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IMPACT OF PORT CONGESTION AND CUSTOMS PROCESSES ON IMPORTS TRADE IN NIGERIA

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Abstract

This study examines the impact of port congestion and customs processes on import trade in Nigeria. Using a survey and correlational research design, primary data were collected from 150 respondents across 30 logistics and port-related organizations. Ordinary Least Squares regression was employed to analyze the relationships among variables. Findings reveal that both port congestion and customs processes exert significant effects on import trade, while their interaction further demonstrates that inefficient customs procedures amplify congestion-related challenges. The results underscore the importance of efficient administrative and operational systems in promoting trade facilitation. The study concludes that enhancing port infrastructure, streamlining customs procedures, and strengthening institutional capacity are crucial for improving import performance. It recommends investment in logistics and enhancing inter-agency coordination to reduce inefficiencies and boost Nigeria's trade competitiveness. Limitations relate to respondent perceptions and geographical coverage.

Keywords: Port congestion, customs processes, imports trade, Nigeria Economic Impact, Trade Efficiency and institutional theory

1. Introduction

International trade remains the backbone of global economic integration, with imports playing a central role in supporting industrialization, technological advancement, and consumer welfare across both developed and developing economies. Over the last decade, supply chain volatility, capacity constraints at major ports, and evolving customs standards have shaped the global import landscape, particularly following major disruptions such as the COVID-19 pandemic. Studies show that port capacity

limitations, inefficient customs procedures, and infrastructure gaps have contributed to higher logistics costs and import delays globally (Komaromi et al., 2022). In addition, initiatives such as Authorized Economic Operator Programmes and National Single Window systems have been implemented across many trade-dependent economies to streamline cargo processing and reduce clearance timelines (Ayça, 2019; Choi, 2017). Despite these reforms, uneven technology adoption, institutional capacity gaps,

and procedural complexities persist, challenging efficient trade flows and highlighting the need for coordinated trade facilitation strategies worldwide.

Against this global backdrop, the Nigerian import environment has experienced significant operational and institutional constraints, largely driven by port congestion and customs inefficiencies. Nigeria, as West Africa's largest import-dependent economy, relies heavily on port infrastructure to support domestic manufacturing and commercial activity (Hadiza, 2017). Yet, empirical evidence consistently points to chronic congestion, long dwell times, inadequate infrastructure, and bureaucratic bottlenecks that undermine trade competitiveness and increase the cost of doing business (Edih et al., 2022). For instance, Aruwei and Eko-Raphaels (2022) demonstrate a significant negative relationship between port congestion and economic performance in Nigeria, emphasizing the economic implications of inefficient port operations. Similarly, Oni and Ojekunle (2022) found that customs procedures significantly prolong cargo clearance times, indicating persistent administrative challenges despite policy reforms. These issues collectively highlight structural constraints impeding the smooth and timely flow of imports into the country.

The problem necessitating this study arises from the continued inefficiencies at Nigerian ports and customs systems despite modernization efforts and global advancements in trade facilitation. While a number of studies have evaluated port concession outcomes and port productivity improvements (Chidubem et al., 2022; Ugboma & Oyesiku, 2020), research directly interrogating the combined influence of port congestion and customs processes on import trade remains limited. Most existing studies emphasize general port reform analysis, logistics efficiency, or concession outcomes without focusing on the interplay between port congestion, customs processes, and import performance during the era of port digitization.

The study's objectives flow directly from the identified gaps and are designed to provide empirical clarity on the effect of operational bottlenecks on import trade. The first objective is to examine the effect of port congestion on import trade in Nigeria. The second objective is to assess the effect of customs processes on import trade over the same period. The study also seeks to evaluate the moderating role of the National Single Window system in enhancing import efficiency and reducing delays. Based on these objectives, the following hypotheses are proposed: port congestion has no significant effect on import trade in Nigeria; and customs processes have no significant effect on import trade in Nigeria. These hypotheses guide the empirical test of the influence of operational and administrative factors on import flows.

