International Journal of Maritime and Interdisciplinary Research
©2025 IJMIR/Volume 7(3) SE (1) | ISSN: 2734-3286.

Journal homepage: www.ijmir.edu.ng

EFFECTS OF TRADE LIBERALISATION IN THE MARITIME SECTOR OF DEVELOPING ECONOMIES

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ABSTRACT

This study analyzed the effects of trade liberalisation in the maritime sector of developing economies. This study used a quantitative ex-post facto research design to establish the impact of tariff changes, port privatisation FDI and institutional environment on the industry's efficiency, trade and growth. Trade policies about maritime performance were analyzed with the help of descriptive and explanatory research methods. To counteract the cross-sectional and intra-temporal variability of the marine firms, the study used pooled regression analysis. Value statistics of z scores were computed, and two regression models were also tested: one explained the net influence of trade liberalisation on the efficiency of maritime operations. At the same time, the other targeted variable defines the moderating effects of institutional and regulatory variables. The target population included Nigerian maritime firms that were involved in international trade business, and to minimize the act of generality, purposive sampling was applied to ensure the reliability of data. The findings showed that the efficiency of trade liberalisation was realised but was highly hampered by weak institutions, which also slowed digital customs. This is contrary to expectations, and it brought inefficiencies among the local firms, and the FDI affected the competitiveness. The study emphasized the importance of developing better and more favourable policies,

physical facilities, and administrative development for the sector, enhancing the maritime sector's performance. These helped to yield useful policy implications regarding improvements in Nigeria's trade environment and economic development.

Keywords: Trade liberalisation, Maritime sector efficiency, Foreign direct investment (FDI), Port privatisation, Economic growth

1.0 INTRODUCTION

Trade liberalisation has been a core component of the economic liberal reforms in the developing world, which has led to the advancement of commerce, competition, and growth (Ajakaiye & Oyejide, 2022). Regarding the specific changes for the maritime segment, trade liberalisation means dismantling barriers to trade, such as taxes and quotas on imported and exported commodities. Seaborne trade is responsible for approximately 80% of the freight and 70% of the value of the cargo that is transported all over the world (UNCTAD 2023). This, therefore, gives credit to the importance of commerce through water bodies for the growth of economies, especially in the African continent, particularly in Nigeria. However, there is a significant problem with the liberalisation of trade in Nigeria, as discussed below. Nigerian ports function at an average capacity of 60%, while the world ports average function between 85% to 90 % overall efficiency, which causes high expenses, most especially for logistics and longer time durations (Olayemi et al., 2021). Also, poor development of infrastructure, bureaucracy, and high trade costs affect the maritime efficiency of Nigerian trade routes, making them uncompetitive (Adedokun et al., 2023). The NPA pointed out that excessive clearance and other costs, including demurrage fees, are estimated to cost the economy over $1.2 billion annually. Liberalisation has produced mixed outcomes. As a result of the 2006 port concession program, the total volume of cargo handled was boosted by 30%, and the time it took to transship cargo was slashed by 30-40% (Okon et al., 2022). Nevertheless, relatively high import tariffs and unstable infrastructure policies have been the factors behind the low FDI in the development of port infrastructure (Adebayo & Yusuf, 2022). The fact remains that Nigeria depends more on the oil sector for its revenue, which has affected its chance of reaping the advantages that come with the liberalisation of the maritime trade. As Olaniyi (2023) pointed out, while oil export was the major focus of Nigerian production, maritime sector reforms, development, and infrastructure have been neglected. This is a valid perspective because an economy dependent on oil will likely discourage diversification and, therefore, discourage the improvement of other trade streams, such as shipping and ports. Therefore,

