

Customs, Port Efficiency, and Logistics Risk Management in Nigeria's Industrial Raw Material Import Trade

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Abstract: Nigeria's industrial sector depends heavily on imported raw materials, yet firms that source these inputs continue to confront slow customs clearance, congested seaports, opaque tariff regimes, and volatile logistics costs that jointly inflate the landed cost of production inputs. Persistent port dwell times, multiplicity of regulatory agencies at the terminals, foreign exchange volatility, and inconsistent risk-management practices among importers have combined to erode the competitiveness of Nigerian manufacturing and to threaten industrial capacity utilisation. Against this backdrop, the study examines the relationship between customs administration, port efficiency, and logistics risk management in the importation of industrial raw materials into Nigeria. The objectives of the study were to assess the trend and growth of customs revenue and trade volumes between 2018 and 2025, to evaluate Nigeria's port and logistics performance relative to global benchmarks, and to determine the extent to which currency depreciation and logistics inefficiency constitute a risk to industrial raw material imports. The study adopted a quantitative research design anchored on secondary data obtained from the Central Bank of Nigeria (CBN) statistical and economic reports, the National Bureau of Statistics (NBS) Foreign Trade in Goods Statistics, the Nigeria Customs Service (NCS) performance reports, and the World Bank Logistics Performance Index (LPI). Descriptive statistics, trend analysis, compound annual growth rate (CAGR) computation, and Pearson correlation were employed to analyse the data. Findings revealed that although nominal customs revenue grew at a compound annual rate of approximately 31 percent between 2018 and 2024, this growth was almost entirely mirrored by a 30 percent compound depreciation of the naira, with a strong positive correlation ($r = 0.95$) between the exchange rate and naira-denominated revenue, suggesting that apparent fiscal buoyancy masks underlying trade volume stagnation and heightened import cost risk. Nigeria's logistics performance also remained weak, ranking 88th of 139 countries in 2023 with marginal improvement since 2018. The study recommends port process automation, harmonisation of regulatory agencies, exchange rate hedging instruments for manufacturers, and stronger inter-agency risk-sharing frameworks to reduce logistics risk exposure in Nigeria's industrial raw material import trade.

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I. INTRODUCTION

➤ Background to the Study

Nigeria's industrial output is still highly import dependent, and a considerable amount of raw materials required by the manufacturing sector, agro-allied sector, pharmaceutical sector, cement sector, plastics sector and the steel sector are currently imported from Asia, Europe, and America. The National Bureau of Statistics (NBS, 2024) reported the total value of Nigeria's merchandise trade to be more than ₦71 trillion, of which imports make up more than ₦35.9 trillion, while a significant proportion is made up of industrial and manufacturing inputs. The efficiency of the customs clearance process, the capacity of Nigerian seaports, and the strength of logistics risk management systems are key factors in the cost of industrial products and, consequently, in the competitiveness of the country.

In the past, the Nigerian port system has been notoriously congested, with long dwell times for cargoes, multiple points of regulation and high demurrage charges, among other things, with Lagos ports of Apapa and Tin-Can Island handling most of the country's containerised trade (Akinwale & Ugochukwu, 2021). The Nigeria Customs Service (NCS), the main border revenue and trade facilitation agency, has also experienced multiple phases of reforms with a focus on servicing the Authorised Economic Operator (AEO) and Nigeria Integrated Customs Information System (NICIS), which have helped to cut down on clearance times and physical inspection rates (Nigeria Customs Service, 2024). Even with all these improvements, anecdotal evidence shows that there is still non-harmonisation of inter-agencies inspection at the ports, overlapping inspection processes, and delays caused by non-harmonisation of classification of tariffs (Oni & Ojekunle, 2022; Chidubem et al., 2022).