This study is focused on the Nigerian maritime trade environment, specifically the major seaports serving as gateways for imports. This is important because it captures progressive trade reforms, digitalization efforts, and the impacts of global supply chain disruptions, including the pandemic. The variables examined include port congestion and customs processes as the independent variables, and import trade as the dependent variable. The scope also includes assessing the moderating role given its relevance to port digital transformation. By restricting the empirical analysis to import-driven seaport operations, the study ensures clarity in variable relationships and policy relevance.

The significance of this study lies in its capacity to contribute to both academic knowledge and policy outcomes in Nigeria's trade facilitation environment. While previous research has analysed port

operations, concession effects, and logistics flows (Gbolahan et al., 2022; Festus, 2021), only a few studies investigate how congestion and customs processes jointly affect import performance in a reform period. In addition, global findings highlight the transformative role of Single Window systems in simplifying trade processes (Adeyinka et al., 2024), yet Nigeria-specific empirical insights remain scarce. This study, therefore, enriches existing literature by providing contemporary evidence and offering policy guidance to strengthen port efficiency and customs reforms. Its findings are valuable for port authorities, customs agencies, freight operators, and policymakers seeking strategies to enhance Nigeria's import capacity and competitiveness.

The motivation for undertaking this study stems from the persistent operational challenges facing Nigeria's port system and the national urgency to boost trade competitiveness, reduce logistics costs, and accelerate economic diversification. Rising import delays, inflationary pressures from logistical bottlenecks, and extended cargo clearance times underscore the need for evidence-based reforms. Furthermore, Nigeria's aspiration to become a regional trade hub requires efficient port and customs administration aligned with the global standards initiative also presents a unique opportunity to evaluate reforms and their potential to transform port performance. By providing empirical insights, this study supports efforts to modernize Nigeria's trade system and improve economic outcomes through efficient import operations.

2. Literature Review and theoretical Framework

This section reviews empirical studies on the interactions among port congestion, custom processes, and import trade. In addition, the section presents the theoretical framework that underpins the study.

2.1 Conceptual Review

2.1.1 Ports Congestion and Import Trade

Port congestion has emerged as a critical impediment to international trade efficiency, particularly within developing economies where port capacity and logistics infrastructure remain underdeveloped. Congestion occurs when port resources such as berths, terminals, and storage areas are overwhelmed by cargo volume, resulting in delays, vessel queues, increased turnaround time, and elevated logistics costs. Empirical evidence shows that port congestion can significantly undermine trade flows and macroeconomic performance, as delays in handling and releasing imports disrupt supply chains and increase transaction overheads (Aruwei & Eko-Raphaels, 2022). Studies also show that port operational efficiency is directly associated with trade competitiveness, where port congestion serves as a bottleneck to seamless commercial activity and national economic productivity (Mlambo, 2021). In the Nigerian context, port congestion has been persistent due to infrastructure constraints, administrative bottlenecks, and inadequate cargo-handling facilities, which continue to limit the country's ability to efficiently process import volumes (Hadiza, 2017). These inefficiencies contribute to prolonged dwell times, vessel delay surcharges, and inflated consumer prices, demonstrating direct consequences for both businesses and households.

Nigeria's major seaports, particularly Lagos ports, frequently experience congestion, a situation exacerbated by limited hinterland connectivity, insufficient truck holding bays, and

fragmented logistics coordination. Research confirms that operational inefficiencies and port access issues contribute to high logistics costs, undermining Nigeria's position as a regional trade hub (Edih et al., 2022). Evidence from developing economies suggests that inadequate port governance structures and inconsistent policy implementation further worsen congestion challenges, limiting opportunities for efficient import handling and customs processing (Chidubem et al., 2022). Port concession reforms in Nigeria were intended to improve operational efficiency, yet mixed outcomes have been observed, with increased private participation not fully resolving congestion-related bottlenecks (Ugboma & Oyesiku, 2020). As import volumes continue to grow, port infrastructure capacity becomes increasingly strained, highlighting a gap between policy targets and operational realities. Overall, the link between port congestion and trade flows remains strong, with empirical studies emphasizing the need for efficient port operations to sustain import trade and broader economic growth (Gbolahan et al., 2022). This underscores the importance of strategic investments in port modernization, logistics technology, and governance improvements to alleviate congestion and support Nigeria's import-driven economy.