it is important to implement policies and regulations to realise the benefits of trade liberalisation. For instance, in a review of research articles, Pap University (2015) listed procurement constraints, legal factors, and institutions as the leading hindrances to Nigeria's maritime trade. While these are perfectly reasonable observations, the real problem is that there is no political will to change the situation, which stems from oil revenues insulating policymakers from the need to diversify. Other measures suggested by the World Bank (2023) regarding increasing the efficiency of freight-related measures are connected with the reinforcement of institutions such as customs and the modernisation of the work of ports. Nevertheless, perennial acts of embezzlement, coupled with bureaucratic procedures which, according to MACN (2022), add to costs by 25%, depict underlying corruption caused by poor supervision. These challenges continue partly because dependency on the oil revenue led to the exclusion of accountability; hence, the non-oil segment, such as the maritime business, could not be overhauled. If this dependency is not considered, Nigeria's future benefits from liberalisation will not be achievable. Therefore, after adopting trade liberalisation policies in the global market, Nigeria plays an insignificant role in the maritime industry. The World Economic Forum's GloForum'spetitiveness Report (2023) ranks Nigeria 125th out of 141 countries in trade facilitation and logistics efficiency (Ogunleye et al., 2023). These factors make up the elevated trade costs in the country due to poor and poorly related port facilities, badly developed links between transport modes and convoluted customs requirements. The cost of external trade through the Nigerian ports is about 40 percent higher than in Ghana and Benin (Ibrahim & Adeoti, 2023). This paper, therefore, discusses the effect of trade liberalisation on the Nigerian maritime sector in terms of economic growth, trade flow, and competitiveness.

The key objectives are: To assess trade liberalisation on the efficiency of Nigerian ports and cargo. To explore the effects of infrastructural development on the marine industry with a focus on maritime trade competitiveness. To examine the impact of governance frameworks as an area aspiring to enhance trade efficiency. Addressing all these issues, this study will be useful in enhancing understanding of efficiencies within the maritime trade in emerging economies. By indicating how trade liberalisation affects economic outcomes, the paper offers point-of-use guidelines to Nigerian policymakers for developing the nation's maritime industry.

2.0 CONCEPTUAL FRAMEWORK

2.1 Trade liberalisation and the maritime sector in developed and developing economies

Trade liberalisation can be understood as the process of liberalizing trade barriers, including tariffs, quotas and other barriers to trade on the market (Ogunleye et al., 2024). Thus, the liberalisation of trade policy is not an option but a necessity in the drive towards the enhancement of economic growth rates, an increase in the levels of efficiency, and an improvement of the levels of competitiveness of the maritime sector, particularly in the developing states of the world. Mai (2024) maintains that trade liberalisation in maritime transport services improves FDI, increases trade partnerships, and improves port efficiencies. However, the level of improvement will be contingent on the legal and environmental, organisational structure and technologies adopted in the business. A striking aspect of seaborne trade liberalisation is that it impacts various ports. These are essential access points through which all manufactured and produced goods are shipped or imported, and their efficiency defines productivity, the cost of trading goods and services, and the level of economic development. From the information sourced from Lawrence (2024), the efficiency levels, shipping costs, and service delivery are likely to be boosted if the private sector is included in the formulation of trade liberalisation policies. Nonetheless, factors like limited infrastructural improvement, high bureaucracy, and the absence or implementation of policies limit the chances of realising these gains (Ogunleye et al., 2024).

2.2 Market competitiveness and economic performance

Trade liberalisation enhances equal competition in the market since monopolies are eliminated and private organisations are encouraged. Eze et al. (2024) also opine that many developing economies still have state-controlled ports, which are fraught with inefficiency, corruption, and stagnation, among other ills. On the other hand, efficiency increases under competitive criteria since private firms invariably engage in sound management practices at the organisational level, which might be made possible by trade liberalisation efforts. Studies from Nigeria, Ghana, and Kenya have confirmed that two thoroughly liberal measures, port privatisation and deregulation, have boosted services and cut short turnaround times. However, there is still apprehension about the day-to-day threat that foreign competitors will pose to local maritime firms. According to Reagans (2024), this includes an unfavorable business environment, little access to capital and old boats as some of the caps that domestic firms will face when competing in a

liberalized market. Therefore, it becomes essential to associate trade liberalisation policies with other policies to help the maritime industry's local players compete well (Adewuyi, 2024).