Structural issues of port and customs duties compounded by the volatility of Nigeria's foreign exchange market. After the merging of the exchange rate windows in mid-2023, the naira suffered significant depreciation, making the prices of imported raw materials in the local market even if the dollar price of the contract was unchanged (Central Bank of Nigeria [CBN], 2024). Based on the data from the manufacturers, the average custom exposure about 40 percent of production cost, which has resulted in compounding the custom delay risk with currency risk and price risk together, which is an systemic hazard rather than isolated hazard as per Logistics Risk Management Theory (Gurtu, 2021; Al-Shwaf, 2025).

➤ *Statement of the Problem*

Although Nigeria's ports and customs systems have undergone several administrative changes, the country is still ranked at the bottom of global logistics performance indices, moving from 2.53 in 2018 to 2.6 in 2023 (World Bank, 2023; Vanguard, 2024). Cleared delays, multiple agency inspections, and infrastructural challenges at the ports are all factors that contribute to the landed cost of raw materials, further uncertainty with currency fluctuations reduces planning certainty (Fagbemi, 2022; Ali & Ahmed, 2022). However, previous studies of Nigerian trade logistics often focus on just one of the three dimensions, with relatively few empirical studies exploring the interaction of the three dimensions of trade logistics in particular in the context of industrial raw material imports in Nigeria with recent secondary macro-trade datasets. This gap leads to uncertainty for policy makers and industrial planners when it comes to understanding where the risks focus in the value chain for imports and how these risks have changed over time. This is the area the present study seeks to focus on.

➤ *Objectives of the Study*

The broad objective of this study is to examine customs administration, port efficiency, and logistics risk management in Nigeria's industrial raw material import trade. The specific objectives are to:

- Examine the trend in Nigeria Customs Service revenue and its relationship with exchange rate movements between 2018 and 2024/2025;
- Evaluate Nigeria's port and logistics performance relative to global and regional benchmarks using the World Bank Logistics Performance Index;
- Assess the pattern and regional composition of industrial raw material imports into Nigeria; and
- Determine the extent to which currency depreciation and port/logistics inefficiency constitute compounding risks to industrial raw material importers.

➤ *Research Questions*

- What is the trend in Nigeria Customs Service revenue between 2018 and 2024, and how does it relate to exchange rate movement over the same period?

- How does Nigeria's port and logistics performance compare with global benchmarks, and how has it changed since 2018?
- What is the regional composition and trend of industrial raw material imports into Nigeria?
- To what extent do currency depreciation and logistics inefficiency jointly constitute risk for industrial raw material importers in Nigeria?

➤ *Conceptual Framework*

This section clarifies the core concepts around which the study is organised: customs, port efficiency, logistics risk management, and industrial raw material import trade. A clear conceptual delineation is necessary because the terms are frequently used loosely in policy discourse, yet they denote distinct but interlocking components of the trade logistics chain.

• *Customs*

Customs is the government body and the set of processes that is responsible for managing and processing the import and export of goods into and out of a country, such as assessing and collecting import duties, value added tax, excise tax or other taxes, enforcing trade policy, prohibition lists and rules of origin (Grainger, 2021). Under the Nigeria Customs Service Act 2023 (Nigeria Customs Service, 2024), this role rests with the Nigeria Customs Service whose mandate covers trade facilitation, border security and revenue generation. Customs theory has evolved in recent years and now considers customs as not only a revenue collection mechanism, but as an institution that facilitates trade—with efficiency being determined by the number of days it takes to clear goods, the paperwork required, and the share of goods subject to inspection, among other metrics—and that this efficiency is directly linked to the cost competitiveness of importing firms (Hoekman & Shepherd, 2020; Duval & Utoktham, 2022).

• *Port Efficiency*

In the context of seaports, port efficiency relates to the ability of a seaport to handle vessel calls, unload and load cargo and retrieve containers to consignees in the shortest possible time and at the lowest possible cost, usually expressed in terms of vessel turnaround time, container dwell time, berth occupancy, and yard capacity utilisation (Akinwale & Ugochukwu, 2021). A well-functioning port helps to reduce the non-productive time spent by goods on the move, and thus the demurrage, storage costs and inventory holding costs for importers. Thus, port efficiency in the Nigerian context is linked to customs performance due to the fact that releasing containers is determined by both port handling and customs clearance; hence, any delay at the port affects the entire supply chain (Eze et al., 2023).