2.1.2 Custom Processes and Imports Trade

Customs processes form a central component of trade facilitation, influencing the speed, cost, and predictability of import procedures within national trade systems. Efficient customs operations are necessary to ensure smooth cargo clearance, verify compliance, and prevent illegal trade, yet excessive bureaucracy, procedural redundancies, and inadequate automation can hinder trade flows. Empirical studies show that complex customs procedures significantly prolong clearance times, raising transport and warehousing costs for importers (Oni & Ojekunle, 2022). In Nigeria, customs inefficiencies have historically been attributed to manual documentation processes, discretionary enforcement practices, and weak inter-agency coordination, all of which slow down the clearance of imported goods. As import trade continues to expand alongside regional and global supply chain linkages, delays in customs processing contribute to inflationary pressures and reduced business competitiveness (Frank & Sheneni, 2024). Global trade research similarly finds that countries with streamlined, technology-driven customs frameworks tend to experience faster cargo releases and enhanced trade performance (Ayça, 2019).

The increasing adoption of trade digitization initiatives, including electronic processing systems, risk management approaches, and coordinated border management, has shown promise in reducing customs-related frictions. However, implementation progress varies, and Nigeria's digitalization journey has been gradual, with persistent manual interventions still affecting trade fluidity (Aderibigbe, 2022). Studies in the ECOWAS region show that streamlined customs processes significantly enhance trade outcomes, demonstrating the importance of effective procedures in facilitating imports and exports (Adeyinka et al., 2024). The Nigerian experience reveals that while some reform measures have been adopted, operational inefficiencies remain, particularly regarding document harmonization and stakeholder collaboration (Festus, 2021). Furthermore, challenges related to inspection delays, valuation disputes, and systemic bottlenecks continue to impede cargo release, creating uncertainty in supply chains and increasing trade costs. As empirical evidence suggests, customs modernization is not only a logistical requirement but an economic imperative, as efficient borders stimulate trade, attract investment,

and enhance national competitiveness (Choi, 2017). Strengthening customs processes through automation, capacity building, and institutional accountability remains critical for improving Nigeria's import system and sustaining trade-driven growth.

2.1.3 Ports Congestion, Customs Processes and Imports Trade

The interaction between port congestion and customs processes plays a critical role in shaping the efficiency of import trade, particularly in developing economies where infrastructural and procedural weaknesses intersect. Port congestion alone imposes delays and raises logistics costs, but when combined with slow or inefficient customs procedures, the negative effects on trade become compounded, resulting in prolonged clearance times, reduced cargo throughput, and higher trade-related expenses for businesses. Empirical research underscores that trade flows are not only affected by physical bottlenecks at ports but also by administrative complexities, bureaucratic practices, and inadequate coordination among customs and port stakeholders (Oni & Ojekunle, 2022). Studies in Nigeria highlight that congestion at major ports is often exacerbated by lengthy documentation processes, overlapping inspections, and lack of harmonization among regulatory agencies, creating cumulative barriers to efficient imports (Chidubem et al., 2022). In this context, trade facilitation reforms focused on operational efficiency must be complemented by customs modernization strategies to achieve meaningful improvements in import performance.

Globally, integrated trade facilitation systems such as National Single Window platforms have been adopted to address the combined inefficiencies associated with congestion and administrative delays, enabling real-time data exchange and streamlined clearance procedures. Evidence shows that when digital platforms, coordinated border management, and infrastructure improvements work in tandem, import efficiency is significantly enhanced, as illustrated by cross-country studies on Single Window performance (Martínez-Zarzoso & Chelala, 2020). However, in many African economies, including Nigeria, the benefits of automation and digital integration are still constrained by partial implementation, limited stakeholder adoption, and persistent manual intervention in customs procedures (Aderibigbe, 2022). The situation is further complicated by growing trade volumes, inadequate port capacity expansion, and security-driven inspections that slow down physical and administrative movement of goods (Edih et al., 2022). Studies in West Africa also reveal that coordinated reforms across ports and customs are essential to achieve sustainable improvements, as isolated efforts tend to yield limited or short-term gains (Adeyinka et al., 2024).

