the import and export of goods through ports like Dar es Salaam and Tanga. These ports serve as the backbone of international trade for Tanzania, with approximately 90% of the nation’s trade passing through maritime routes. The company’s efficiency in cargo handling, scheduling, and digitalized logistics systems ensures smooth flow of goods, which translates into increased customs revenue, port fees, and taxes, directly impacting GDP growth.

“Maersk’s operations contribute significantly to Tanzania’s GDP by handling a large share of imports and exports, with Dar es Salaam Port as the main gateway. These activities generate customs revenue, port fees, and logistics services, directly influencing national economic growth” (UNCTAD, 2023).

Furthermore, Maersk’s role in reducing shipping delays and improving cargo clearance processes enhances trade efficiency, reducing costs for importers and exporters. This cost efficiency has a multiplier effect on the economy by lowering consumer prices and increasing the competitiveness of Tanzanian goods in global markets.

Facilitation of Trade and Regional Integration

Respondents strongly agreed that Maersk facilitates trade and regional integration, as reflected by a mean score of 4.38 and a standard deviation of 0.49. The high mean and low deviation indicate strong consensus across all stakeholder groups, confirming Maersk's role as a key enabler of cross-border and regional trade.

Through efficient port operations and integrated logistics services, Maersk supports trade not only within Tanzania but also for neighboring landlocked countries such as Rwanda, Burundi, Uganda, Zambia, and the Democratic Republic of Congo (DRC). By providing shipping connectivity and logistics solutions, the company plays a crucial role in ensuring these countries access global markets at reduced costs and with reliable schedules.

In addition, Maersk's operational efficiency supports the goals of the African Continental Free Trade Area (AfCFTA) by improving regional supply chains and strengthening Tanzania's position as a logistics hub in East and Central Africa.

"Through access to global shipping routes, Maersk helps reduce transport costs, improve trade efficiency, and enhance the competitiveness of Tanzanian goods in both regional and international markets" (World Bank, 2020).

Maersk's introduction of digital platforms such as Trade Lens for document sharing and cargo tracking has also improved transparency and reduced bottlenecks in trade processes. These innovations directly contribute to regional integration by enabling faster, safer, and more reliable cross-border transactions.

Employment Generation

The findings further indicate that respondents agreed Maersk supports employment creation in Tanzania, with a mean score of 4.11 and a standard deviation of 0.88. The relatively high standard deviation reflects differences in perception, possibly due to the diversity of employment opportunities across the sector, ranging from high-skilled logistics jobs to manual port operations.

Maersk creates both direct and indirect employment. Direct employment comes from shipping line staff, port workers, customs agents, and logistics professionals. Indirectly, Maersk's operations support jobs in freight forwarding, trucking, warehousing, maritime security, customs brokerage, and clearing agencies. The ripple effect of Maersk's presence extends to small and medium-sized enterprises (SMEs) engaged in supply chain services, thereby amplifying job opportunities.

"The presence of international shipping lines like Maersk expands employment prospects by creating opportunities in logistics, skill transfer, and professional training, which strengthens Tanzania's maritime workforce" (Chacha & Mwita, 2020; UNCTAD, 2023).

Moreover, Maersk's global reach fosters skills transfer and capacity-building initiatives. Employees gain exposure to international shipping standards, modern digital tools, and efficient cargo management systems, enhancing Tanzania's human capital base. This is particularly relevant under the blue economy framework, which identifies maritime transport as a critical driver of sustainable employment in developing countries.

Boosting Foreign Direct Investment (FDI)

Respondents also agreed that Maersk's infrastructure and logistics investments support FDI, reflected in a mean score of 3.96 and a standard deviation of 0.85. This suggests that while there is broad recognition of Maersk's role, some stakeholders perceive gaps in the distribution of benefits across different port regions.

Maersk has invested in container terminal upgrades, digitalization, and inland container depots (ICDs) in Tanzania. These investments modernize the logistics chain, reduce bottlenecks, and enhance Tanzania's attractiveness to international investors. By ensuring efficient

handling of goods and improving cargo clearance processes, Maersk helps create a favourable investment climate for global companies seeking regional market access.

“For example, Maersk’s involvement in container terminal upgrades, dredging, and digitalization at the Port of Dar es Salaam has made Tanzania more attractive to global logistics players, thereby enhancing its position as a regional hub” (AfDB, 2021; World Bank, 2020).

In addition, Maersk often partners with both public and private stakeholders to improve port facilities, integrate ICT systems, and streamline customs processes. These measures enhance investor confidence and increase Tanzania’s competitiveness as a regional logistics hub.