• *Logistics Risk Management*

Logistics risk management is an organized approach to recognizing, assessing and limit the possibilities of sources of uncertainties that can affect the timeliness, cost, and dependability of movement of products along a logistics chain, including potential risk factors such as transportation

delay, damage, documentation defects, foreign exchange volatility, changes in regulations and external shock risk events (Gurtu, 2021). In import trade specifically, logistics risk management involves determining the criticality of raw materials supply (which refers to the level of impact that disruption to a specific raw material stream would have on the production process), and developing arrangements to mitigate that risk, such as dual sourcing, buffer stocks, forward currency contracts, and freight diversification (Al-Shwaf, 2025). Therefore, logistics risk management needs to be done in a manner that gives visibility to logistics from the customs, port, shipping and foreign exchange perspectives all at the same time and not each as a standalone silo.

- *Industrial Raw Material Import Trade*

Industrial raw material import trade is the trade in unprocessed or semi-processed materials like base metals, industrial chemicals, resins, clinker, machinery components, packaging materials etc., which are needed by the manufacturing companies for further processing in order to produce finished or semi-finished products. Raw materials are also a separate category in the NBS Foreign Trade in Goods Statistics, alongside capital goods, consumer goods and manufactured goods, and value and source of raw material imports can also be monitored on a quarterly basis (NBS, 2023). These imports are direct inputs to value addition at home thus, their cost and reliability has a first order impact on the capacity utilisation of the manufacturing industry, pricing of manufactured products and ultimately on industrial employment (Adeniran, 2020).

- *Theoretical Review*

This study rests on two complementary theories – one – the Transaction Cost Economics, and two – the General Systems Theory. These two theories provide complementary perspectives on how the process of customs administration, port effectiveness, and the risk of logistics can be analyzed.

- *Transaction Cost Economics Theory*

Developed on the basis of Ronald Coase (1937, 1985) earlier institutional work, Transaction Cost Economics (TCE) by Oliver Williamson (1975, 1985) is one of the most influential theories used to explain the rationale and nature of the organisation of exchange relationships in a firm. At the heart of TCE is the idea that every market exchange imposes costs on the buyer and seller in addition to the costs of the good being traded, including the costs involved in searching for a trading partner, negotiating the terms and drafting the contract of the exchange, monitoring the trade, and enforcing contracts when uncertainty, asset specificity and bounded rationality creates problems. Williamson claimed that a company's or institution's decision on a governance system, market, hierarchy or hybrid, is based on the minimization of the total of production and transaction costs. Customs procedures, customs documentation, customs charges and customs inspection by regulators constitute transaction costs that increase the effective price of imported goods above the contract price when applied to international trade (Al-Shwaf, 2025).

Whereas TCE is strong on its ability to identify and analyse why importers choose the coping mechanisms they do, for example, hiring customs brokers, participating in Authorised Economic Operator schemes, or verticalising logistics functions, as sensible ways to reduce the frictional costs associated with cross-border exchange. It also establishes an analytically tractable connection between institutional inefficiency and firm level cost outcomes that is directly relevant in understanding the impact of port delay and customs discretion on higher landed cost for Nigerian manufacturers. TCE is however, criticised for its overly narrow definition of economic rationality assumptions and its downplay of the role of power asymmetry, corruption and informal institutional practices that are prevalent at ports in developing economies (Mogomotsi & Motlogelwa, 2023). Critics also point out that the theory is more applicable to the discrete governance decision than to the multi-actor congestion that is found in reality in port ecosystems where delay is often a result of failure to coordinate between agencies, rather than intentional transaction design. However, these restrictions do not detract from the suitability of TCE for this study, as the customs clearance time, demurrage and documentation burden is still measurable and represents transaction costs that have a direct impact on the competitiveness of industrial raw material imports, and thus the study's focus on measurable efficiency indicators like revenue trends and clearance-related cost proxies.