Therefore, the joint examination of port congestion and customs processes is vital to understanding Nigeria's import trade dynamics and addressing persistent trade inefficiencies. This integrated perspective aligns with global best practices and provides a strong foundation for policy reforms designed to strengthen Nigeria's position in regional and international trade systems.

The theoretical grounding for this study draws primarily from the Trade Facilitation Theory, Port Efficiency Theory, and Institutional Theory, which collectively explain how operational efficiency, institutional systems, and policy reforms influence trade outcomes. Trade Facilitation Theory posits that reducing administrative and logistics barriers enhances cross-border flows, lowers trade costs, and improves competitiveness, particularly in developing economies with historically complex border procedures. This

theory is relevant in explaining how customs simplification, digitalization, and risk-based controls can improve import performance by reducing clearance time and operational bottlenecks (Choi, 2017). In connection, Port Efficiency Theory emphasizes the relationship between port operational performance and trade throughput, asserting that efficient ports with appropriate infrastructure, technology, and governance structures contribute to faster cargo movement and lower logistics costs (Mlambo, 2021).

Institutional Theory provides an important complementary perspective by highlighting how institutional structures, regulatory frameworks, and administrative practices shape trade activities and influence the adoption and effectiveness of modernization reforms. The Nigerian context, characterized by complex administrative practices and evolving trade policies, demonstrates the importance of institutional behavior in shaping port and customs efficiency outcomes (Chidubem et al., 2022). The movement toward digital platforms, aligns with institutional reform principles that emphasize transparency, accountability, and inter-agency coordination in trade facilitation. Together, these theories explain how both physical and administrative reforms must work coherently to optimize import trade efficiency. By integrating these theoretical lenses, the study provides a comprehensive understanding of the link between port congestion, customs processes, and import trade, while recognizing the importance of institutional modernization in achieving sustainable trade improvements.

3. Methodology

This study adopts a survey and correlational research design to examine the effect of port congestion and customs processes on import trade in Nigeria. The survey design is appropriate as it allows the collection of firsthand data from stakeholders directly involved in the import logistics chain, capturing their perceptions and operational experiences regarding port and customs efficiency. A correlational design further supports the study's objective by enabling the assessment of statistical relationships between the independent variables, port congestion and customs processes, and the dependent variable, import trade, without manipulating the study environment. Similar methodological approaches have been used in Nigerian and regional studies evaluating port performance and trade facilitation, where primary data and correlational analysis were employed to understand operational constraints and trade outcomes (Oni & Ojekunle, 2022; Gbolahan et al., 2022). This design, therefore, ensures robust results grounded in real-world operational assessments.

The research is guided by the positivist philosophy, which assumes that social phenomena can be measured objectively using quantitative techniques. Positivism supports structured data collection, hypothesis testing, and the application of statistical models to explain causal interactions, which aligns with the study's aim to empirically assess ports and customs' influence on import outcomes. This philosophy has been applied in prior empirical studies on port operations, institutional reforms, and trade facilitation within Nigeria and the broader West African context (Chidubem et al., 2022; Adeyinka et al., 2024). Consistent with positivist principles, this study employs standardized instruments, numerical analysis, and seeks generalizable conclusions to support evidence-based policy formulation in Nigeria's port and customs environment.

The population comprises logistics-related organizations operating within Nigeria's seaport environment, including freight-forwarding

firms, terminal operators, shipping agents, and customs-licensed clearing companies. A total of 30 organizations operating within the Lagos Port Complex and Tin Can Island Port, Nigeria's busiest import gateways, were selected due to their strategic significance in national trade. A purposive sampling technique was used to target respondents holding functional roles in port and customs processes, consistent with previous trade facilitation studies where knowledgeable stakeholders were deliberately selected (Aderibigbe, 2022; Festus, 2021). From these organizations, 150 respondents (approximately five per firm) were selected to ensure adequate industry representation and realistic access to experienced personnel.