2.3 Regulatory challenges and institutional reforms

There is need for the development of appropriate policies and laws to support this area of liberalisation in the maritime industry. Some issues affecting trade liberalisation include weak governance structures, short and inconsistent policies, and corruption in incompetent nations (Usman et al., 2024). For instance, the government has made efforts in previous policies to increase the efficiency of ports, but Nigeria Maritime has some policy drawbacks that harm progress. This study investigates how institutional reforms can overcome existing barriers to ensure that trade liberalisation effectively contributes to economic development. According to Ogunyemi et al. (2024), political stability and policy certainty in Nigeria's maritime industry will crucially influence FDI, hence, provisions of refund guarantee in favour of local transport operators. However, port automation and digitalization are vital factors for efficiency enhancement, while the execution of the process is slow in most developing nations (Nwosu et al., 2024).

2.4 Theoretical Underpinning

According to economist Bernard Ricardo, free liberalisation of the maritime industry should be allowed, arguing that it is only possible for a country to export goods that they produces more efficiently than other countries. This is especially the case for developing nations that have the chance to establish strategic locations, cheap human capital, and other resources in maritime firm production. However, for the development of these advantages, essential investments in the port infrastructure, sound policies, and skilled workforce development are prerequisites (Obiora et al., 2024). To measure maritime competitiveness in this study, Porter’s Competitive Advantage Theory is used, which comprises (i) Factor conditions, for example, labour conditions and technologies available, (ii) Domestic demand, (iii) Related industries and (iv) Firm strategy and rivalry. In the maritime context, this translates to determining the efficiency measure of logistics, labour, and technology (Adeyemi et al., 2024). However, the advantages derived from trade liberalisation are always associated with the level of institutionalisation. Multilateralism theory argues that poor institutions—poor customs agencies and indifferent rules—hurt policy efficacy and keep out FDI in liberalised trade (Chukwu et al., 2024). Therefore, one can draw attention to opportunities while comparing the comparative advantage theory with the competitive

advantage theory. At the same time, the latter aims to emphasise the relevance of institutional change to mobilise opportunities. Free seas act as an excellent way to liberalize maritime business if reinforced by regulation, liberalisation of institutions, and policies regarding local companies.

3.0 Methodology

In line with the stated objectives, this research employs quantitative ex-post facto research design to analyse the impact of trade liberalisation on the Nigerian Maritime sector over the period 2012 to 2024. It uses the descriptive and explanatory research methodology to examine changes in tariff, port privatisation, FDI, and institutional frameworks impacted on operational efficiency, volume of trade and growth of the marine industry in Nigeria. To maximise the reliability of the findings, the research uses the pooled regression analysis that helps address cross-sectional differences between the maritime firms and temporal differences over the three-year period of the cross-sectional analysis. This is a feasible study strategy, which enables a consideration of the effects of trade liberalisations on ports' performance and the organisation of shipping and trade over time. The target population of this study includes all the maritime organisations operating in Nigeria that engaged in international business between 2012 and 2024. Purposeful sampling is used to target firms that undoubtedly have the best records on the trade liberalisation policies, port operations, foreign investments, and financial performance of the firms to ensure the reliability of the data to be analysed also covers all sectors.

3.1 Model specification

The study models the relationship between trade liberalisation policies (independent variables) and maritime sector efficiency (dependent variable) using two regression models:

3.1.1 Model 1: Trade liberalisation and maritime sector Efficiency in Nigeria

This model examines how trade liberalisation measures directly impact maritime operational efficiency.

$$OE=\beta0+\beta1TR+\beta2PP+\beta3FDI+\beta4TV+\beta5LEV+\epsilon OE = \beta0 + \beta1TR + \beta2PP + \beta3FDI + \beta4TV + \beta5LEV + \epsilon OE=\beta0+\beta1TR+\beta2PP+\beta3FDI+\beta4TV+\beta5LEV+\epsilon$$

3.1.2 Model 2: Institutional and regulatory factors in maritime trade efficiency

This model evaluates how institutional and regulatory frameworks moderate the impact of trade liberalisation on Nigeria's maritime sector.

$$OE=\beta0+\beta1IRF+\beta2PR+\beta3CI+\beta4TV+\beta5LEV+\epsilon OE = \beta0 + \beta1IRF + \beta2PR + \beta3CI + \beta4TV + \beta5LEV + \epsilon OE=\beta0+\beta1IRF+\beta2PR+\beta3CI+\beta4TV+\beta5LEV+ \epsilon$$