4.2 Challenges Facing the Maritime Transport Sector in Tanzania

This section presents findings on the key challenges that affect the efficiency and performance of the maritime transport sector in Tanzania. Respondents were asked to indicate their level of agreement with several statements related to port congestion, infrastructure, manpower, and regulation.

Table 4. 2: Mean and Standard Deviation of Responses on Maritime Sector Challenges

Statement	Mean Score	Standard Deviation
Port congestion delays cargo clearance and increases costs	4.20	0.81
There is a lack of modern maritime infrastructure and equipment	4.33	0.76
Inadequate skilled manpower limits sectoral growth	4.60	0.50
Regulatory inefficiencies hinder maritime operations	4.60	0.50

Source: Field data, 2025

The statement “Port congestion delays cargo clearance and increases costs” received a mean score of 4.20 and a standard deviation of 0.81, indicating strong agreement among respondents that congestion remains a critical issue within Tanzania’s port operations. The high mean suggests that most respondents agreed or strongly agreed that port congestion negatively impacts operational efficiency. The standard deviation (0.81) indicates some variance in responses, potentially due to differences in port location or job roles (freight forwarders may feel this impact more directly than administrative staff). Port congestion contributes to Increased dwell times and vessel turnaround delays, Rising costs for importers/exporters, and Reduced competitiveness of Tanzanian ports within the East African region. Chacha & Mwita (2020) highlight that congestion at Dar es Salaam port results in significant demurrage charges and shipping delays. UNCTAD (2023) and the World Bank (2020) identify port congestion as a major obstacle to seamless trade and logistics in Sub-Saharan Africa.

“For businesses, these delays translate into higher costs of doing business, reduced competitiveness, and disruptions in supply chains. In some cases, it can even lead to the diversion of cargo to alternative ports in neighboring countries, which affects national revenue and economic efficiency”.

The statement “There is a lack of modern maritime infrastructure and equipment” yielded a mean score of 4.33 and a standard deviation of 0.76. This indicates strong agreement among respondents that outdated or insufficient infrastructure is a key constraint affecting the maritime transport sector in Tanzania. A mean score of 4.33 suggests that most respondents agreed or strongly agreed with the statement, signaling that the issue is widely recognized. The relatively low standard deviation (0.76) indicates moderate consistency in views across

various respondent groups. The lack of modern infrastructure results in Inefficiencies in cargo handling, stacking, and offloading, Increased vessel turnaround times, Limited capacity to handle modern container ships or advanced logistics systems and Reduced attractiveness for private investment and FDI. UNCTAD (2023) and AfDB (2021) both note that Africa's port infrastructure lags behind global standards, reducing port efficiency and regional competitiveness. Tijan et al. (2019) emphasize that investing in modern port technologies such as automated cargo systems and smart logistics can significantly improve performance.

“This situation undermines Tanzania's competitiveness compared to regional ports that have invested heavily in modernization. It also discourages some international shipping lines and investors from fully committing to the Tanzanian market, limiting potential economic benefits”.

The statement “Inadequate skilled manpower limits sectoral growth” recorded a mean score of 4.60 and a standard deviation of 0.50, indicating very strong agreement among respondents with minimal variation in responses. The high mean score of 4.60 indicates that nearly all respondents agreed or strongly agreed that lack of skilled labor is a serious constraint in Tanzania's maritime sector. The very low standard deviation of 0.50 reflects a high level of consensus, regardless of job role, experience, or organization. The shortage of qualified professionals affects Port operations efficiency, Marine engineering and vessel operations, Customs clearance and regulatory compliance and Innovation and digital transformation in port management. This finding supported by IMO (2023) underscores the importance of maritime education and training as a foundation for sustainable shipping.

“Additionally, inconsistent enforcement of maritime laws and lack of coordination among agencies such as the Tanzania Ports Authority, customs, and maritime safety regulators reduce the sector's overall efficiency. This environment discourages foreign investment and impedes the growth of the maritime industry”.

The Statement: “Regulatory inefficiencies hinder maritime operations” The mean score of 4.60 signifies that most respondents strongly agree that regulatory inefficiencies are a major challenge to the smooth functioning of maritime transport operations in Tanzania. This high average implies that inefficiencies in laws, port regulations, customs processes, and administrative procedures are widely perceived as barriers to performance. The standard deviation of 0.50 indicates that there is very little variation in responses respondents had similar views, which strengthens the reliability of this result. World Bank (2020) – “Improving Port Performance” The World Bank emphasizes that regulatory fragmentation and inefficient clearance procedures significantly hinder port productivity, increase cargo dwell time, and discourage foreign investment. Quote: *“Complex and overlapping regulatory procedures are a major bottleneck in African ports.”*

"Regulatory inefficiencies significantly affect the smooth flow of maritime operations in Tanzania. One of the main challenges is the presence of too many regulatory bodies working independently. For example, a single shipment might need clearance from the Tanzania Revenue Authority (TRA), the Tanzania Ports Authority (TPA), the Tanzania Bureau of Standards (TBS), and immigration, each with its own processes and paperwork”.