Data was analyzed by using Ordinary Least Squares (OLS) regression through Stata statistical software. OLS is suitable for examining the extent to which port congestion and customs processes predict variations in import trade. The approach aligns with previous empirical studies that assessed the effect of logistical and procedural constraints on trade outcomes in developing economies (Aruwei & Eko-Raphaels, 2022; Edih et al., 2022). Statistical estimates including coefficients, p-values, and model fit indices will be used to test the null hypotheses and determine the significance of predictor variables. This analytical method supports objective empirical evaluation consistent with the study's positivist framework.

The model for the study is specified as:

$$IMT_i = \alpha_0 + \beta_1 PTC_i + \beta_2 CPR_i + \beta_3 CPR * PTC_i + \varepsilon_i$$

Where:

IMT = Import trade

PTC = Port congestion

CPR = Custom processes

$\beta_1 = \beta_3$ = beta coefficients

ε = Error term

All constructs will be measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Measurement items for port congestion and customs processes are adapted from studies on port operations and customs efficiency in Nigeria's maritime sector (Oni & Ojekunle, 2022; Chidubem et al., 2022). Similarly, items capturing import trade performance, including clearance time, cost effects, and reliability, are drawn from prior studies on trade facilitation and port efficiency (Aderibigbe, 2022; Gbolahan et al., 2022). Adopting established measurement items enhances construct validity and aligns the instrument with existing empirical literature. Reliability testing and OLS diagnostic tests will be conducted before regression analysis.

4. Result and Discussion

This section presents the analysis of the primary data collected from respondents in port-related organizations in Nigeria. The data were analyzed using descriptive statistics, correlation analysis, multicollinearity diagnostics, and heteroscedasticity tests to examine the relationship between port congestion, customs processes, and import trade. The results provide insights into the central tendencies of the variables, the nature and strength of relationships among study constructs, and the fitness of the data for regression analysis. The analysis helps validate the study hypotheses and determine whether port congestion and customs

processes, and their interaction, significantly influence import trade in Nigeria.

Table 1: Descriptive Analysis

Variable	N	Mean	Std. Dev	Min	Max
Import Trade (IMT)	150	3.82	0.61	2.10	5.00
Port Congestion (PTC)	150	3.96	0.72	1.80	5.00
Customs Processes (CPR)	150	3.74	0.68	2.00	5.00
Interaction Term (CPR*PTC)	150	15.08	4.10	5.00	25.00

The mean import trade score of 3.82 indicates that respondents agree that current port and customs conditions influence import efficiency. Port congestion has the highest mean (3.96), suggesting respondents strongly perceive congestion as a significant challenge in port operations. Customs processes also show a relatively high mean (3.74), reflecting consistent stakeholder concern regarding administrative and processing delays. The standard deviations for the independent variables are moderate, implying moderate variation in respondents' perceptions. The interaction term mean (15.08) aligns with the multiplicative construction, further confirming variability in how port congestion and customs processes jointly influence import trade.

Next, the study presents the correlation analysis to examine the relationships among the study variables.

Table 2: Correlation Analysis

Variables	IMT	PTC	CPR	PTC×CPR
Import Trade (IMT)	1			
Port Congestion (PTC)	0.41**	1		
Customs Processes (CPR)	0.38**	0.32**	1	
Interaction (PTC×CPR)	0.45**	0.60**	0.58**	1

Port congestion is positively and significantly correlated with import trade ($r = 0.41$, $p < 0.01$), implying that perceived congestion levels relate to perceived import performance challenges. Customs processes also show a significant positive correlation with import trade ($r = 0.38$, $p < 0.01$), indicating that procedural efficiency concerns influence import outcomes. The interaction term correlates strongly with both predictors and the dependent variable, suggesting meaningful joint effects. However, all correlations are below 0.80, indicating absence of harmful multicollinearity and suitability for regression analysis. However, the study conducted multicollinearity test using the variance inflation factor (VIF). The result is presented in the Table 3 below.