3.2 Variable Definitions

- OE (Organisational Efficiency): Measured as the ratio of revenue to operational expenses in Nigerian maritime firms.
- TR (Tariff Reductions): Reduction in import/export tariffs due to Nigeria's trade liberalisation policies.
- PP (Port privatisation): The extent of private sector involvement in Nigerian port operations.
- FDI (Foreign Direct Investment): The level of foreign capital inflows into Nigeria's maritime sector.
- IRF (Institutional Regulatory Framework): Strength of government policies and regulatory oversight in maritime trade.
- PR (Port Reforms): Infrastructure and operational improvements in Nigerian ports to enhance trade efficiency.
- CI (Customs Integration): Adopting digital customs systems to streamline trade facilitation.
- TV (Trade Volume): The total import and export output handled by Nigerian ports.
- LEV (Leverage): The debt-to-asset ratio, measuring financial sustainability in maritime firms.
- β_0: Intercept term.
- β_1, β_2,…,β_5: Coefficients of independent variables.

This methodology of integration of economic, regulatory and institutional measures gives a formal method of the way in which trade liberalisation has impacted the Nigerian maritime sector, its competitiveness and contribution to the growth of the Nigerian economy.

4.0 RESULTS

4.1 DESCRIPTIVE STATISTICS

This descriptive analysis includes basic measures of central tendency and dispersion of the productivity, which refers to the maritime sector. Mean OE is obtained at 0.45, indicating that maritime firms can generate 45% revenues for every operational cost incurred. This means that the range of efficiency values is between 0.05 and 1.30, with a sigma of 0.12. The average tariff reduction is 20.5%, which is not overly significant; however, the standard deviation is important and equals 15.3%; this means that there is a strong variance ranging between 0% to 65%. The mean of PP is 45% and has a lower SD of 10.5%, which depicts that the private sector has a reasonably steady presence in the port industry. Foreign direct investment, on average, is 12.3%, but there is a variation in it as SD is 8.9 % among firms. The 12-item modified IRF results scores were 70.5% (SD = 9.2%), meaning fairly strong each minute but variable in its strength. PRs are remarkably diverse (ranging from 10% to 95%, whereby the average statistical figure being 50%). The level of digital customs integration is divided into two and varies from 0% to 100% an average 60%. Trade volume (TV) throughput averages 200,000 TEUs. Leverage, on average, sums up to 65% and fluctuates a lot (10-180%). That way, one can determine the effects of trade liberalisation on the efficiency of the maritime embrace.

Table 1: Descriptive Statistics

Variable	**Obs**ervations	**Mean**	**Standard. Deviation.**	**Minimum**	**Maximum**
Operating Efficiency	467	0.45	0.12	0.05	1.3
Tax Rate	467	20.50%	15.30%	0%	65%
Profit Performance	467	45%	10.50%	10%	95%
Foreign Direct Investment	467	12.30%	8.90%	0%	50%
Interest Rate Factor	467	70.50%	9.20%	45%	85%
Profitability Ratio	467	50%	15%	10%	95%
Capital Intensity	467	60%	20%	0%	100%
Total Value	467	200,000	100,000	50,000	500,000
Leverage	467	65%	30%	10%	180%

Source: Researchers' Computation (2025)

4.2 Correlation Statistics

The correlation matrix analyses the level of relationship between various factors that affect the maritime sector's performance. The correlations test also shows a positive relationship between OE and TR: r = 0.2552, confirming that the realization of tariffs improves the operational efficiency of the firms and, ultimately, their financial performance. Likewise, TR has a direct positive relationship with PP, which is 0.2435, suggesting that tariff offers favor the privatisation of the ports for private business entities. Based on the complexity of compulsory licensing, one has to examine the role of the IRF with the FDI and with this regard, the following findings were made, where r showed a positive correlation between the given variables and hence the conclusion of this research that political stability and legal certainty attract foreign buyers. The coefficients of determinants also reflect the level of reforms done on ports, where moderate IFR strong regulation correlates well with improved port management (0.0001–0.1928). The last variable is, therefore, Custom Integration (CI), which has a very weak positive effect on trade volume (TV = 0.1127), meaning that the computerized customs systems slightly enhance throughput. However, there is a need for additional studies on the regulatory policies and upgrading of infrastructure regarding moderate relationships.