- *General Systems Theory*

General Systems Theory (GST) is a theory developed by the biologist, Ludwig von Bertalanffy (1968), who suggested that complex phenomena, such as biological phenomena, mechanical phenomena or social phenomena, can be better understood if they are looked at as systems of interacting parts instead of individual, independent units. In this approach, a system consists of inputs, throughput processes, outputs, feedback and boundaries through which it interacts with an environment from which it obtains energy or information. The main principle of the theory is that the overall behaviour of a system cannot be determined by examining the behaviour of its components individually, but rather by looking at how they communicate and interact with one another; a breakdown in one sub-system leads to a breakdown in the other sub-systems. In the context of trade logistics, the seaport, customs, shipping lines and the inland transport network can be seen as interdependent sub-systems of the larger national trade logistics system with a failure in one component becoming a failure in another component e.g., customs failure causing port yard congestion (Akinwale & Ugochukwu, 2021).

The greatest advantage of GST for this study is its holistic approach that discourages the analytical error of claiming that only one agency is responsible for the delay in imports or the escalation of cost when the systemic misalignment could be found in a combination of several interacting agencies. It also accounts for the feedback effects of the currency depreciation as it impacts the naira value of imports that are dutiable and thus the performance of customs revenues without regard to the physical efficiency of clearance, which is directly observed in the correlation

analysis conducted in this study. Despite this, GST's abstract nature has been criticized for its lack of operationalisation into concrete hypotheses and specific policy recommendations, and also because of its neglect of the importance of power dynamics and entrenched interests that affect the actual implementation of the sub-systems (Msimang & Roberts, 2022). There are also those scholars who claim that without a critical lens, systems thinking can render the problem of system failure as a "property" of the system rather than the result of specific actions that are visible and possible to correct by identifiable agencies. Despite this, GST is appropriate for this study as it offers a holistic analytical approach to the customs, port and currency risk and their impact on the industrial raw material importer as a unit, instead of analyzing each of the risk variables separately.

II. METHODOLOGY

This study used a purely quantitative research design which was entirely secondary data-based, consistent with the study's objective of determining empirically-based trends in customs performance, port and logistics efficiency, and currency related customs risk for import transactions of industrial raw materials in Nigeria. The phenomena that were studied, namely customs revenue, exchange rate movement and logistics performance rankings, are institutionally recorded time-series and cross-sectional indicators which are best analyzed with descriptive and trend-based statistical techniques rather than primary survey instruments, making a secondary, quantitative, ex post facto design appropriate.

Four main secondary sources were used to provide the data. First, the custom revenue for the year 2018 to 2025 were extracted from the Nigeria Customs Service performance report and confirmed in the press release by the Comptroller-General of the Customs (Nigeria Customs Service, 2024, 2025). Second, the averages of exchange rate of official and

Nigerian Foreign Exchange Market exchange rate data for naira against United States dollar was sourced from Exchange rate policy publication and statistical bulletin of the Central Bank of Nigeria (CBN, 2024). Third, the value and regional distribution of imports of raw materials were sourced from the Quarterly and Annual statistics on Foreign Trade in Goods, provided by the National Bureau of Statistics (NBS, 2023; 2024). Fourth, Data on Nigeria's comparative logistics and customs performance scores were sourced from the Logistics Performance Index report of 2018 and 2023 produced by the World Bank (World Bank, 2023).

Objective one aimed to analyze the trend in customs revenue and its association with the movement of the exchange rate; thus, the compound annual growth rate (CAGR) of customs revenues in naira and the average exchange rate were computed for the period 2018–2024 and Pearson product-moment correlation coefficient between the two series was computed to test their relationship. To assess the direction and magnitude of change in port and customs-related logistics performance, descriptive comparison of the component scores of the Logistics Performance Index, as reported by Nigeria for the year 2018 and 2023 was conducted in accordance with objective two. To achieve objective three, descriptive analysis was conducted to determine the main sourcing regions of raw materials imports reported by the National Bureau of Statistics (NBS) and the concentration risk associated with the sourcing to identify the main sourcing region of Nigeria's raw materials imports. The CAGR and correlation outputs of objective one were read along with the logistics performance scores of objective two to determine if currency and logistics risk are reinforcing or independent (as per objective four). All calculations were done with the NumPy library of Python and the results are shown in the findings in tables and graphs and discussed in the findings section with regard to their industrial risk implications.