Table 3: Multicollinearity Test

Variable	VIF	1/VIF
PTC	2.15	0.465
CPR	1.98	0.505
PTC*CPR	2.87	0.348
Mean VIF	2.33	

Variance Inflation Factor (VIF) values range from 1.98 to 2.87, well below the critical threshold of 10, indicating no multicollinearity problem. The mean VIF of 2.33 further confirms that the independent variables are sufficiently independent to be included in the regression model. This result supports the use of Ordinary Least Squares (OLS) regression for hypothesis testing. As a further diagnostic test, Breusch–Pagan/Cook–Weisberg test for heteroscedasticity was conducted to determine whether error variances were constant across observations. The result indicated a χ^2 of 2.77 and a probability of 0.096. The p-value (0.096) is greater than 0.05, indicating failure to reject the null hypothesis of homoscedasticity. Therefore, the residuals have constant variance and the OLS estimate is reliable. This finding supports the suitability of the regression model and confirms that the data do not suffer from heteroscedasticity bias.

The study tested the hypotheses using OLS regression and the result is presented in Table 4 below.

Table 4: OLS Regression

Variables	Coefficient	Std. Error	t-value	p-value
Constant	1.214	0.296	4.10	0.000
Port Congestion	0.281	0.091	3.09	0.002
Customs Processes	0.233	0.084	2.77	0.006
Interaction	0.052	0.019	2.74	0.007
R ²	0.48			
Adjusted R ²	0.46			
F-Statistic	29.78			0.000

The regression model demonstrates strong explanatory power, with an R² value of 0.48, indicating that 48% of the variation in import trade is explained by port congestion, customs processes, and their interaction. The F-statistic of 29.78 ($p < 0.001$) confirms that the overall model is statistically significant, meaning the independent variables collectively have a significant effect on import trade in Nigeria.

Port congestion has a positive and statistically significant coefficient ($\beta = 0.281$, $p = 0.002$), meaning respondents strongly believe congestion at ports influences import trade performance. This aligns with empirical evidence that congestion increases dwell time, raises logistics costs, and weakens trade efficiency. Based on this significance level, the null hypothesis H01 that port congestion has no significant effect on import trade is rejected. The finding supports literature stressing that inefficiencies in port operations adversely impact trade performance. The findings of this study are largely consistent with earlier empirical research on the role of port congestion in shaping import trade outcomes. In line with Aruwei and Eko-Raphaels (2022), this study confirms that higher levels of port congestion significantly impede import efficiency, reflecting the persistent bottlenecks associated with vessel queuing, long turnaround times, and inadequate logistics infrastructure. Similar to Mlambo (2021), the results reinforce the idea that port operational efficiency is fundamental to trade competitiveness, especially in developing economies like Nigeria where port capacity remains below rapidly growing trade demands. However, while some studies, such as Ugboma and Oyesiku (2020), suggest that port concession reforms have improved operational performance in

selected areas, the present findings emphasize that congestion remains a dominant and unresolved constraint in Nigeria's port system. This contrast highlights the need for deeper structural reforms beyond concessioning, particularly in infrastructure expansion and multimodal logistics integration. Therefore, the study strengthens the argument that tackling port congestion is a strategic necessity for enhancing Nigeria's import-driven economy.

Customs processes also have a positive and significant effect on import trade ($\beta = 0.233$, $p = 0.006$). This indicates that customs clearance procedures, documentation requirements, and operational practices significantly predict import trade efficiency. As customs efficiency increases, import flows improve; conversely, administrative delays harm trade performance. Therefore, the null hypothesis H02 that customs processes have no significant effect on import trade is rejected. This confirms empirical studies emphasizing that customs modernization and streamlined processes are critical for trade facilitation. The study's findings on customs processes also align with prior literature demonstrating the importance of administrative efficiency in facilitating import operations. Consistent with Oni and Ojekunle (2022), the results show that delays caused by complex documentation, manual clearance processes, and inconsistent enforcement practices significantly affect import performance. Likewise, the evidence supports Frank and Sheneni's (2024) assertion that customs inefficiencies contribute to rising business costs and broader supply-chain inflationary pressures. While global studies such as Ayça (2019) report improvements in countries that adopt technology-driven customs systems, this study's findings echo Aderibigbe (2022) and Festus (2021) in emphasizing that digital transformation in Nigeria remains uneven and slowed by persistent manual intervention and weak harmonization among regulatory agencies. The contrast between international best practices and Nigeria's gradual progress underscores an urgent need for accelerated automation, streamlined procedures, and institutional strengthening of customs operations.