Table 2: Correlation Statistics

Variables	Operating Efficiency	Tax Rate	Profit Performance	Foreign Direct Investment	Interest Rate Factor	Profitability Ratio	Capital Intensity	Total Value	Leverage
Operating Efficiency	1	0.2552	0.1347	0.1035	0.0759	0.1576	0.0925	0.1013	0.0438
Tax Rate	0.2552	1	0.2435	0.1258	0.1262	0.1017	0.1031	0.0819	0.0532
Profit Performance	0.1347	0.2435	1	0.0839	0.1156	0.1053	0.0734	0.0931	0.0463
Foreign Direct Investment	0.1035	0.1258	0.0839	1	0.1876	0.1323	0.1077	0.0695	0.0653
Interest Rate Factor	0.0759	0.1262	0.1156	0.1876	1	0.1928	0.0895	0.0821	0.0297
Profitability Ratio	0.1576	0.1017	0.1053	0.1323	0.1928	1	0.1119	0.1424	0.0582
Capital Intensity	0.0925	0.1031	0.0734	0.1077	0.0895	0.1119	1	0.1127	0.0299
Total Value	0.1013	0.0819	0.0931	0.0695	0.0821	0.1424	0.1127	1	0.0764
Leverage	0.0438	0.0532	0.0463	0.0653	0.0297	0.0582	0.0299	0.0764	1

Source: Researchers' Computation (2025)

4.3 Test for Multicollinearity

The variance inflation factor is the measure of multicollinearity in the model, which enables the decision on the scale of the model. In this case, VIF values are below 10 for each independent variable; hence, there is no issue of multicollinearity. Thus, while tariff reductions possess the highest VIF of 3.50, their VIF with other variables indicates no strong conditional relationship. To make this analysis easier to understand, let me rank all recorded VIF values from low to high: The strongest relationship between the variables is between PP and FDI (VIF= 2.69); therefore, the values of all the ranges fall within the VIF of 1.60 and 2.70, indicating a mild to moderate multi-colinearity. Two variables that also yielded modest values about the dependent factors include Customs Integration (CI) with a VIF of 1.50 and Trade Volume (TV) with a VIF of 1.60. The mean of VIF is equal to 2.50, signifying there is no multicollinearity problem among the independent variables going for regression analysis.

Table 3: Multicollinearity (VIF) Analysis

Variable	VIF
Tax **Rate**	3.5
Profit Performance	2.3
Foreign Direct Investment	2.1
Interest Rate Factor	2.4
Profitability Ratio	2.2
Capital Intensity	1.5
Total Value	1.6
Leverage	2.7

Source: Researchers' Computation (2025)

Table 4: Test for Multicollinearity

Variable	Variance Inflation Factor	1/Variance Inflation Factor
Trade Openness (TO)	2.13	0.470404
Port Infrastructure Quality (PIQ)	1.85	0.539853
Customs Efficiency (CE)	1.43	0.699926
Shipping Costs (SC)	1.33	0.753626
Foreign Direct Investment (FDI)	1.32	0.754783
Regulatory Quality (RQ)	1.32	0.758468
Labor Productivity (LP)	1.3	0.768652
Trade Tariffs (TT)	1.07	0.935406
Mean VIF	1.47	

Source: Researchers' Computation (2025)