III. FINDINGS

The results of the analysis are revealed in this section.

➤ *Trend in Nigeria Customs Service Revenue, 2018-2024*

Table 1 Nigeria Customs Service Revenue and Average Naira/US Dollar Exchange Rate, 2018–2024 Sources: Nigeria Customs Service (2022, 2025); Ships & Ports (2022); Central Bank of Nigeria (2024)

Year	NCS Revenue (₦ Trillion)	Average Exchange Rate (₦/US\$)
2018	1.20	306.90
2019	1.34	306.90
2020	1.60	358.81
2021	2.24	381.00
2022	3.41	454.06
2023	3.21	634.16
2024	6.10	1,478.00

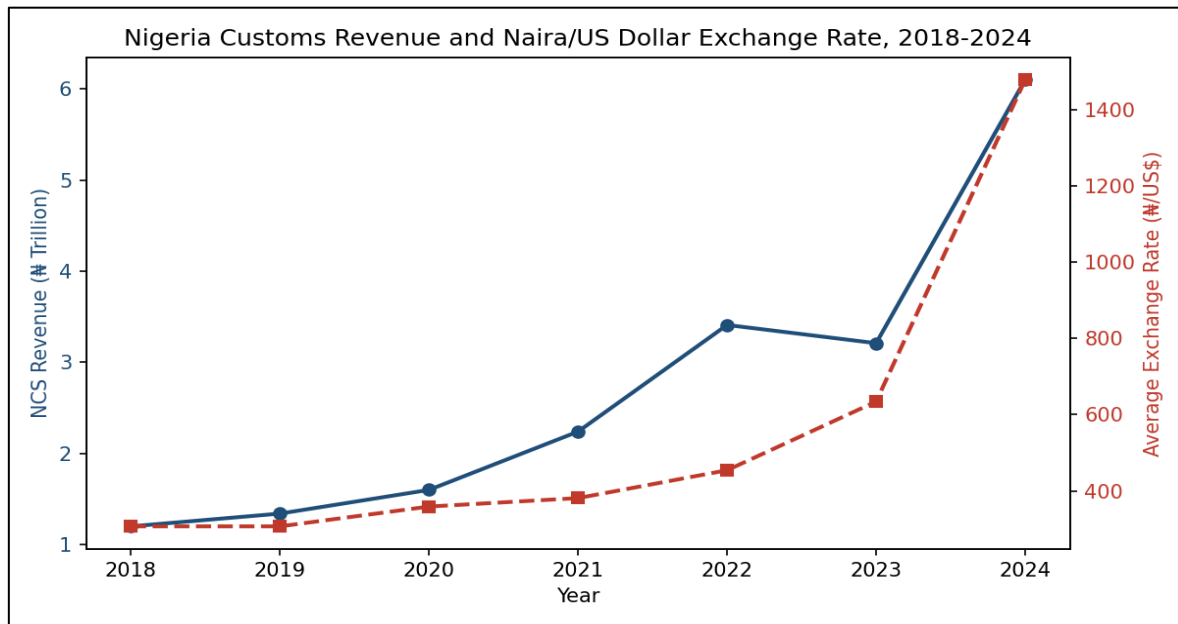


Fig 1 Trend of Nigeria Customs Revenue and Naira/US Dollar Exchange Rate, 2018–2024