4.3 Strategic interventions to enhance the performance of Tanzania's maritime transportation sector.

This section presents key policy and strategic interventions proposed by respondents to address the challenges and improve the performance of the maritime transportation sector in Tanzania. The analysis is based on mean scores and standard deviations derived from survey responses.

Table 4.3: Policy and Strategic Interventions

Statement	Mean	Standard Deviation
Improve port infrastructure and cargo handling facilities	4.51	0.54
Implement digital systems to streamline port operations	4.47	0.51

Statement	Mean	Standard Deviation
Enhance human resource capacity and technical skills	4.44	0.59

Source: Field data, 2025

The Statement “Improve port infrastructure and cargo handling facilities” A mean score of 4.51 (on a 5-point Likert scale) indicates strong agreement among respondents that improving port infrastructure and cargo handling facilities is crucial for enhancing the performance of Tanzania’s maritime transportation sector. The low standard deviation (0.54) suggests that most respondents consistently agreed, showing a high level of consensus on this issue. According to UNCTAD (2023) and the World Bank (2020), efficient port infrastructure is a critical enabler of trade and economic growth, especially in developing countries. Their reports emphasize that modernized port facilities improve supply chain reliability and trade facilitation, leading to increased exports and regional integration.

“When ships stay longer at the port due to slow unloading or poor yard management, it affects trade efficiency and discourages shipping lines from choosing Tanzanian ports”.

The Implement digital systems to streamline port operations A mean score of 4.47 demonstrates that respondents strongly agree that implementing digital systems is vital for improving port efficiency and overall maritime sector performance in Tanzania. The low standard deviation of 0.51 indicates high consistency in responses, showing a shared recognition of this priority. According to the World Bank (2020) and IMO (2023), digitalization is a game-changer in port logistics. Countries that have adopted digital port management systems have reported significant improvements in customs processing times, revenue collection, and overall supply chain reliability.

“Digital systems are the backbone of modern port operations. Right now, many of our procedures are still manual, which slows down the flow of cargo, increases paperwork, and opens doors to inefficiencies and corruption. By implementing systems like electronic cargo tracking, automated customs clearance, and port community systems, we can significantly reduce clearance time and improve transparency”.

“Enhance human resource capacity and technical skills” A mean score of 4.44 indicates that respondents strongly agree on the importance of developing human capital to enhance the performance of Tanzania’s maritime transportation sector. The standard deviation of 0.59 reflects a relatively consistent level of agreement among respondents. This result highlights a critical challenge in the maritime sector: the shortage of skilled and technically trained personnel. Respondents recognize that without qualified professionals in logistics, marine engineering, customs clearance, and port management, even the best infrastructure and technology investments may underperform.

“It’s absolutely critical. You can invest in the best infrastructure and technology, but if the people operating them are not well-trained, the entire system underperforms. In Tanzania, there’s a real shortage of maritime professionals with the necessary technical skills especially in areas like logistics, marine engineering, port management, and customs systems”.

4.4 Reliability Analysis

Reliability analysis was conducted to assess the internal consistency of the questionnaire used in this study. The primary tool used was Cronbach’s Alpha (α), which measures how closely related a set of items are as a group. This test was applied to Likert-scale statements under each of the three major research objectives, The role of maritime transport in economic growth, Challenges facing maritime transport and Strategic interventions to enhance maritime transport performance.

Table 4. 4: show summarizes the Cronbach’s Alpha values for each section

Section	Number Items	of Cronbach's (α)	Alpha	Interpretation
Maritime transport and economic growth	4	0.812		Good reliability
Challenges facing the maritime transport sector	4	0.861		Very good reliability
Strategic interventions to improve maritime sector	5	0.879		Very good reliability
Overall	13	0.842		Very good reliability

Source: Field data, 2025

From the table above, all sections scored above 0.8, indicating good to very good reliability. The overall reliability score of 0.842 confirms that the research instrument was consistent in measuring the intended variables and that the collected data is dependable for analysis and interpretation.

4.5 Regression Analysis

Regression analysis was conducted to examine the relationship between maritime transport variables and economic growth indicators. The objective was to determine the extent to which maritime transport contributes to economic performance in Tanzania. The analysis focused on key independent variables such as port infrastructure development, maritime regulatory efficiency, skilled labor availability, and adoption of digital technologies, against the dependent variable economic growth (measured in terms of trade volume, GDP contribution, and investment inflows).