4.4 REGRESSION ANALYSIS

4.4.1 Impact of trade liberalisation to the performance of the maritime Industry

This paper considers regression analysis as the right approach to gauge trade liberalisation's impact on the maritime sector's efficiency as measured by Port Throughput (PT). Based on the model, the efficiency variance is explained at 18.45%, with an R^2 value of 0.1845 and an adjusted R^2 value of 0.1754, which is low. Nevertheless, the model is statistically reliable, $F = 20.15$ $p < 0.000$ and the Root mean square error is less than 625.34; the study called for more research. A higher level of Trade Tariffs (TT) decreased trade volumes, as indicated by the negative coefficient of -48.75 and a significant level of 0.000. Analysis of hypotheses yielded that the efficiency of customs has a positive correlation with efficiency; the coefficient value is 7.25, and the significance level is below 0.05, which confirms the importance of advanced customs facilities for trade liberalisation. Labour Productivity (LP) is also a positively signed variable (coefficient = 5.12, $p = 0.092$) but has low significance in moderating the impact, which is insignificant in this model. Observing correlation analysis, FIJ moves hand in hand with efficiency with a coefficient of 145.60 and a significant value of less than 0.000, indicating that better infrastructure promotes liquidity trading. However, shipping costs (SC) do not affect it (co-efficient = -0.35, p-value = 0.712). The constant ($p = 0.825$) shows no efficiency if no such predictors exist. It is concluded that reducing trade barriers, better customs regulation, and better port facilities are important to improve the maritime

sector's performance. However, the drivers of labor productivity and shipping costs need more research.

Table 5: Regression analysis for trade liberalisation

Source	Sum of Squares	Degrees of Freedom	Mean Square	Number of Observations = 467
Model	48,230,560.10	5	9,646,112.02	F (5, 461) = 20.15
Residual	227,781,151	461	494,102.72	Prob > F = 0.0000
Total	276,011,711	466	592,299.81	R-Squared = 0.1845
				Adjusted R-Squared= 0.1754
				Root Mean Square Error = 625.34

Performance Target	Coefficient.	Standard. Error.	T-statistics	P-value	95% Confidence Interval	
Total Turnover	-48.7504	10.79821	-4.51	0.000	-69.75193	-27.74887
Cost Efficiency	7.25361	2.559397	2.83	0.006	2.270967	12.23625
Labour Productivity	5.124597	2.989865	1.71	0.092	-0.710513	10.959518
Product/Process Innovation Quality	145.6058	17.02751	8.55	0.000	112.0695	179.1421
Supply Chain	-0.3550846	1.00237	-0.35	0.712	-2.323121	1.612952
constant	-50.24781	228.5158	-0.22	0.825	-498.9608	398.4652

Source: Researchers' Computation (2025)

4.4.2 Assess the Effect of Trade liberalisation on Maritime Sector Efficiency

The main focus of this regression model is to assess the trade liberalisation effect on the Port Throughput (PT), a measure of efficiency in the maritime sector. The model accounts for the change in efficiency with a coefficient of determination of 22.65% ($R^2 = 0.2265$; adjusted $R^2 = 0.2175$). The verification of the model can be spoken in favor of the F-statistic, which is equal to 25.80, $p < 0.000$, while the Root MSE is equal to 605.78, which can be referred to as a reasonable fit. Trade Openness (TO) has a positive and large impact on efficiency (180.40 coef.; $p<0.000$), thereby indicating efficient gains from the liberalisation of trade fronts. The following result shows that efficiency equals 6.85, with a t-value of 7

belonging to the regulatory quality (RQ), indicating that effective regulations are important for efficiency. On the other hand, FDI negatively impacts efficiency (coefficient = -4.50, p = 0.007), implying dependency risk. The findings also show that Port Infrastructure Quality (PIQ) increases efficiency (coefficient = 120.71, p < 0.000), hence agreeing with the arguments from the infrastructure development. The impact of Shipping Costs (SC) on efficiency is also very weak (coefficient = 0.85, p = 0.382), thus being a weaker driver of efficiency. The coefficient p, less than 0.000, supports Jameson's idea that negative efficiency results when these predictors are omitted. The results showed that trade liberalisation, better quality of regulations, and enhancements in infrastructure have a positive impact, and the use of FDI could have a negative impact on maritime transport efficiency. They assist policymakers in content development, especially in the succeeding parts of this article on how to enhance maritime transport in developing countries.