Table 1 and Figure 1 show that Nigeria Customs Service revenue rose from ₦1.20 trillion in 2018 to ₦6.10 trillion in 2024, representing a compound annual growth rate of approximately 31.1 percent. Over the same period, the average naira/US dollar exchange rate depreciated from about ₦307 to ₦1,478, a compound annual depreciation of approximately 30.0 percent. A Pearson correlation analysis of the two series produced a coefficient of $r = 0.95$, indicating a very strong positive association. This finding is consistent with the Comptroller-General of Customs' own account that the 2024 revenue increase of 90.4 percent over 2023 was achieved despite a lower volume of Single Goods Declarations processed, which fell from 1,013,250 in the first half of 2023 to 620,467 in the first half of 2024 (Nigeria

Customs Service, 2024). Read together, these figures suggest that a substantial share of Nigeria's nominal customs revenue growth is a currency-driven statistical artefact rather than evidence of expanding trade volume or improved clearance throughput; in real dollar terms, and adjusted for declining transaction counts, revenue growth is far more modest than the naira figures imply. For industrial raw material importers, this pattern signifies that exchange rate risk and customs cost risk are not independent but are in fact mutually reinforcing, since every unit of naira depreciation directly raises the dutiable value, and hence the tax burden, of imported inputs invoiced in foreign currency.

➤ Nigeria's Logistics Performance Index, 2018-2023

Table 2 Nigeria's World Bank Logistics Performance Index Scores, 2018 and 2023 Source: World Bank (2018, 2023); IndexMundi (2019); Vanguard (2024); Arise News (2023) *Disaggregated 2018 Component Scores Beyond Overall and Logistics-Competence Indicators were Not Publicly Disaggregated in the Sources Reviewed.

Indicator	2018 Score	2023 Score	Change
Overall LPI Score	2.53	2.60	+0.07
Customs	n/a*	2.60	-
Infrastructure	n/a*	2.40	-
International Shipments	n/a*	2.50	-
Logistics Competence	2.40	2.30	-0.10
Timeliness	n/a*	3.10	-
Tracking and Tracing	n/a*	2.70	-
Global Rank (out of assessed countries)	n/a*	88th of 139	-