4.5.1 Model Summary

The multiple linear regression model revealed a strong relationship between maritime sector performance and economic growth. The R-squared (R^2) value was 0.728, indicating that approximately 72.8% of the variation in economic growth could be explained by the combined effect of the maritime-related independent variables.

Table 4. 5: Model Summary

Model Summary	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.853	0.728	0.714	0.402

Source: Field data, 2025

The model summary provides an overview of the strength and explanatory power of the regression model. The multiple correlation coefficient (R) is 0.853, indicating a strong positive relationship between the independent variables (such as port infrastructure, regulatory efficiency, skilled labor, and digital technology adoption) and the dependent variable (economic growth). The R Square value is 0.728, meaning that approximately 72.8% of the variation in economic growth can be explained by the maritime transport-related

predictors included in the model. The Adjusted R Square, which accounts for the number of predictors and sample size, is slightly lower at 0.714, but still reflects a high level of model reliability.

The Standard Error of the Estimate is 0.402, indicating a relatively low average deviation of observed values from the predicted values. This suggests that the model fits the data well and has a good level of predictive accuracy. These results confirm that the regression model is statistically robust and the selected variables significantly explain variations in economic performance, highlighting the critical role of maritime transport in driving economic growth in Tanzania.

4.5.2 Coefficients

The coefficients table below shows the individual contribution of each independent variable to economic growth. All variables were positively correlated with economic growth, and most were statistically significant ($p < 0.05$).

Table 4. 6: Regression Coefficients

Variables	Unstandardized B	Std. Error	Beta	t	Sig.
(Constant)	0.642	0.183		3.508	0.001
Port Infrastructure	0.398	0.082	0.421	4.854	0.000
Regulatory Efficiency	0.276	0.074	0.318	3.730	0.001
Skilled Labor Availability	0.211	0.069	0.243	3.058	0.003
Adoption of Digital Technologies	0.192	0.067	0.205	2.865	0.006

Source: Field data, 2025

The constant value (0.642) indicates the predicted value of economic growth when all independent variables are zero. Port infrastructure had the strongest positive influence on economic growth ($\beta = 0.421$, $p < 0.001$), suggesting that improvements in port facilities significantly enhance economic performance. Regulatory efficiency also showed a significant contribution ($\beta = 0.318$, $p = 0.001$), highlighting the importance of a supportive policy and legal environment. Skilled labor availability was a significant predictor ($\beta = 0.243$, $p = 0.003$), confirming the importance of human capital development in the maritime sector. Adoption of digital technologies had a positive and significant impact ($\beta = 0.205$, $p = 0.006$), indicating that digitalization enhances operational efficiency and contributes to economic growth. All variables were statistically significant at the 0.01 level, confirming their relevance in explaining variations in economic growth. This reinforces the conclusion that targeted investment and reforms in maritime infrastructure, regulatory frameworks, human capital, and technology adoption are key drivers of economic development in Tanzania.

5.0 Conclusion and Recommendation

5.1 Conclusion of Findings

This study aimed to analyze the impact of maritime transportation on Tanzania's economic growth, with a specific focus on Maersk Shipping Line. Based on the research objectives and data collected through surveys, interviews, and secondary sources, several conclusions can be drawn Maritime transport plays a central role in driving Tanzania's economic growth by facilitating international trade, improving connectivity to global markets, and supporting major sectors such as agriculture, mining, and manufacturing. Maersk Shipping Line, as a leading global player, contributes significantly to cargo movement, foreign exchange earnings, and port revenue generation.

5.2 Recommendations of the study

Based on the findings and conclusions of this study, the following recommendations are proposed to enhance the performance of Tanzania's maritime transportation sector and maximize its contribution to national economic growth:

5.3.1 Upgrade and Modernize Maritime Infrastructure

The enhancement and modernization of maritime infrastructure remain critical to improving the efficiency and competitiveness of Tanzania's maritime sector. Current infrastructure faces challenges such as outdated equipment, insufficient capacity, and inadequate technology, which collectively hinder smooth operations and limit trade facilitation. To address these issues, investment in advanced port facilities, modern cargo handling equipment, and digital systems for cargo tracking and management is essential. Modernization efforts should also focus on expanding port capacity to accommodate larger vessels and increasing storage facilities to reduce congestion. Upgraded infrastructure will not only improve operational efficiency but also attract greater foreign direct investment and support regional trade integration.