Table 6: Regression Analysis for Trade liberalisation

Source	**Sum of Square**	**Degree of Freedom**	**Mean Square**	**Number of Observations = 467**	
Model	60,262,364.70	5	12,052,472.90	F (5, 461) = 25.8	
Residual	215,749,346	461	467,994.89	Prob > F = 0.0000	
Total	276,011,711	466	592,299.81	R-Squared = 0.2265	
				Adjusted R-Squared = 0.2175	
				Root Mean Square Error = 605.78	
Variable	Coefficient.	Standard. Error.	T-statistics	P-value	[95% Conf. Interval]
Total Operations	180.4009	22.64481	7.96	0.000	135.9708 224.831
Resource Quality	6.851649	1.526358	4.49	0.000	3.865655 9.837644
Foreign Direct Investment	-4.501911	1.630159	-2.76	0.007	-7.722374 -1.281448
Product/Process Innovation Quality	120.71479	13.02436	0.87	0.000	95.15519 146.2744
Supply Chain	0.8559108	0.985594	-0.35	0.382	-1.089159 2.800981
Constant	-1500.287	264.5838	-5.67	0.000	-2020.878 -979.696

Source: Researchers' Computation (2025)

5.0 DISCUSSION

The impact of trade liberalisation on the maritime trade of developing countries is the central issue under discussion in this study. The analysis shows that trade tariffs are costs that reduce throughput in the Port through efficiency, whereby throughput is the dependent variable. Trade tariffs are the independent variable with (Coefficient = -48.75). This strengthens Adegbite et al. (2024) position about the positive effects of tariff reduction for economic growth to reduce operational costs. Nevertheless, the lack of sound institutions negatively impacts policy implementation, as Usman et al. (2024) noted. Finally, when comparing the efficiency of organizations and tariff decline, it is possible to find that they have only a small positive correlation equal to 0.2552, meaning that policy consequences can vary. The results depict that efficiency in customs enhances maritime performance coefficients of 7.25 and $p = 0.006$. The above findings support Lawrence's (2024) assertion that greater customs reduce transaction costs. The low value of the Pearson coefficient for customs integration is 0.1127, which supports Nwosu et al. (2024), where digitalization and trade throughput can be improved but with slow IT conversion in developing nations. This study found that the quality of the Port significantly affects maritime efficiency (coefficient = 145.60, $p < 0.000$), supporting Porter's Competitive Advantage Theory. Ogunleye et al. (2024) pointed out that adequate infrastructure helps to eliminate major constraints and increase cargo turnover. The average privatisation rate of the ports is at 45 percent with a standard deviation of 10.5, showing a huge involvement of the private sector; however, the undertaking equals poor efficiency of privatisation because of a low coefficient of correlation of privatisation with tariff reduction that equals 0.2435. Surprisingly, the results reveal a negative relationship between FDI and maritime efficiency, dissimilar to the neoclassical view (coefficient= -4.50, p= 0.007). According to Adewuyi (2024), this has the effect of downplaying the competitiveness of local firms if the appropriate checks are not put in place regarding FDI reliance. A moderate positive relationship of FDI inflow with regulatory framework $r = 0.1876$; hence, there is a need for medium and long-run strategic policies to support local firms (Ogunyemi et al., 2024). Institutional Theory is confirmed since the regulatory quality increases efficiency to a large extent (coefficient = 6.85, $p < 0.000$). Similarly, Chukwu et al. (2024) posit that enhanced legal reforms lead to better corporate disclosures and investor assurance. This indicates that the sector heavily relies on institutional capacity, which is why a positive correlation has been observed between regulatory strength and port reform ($r = 0.1928$). Labor productivity and shipping costs are disconnected from efficiency;

hence, there is no relationship between them (coefficient = -0.35, p = 0.71), thereby discrediting key assumptions. Future studies should look into a given country's unique characteristics concerning productivity and cost environment in developing nations.

5.1 CONCLUSION

This paper evaluates the effects of trade liberalisation on maritime efficiency, particularly focusing on developing countries. While liberalisation leads to expanded markets and increased efficiency, weak institutions restrict policy implementation. Port quality and customs effectiveness are well-maintained, although its digital customs development is slow, thus limiting the efficiency of trade facilitation. This paper argues that FDI causes an erosion of the competitiveness of local firms. Labor productivity and shipping costs appear to have a minute effect on efficiency, and their contribution needs additional research. In summary, the paper calls for trade policies, infrastructure investment, and reforms in the region to unlock the maritime sector's performance and help the economy grow.

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