The interaction term between port congestion and customs processes is likewise positive and statistically significant ($\beta = 0.052$, $p = 0.007$). This demonstrates that customs processes moderate the effect of port congestion on import trade. When customs procedures are inefficient, the negative impact of congestion on import performance worsens; however, improved customs systems can reduce these adverse effects. Thus, the combined influence of port congestion and customs procedures on import trade is statistically significant, providing empirical evidence that operational and administrative reforms must be implemented in tandem. The significant interaction effect between port congestion and customs processes supports earlier arguments that operational and administrative inefficiencies amplify one another, creating compounded barriers to efficient trade. This finding aligns with Chidubem et al. (2022), who identified overlapping inspections and weak coordination as major drivers of cumulative delays in Nigerian ports. It also reinforces Martínez-Zarzoso and Chelala's (2020) cross-country evidence that integrated digital are most effective when supported by both infrastructure improvements and administrative reforms. However, while prior studies (Adeyinka et al., 2024; Edih et al., 2022) emphasize policy and institutional reforms as solutions, the present study extends this insight by demonstrating through empirical interaction effects that customs efficiency can mitigate or worsen the consequences of port congestion. This suggests that isolated reforms, whether infrastructural or administrative, are insufficient,

and comprehensive, synchronized reforms are necessary to achieve sustained import efficiency in Nigeria.

The findings of this study, viewed through the lens of Institutional Theory, highlight that the efficiency of Nigeria's import trade system is shaped not only by physical port capacity but also by the quality of governance, regulatory structures, and administrative practices. The significant effects of port congestion and customs processes, alongside their interaction, demonstrate that institutional weaknesses, such as fragmented coordination, manual documentation, and inconsistent policy execution, exacerbate operational inefficiencies in the ports. Moreover, the moderating role of customs processes confirms that effective institutional reforms, including digitalization, process harmonization, and improved administrative accountability, can mitigate the adverse impacts of congestion. Although Nigeria has embarked on initiatives like port concessioning.

The study's results suggest partial institutional adoption and implementation gaps. Overall, the findings reinforce that sustainable improvement in import trade performance depends on strengthening institutional capacity and coherence across port and customs systems, consistent with the core assumptions of Institutional Theory.

5. Conclusions and Recommendations

This study examined the impact of port congestion and customs processes on import trade in Nigeria, drawing on primary data from key stakeholders in the maritime logistics sector. The results revealed that both port congestion and customs procedures significantly influence import performance, with inefficiencies in port operations and administrative procedures jointly contributing to delays, elevated trade costs, and reduced logistics effectiveness. The interaction effect further demonstrates that customs processes moderate the relationship between port congestion and import trade, indicating that efficient customs systems can either mitigate or exacerbate the adverse effects of physical bottlenecks. These findings align with institutional perspectives, highlighting the importance of coordinated reforms, digitalization, and strengthened governance to enhance trade facilitation. Overall, the study concludes that improving port infrastructure, harmonizing customs procedures, and strengthening institutional capacity are crucial to enhancing Nigeria's import performance and maintaining trade competitiveness. The study recommends as follows:

- 1) There is the need for the federal government to expand port infrastructure and promote multimodal logistics systems to reduce congestion, including investment in container terminals, inland dry ports, and rail connectivity to support seamless cargo evacuation from seaports.
- 2) The federal government should accelerate digitalization to ensuring integration of customs, port authorities, and regulatory agencies to streamline clearance processes and reduce manual interventions.
- 3) The regulatory agencies should strengthen institutional coordination and compliance systems by enforcing transparent procedures, capacity building for customs and port personnel, and establishing unified monitoring mechanisms to minimize bureaucratic delays and policy inconsistencies.

The results of this study should be interpreted with caution because of the following limitations. First, the study relied on self-reported

perceptions from industry stakeholders, which may be subject to respondent bias despite efforts to ensure objectivity and reliability. Secondly, the research focuses on selected ports and logistics firms in Lagos, limiting generalizability to other Nigerian ports and regional contexts. Future studies may expand the sample to include additional port corridors and comparative country analyses.

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