5.3.2. Enhance Regulatory Framework and Institutional Coordination

Effective regulation and strong institutional coordination are fundamental to ensuring a well-functioning maritime sector. The current regulatory environment in Tanzania's maritime industry faces inefficiencies such as overlapping mandates, outdated laws, and fragmented enforcement mechanisms that create delays and increase operational costs. To overcome these challenges, it is imperative to review, update, and harmonize maritime laws and regulations to reflect contemporary industry standards and international conventions. Strengthening the capacity of maritime regulatory bodies will enhance their ability to enforce compliance, monitor safety standards, and oversee environmental protection.

5.3.3. Promote Adoption of Digital Technologies

The adoption of digital technologies is vital for enhancing efficiency, transparency, and competitiveness in the maritime transport sector. In Tanzania, the integration of modern IT systems such as electronic cargo tracking, automated customs clearance, and digital port management platforms can significantly reduce processing times, minimize human error, and improve overall service delivery. Encouraging stakeholders to adopt technologies like blockchain for secure and transparent documentation, Internet of Things (IoT) for real-time monitoring of shipments, and advanced data analytics for operational decision-making will foster a smarter maritime ecosystem. Additionally, capacity-building initiatives should be implemented to train personnel on new digital tools and ensure smooth technology uptake.

5.3.4. Develop Skilled Maritime Human Capital

A well-trained and competent workforce is essential for the sustainable growth and modernization of Tanzania's maritime sector. However, the industry currently faces a shortage of skilled professionals, including marine engineers, port operators, logistics managers, and maritime safety officers. This skills gap undermines operational efficiency, safety standards, and the adoption of modern technologies. To address this challenge, strategic investment is required in maritime education and vocational training. Strengthening institutions such as the Dar es Salaam Maritime Institute (DMI) and fostering partnerships with international maritime academies can enhance the quality and relevance of training programs. Curricula should be updated to include emerging areas such as maritime cybersecurity, green shipping technologies, and digital port operations.

5.3.5. Address Environmental Sustainability

Environmental sustainability is increasingly vital to the development and global competitiveness of the maritime sector. In Tanzania, maritime operations contribute to pollution through oil spills, ballast water discharge, marine litter, and emissions from ships and port activities. Failure to address these environmental concerns can lead to ecosystem degradation, public health risks, and non-compliance with international environmental standards such as MARPOL. To promote sustainable maritime development, it is essential to strengthen environmental regulations and ensure strict enforcement of pollution control measures. Investments should be made in environmentally friendly port infrastructure, such as shore power systems (cold ironing), waste reception facilities, and green logistics technologies. Additionally, ships calling at Tanzanian ports should be encouraged or required to adopt cleaner fuels and energy-efficient systems.

5.3.6. Facilitate Regional Integration and Trade Facilitation

Facilitating regional integration and enhancing trade facilitation are key to maximizing the strategic geographic position of Tanzania along the Indian Ocean. As a gateway for several landlocked countries in East and Central Africa such as Rwanda, Burundi, Uganda, Zambia, and the Democratic Republic of Congo Tanzania's maritime sector plays a critical role in regional trade and economic cooperation. To fully leverage this potential, it is essential to improve the efficiency of port operations, simplify customs procedures, and harmonize cross-border regulations in line with regional agreements such as the East African Community (EAC) and the African Continental Free Trade Area (AfCFTA).

References

- World Bank. (2021). Tanzania: *Ports and logistics development*. Retrieved from World Bank. <https://www.worldbank.org>
- Tanzania Ports Authority (TPA). (2022). *Port Efficiency and Its Impact on Trade Growth: transport and Logistics*, 12(4). *Transport and Economic Growth in Developing Countries: A Review of Policies*
- African Development Bank (AfDB). (2020). *Transportation Infrastructure and Economic*
- United Nations Conference on Trade and Development (UNCTAD). (2023). *Review of Maritime Transport 2023*. Geneva: United Nations. <https://unctad.org>
- Mwandosya, M., & Komba, F. (2020). *Capacity building and skills development in Tanzania's transport and logistics sector: Challenges and opportunities*. Dar es Salaam: Tanzania Transport Research Institute.
- World Bank. (2020). *Enhancing the Performance of the Transport Sector in Tanzania*. Washington, DC: World Bank. <https://www.worldbank.org>
- Chacha, A. M., & Mwita, K. M. (2020). The impact of port infrastructure on trade performance in East Africa. *East African Journal of Social and Applied Sciences*, 2(1), 31–40.
- International Maritime Organization (IMO). (2023). *IMO and the Sustainable Development Goals*. <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Default.aspx> Journal of International Trade and Economic Development, 14(3), 311-327.