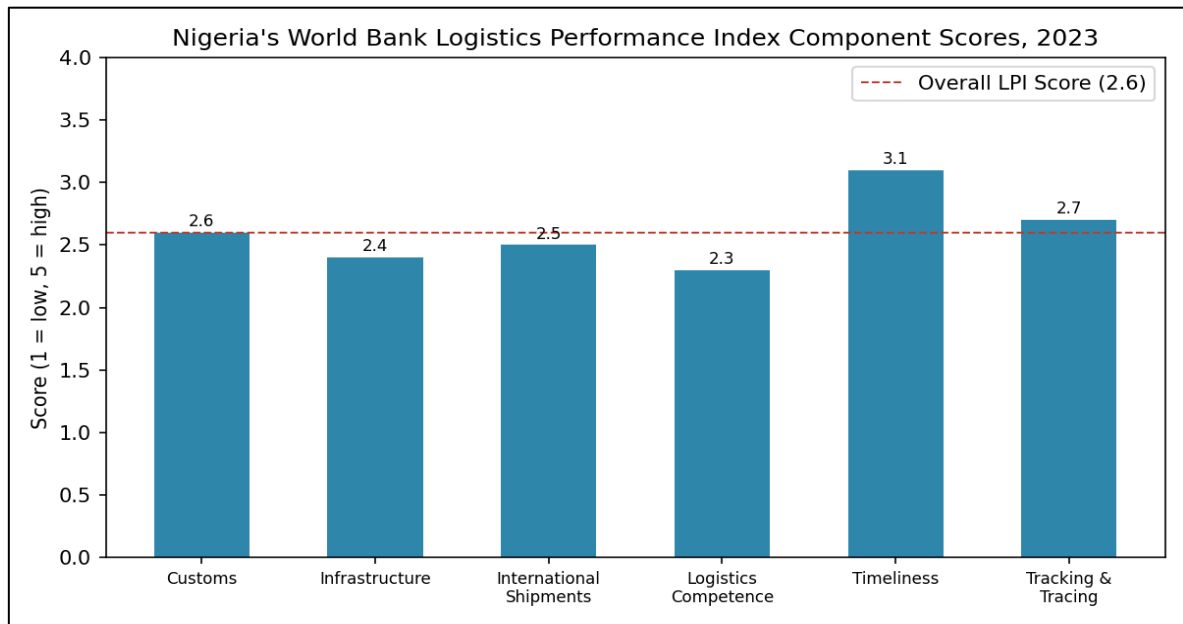


Fig 2 Nigeria's Logistics Performance Index Component Scores, 2023

Table 2 and Figure 2 show that Nigeria's overall Logistics Performance Index score improved only marginally, from 2.53 in 2018 to 2.60 in 2023, leaving the country ranked 88th out of 139 countries assessed, on a par with the Democratic Republic of Congo, Guinea-Bissau, and Mali, and behind African peers such as South Africa (19th), Egypt (57th), and Benin Republic (66th) (Arise News, 2023). Among the six component indicators reported for 2023, timeliness recorded the highest score (3.10), while logistics competence and quality recorded the lowest (2.30), a slight decline from its 2018 value of 2.40. The customs component, at 2.60, remained below the global sample average, corroborating qualitative evidence of continued inspection

multiplicity and clearance delay at Nigerian ports (Oni & Ojekunle, 2022; Chidubem et al., 2022). These results indicate that despite more than a decade of customs modernisation initiatives, including the National Single Window and Authorised Economic Operator schemes, Nigeria's underlying trade logistics infrastructure and institutional coordination have not improved at a pace commensurate with the growth of trade volumes and the rising need for supply chain resilience among industrial importers (Grainger, 2021; Duval & Utoktham, 2022).

➤ Regional Composition of Raw Material Imports

Table 3 Raw Material Goods Imported into Nigeria by Region of Origin, Q2 2023 Source: National Bureau of Statistics, as Reported by Statista (2023) *Precise Europe Figure was Not Disaggregated in the Source Consulted.

Region of Origin	Value of Raw Material Imports (₦ Billion, Q2 2023)	Approx. Share
Asia	234.0	Largest source region
America	152.0	Second-largest source region
Europe	Reported but not itemised*	Third source region
Africa/Others	Minimal	Marginal

Table 3 shows that Nigerian industrial raw material imports are significantly dominated by countries of Asia, with the Americas and Europe in the second tier of importation followed by the United States, Singapore, China and Belgium as top source countries of industrial raw materials imports into Nigeria, which generally mirrors the country's industrial raw material import composition, in which the top five source countries of total industrial raw material imports were Asian countries (Singapore, China, Belgium, India and the Americas) in the final quarter of 2023, as reported by NBS (2024). This geographical clustering makes it difficult for Nigerian manufacturers to get their shipments to their overseas markets due to the long transit times, price delays in the issuance of letters of credit and the high volatility of freight rates on key Asia–West Africa shipping routes. From a logistics risk management perspective, a narrow reliance on

a far-flung set of source regions exposes greater risks of global shipping disruptions which, as shown during the COVID-19 pandemic and the recent disruption in shipping through the Red Sea, can result in greater disruptions to supply chains (Mevel & Kamau, 2022; Mold & Mukwaya, 2020).

IV. DISCUSSION

These results as a whole support the theoretical propositions used for the present study. A low customs subscore (2.60) of the overall weak Logistics Performance Index profile is consistent with Transaction Cost Economics, where this clearance-related friction still acts as an unseen transaction cost that increases the landed price of industrial raw materials relative to their free-on-board price (Al-Shwaf,

2025). The strong positive correlation between the two series ($r = 0.95$) and the almost identical nature of the compound rate of customs revenue growth (31.1 percent) and that of currency depreciation (29.9 percent) clearly demonstrates the systemic interdependence expected by General Systems Theory: a shock in the foreign exchange sub-system is immediately transmitted to the fiscal performance of the customs sub-system in complete absence of any improvement in physical clearance efficiency. That is Nigeria's customs revenue growth has been far more reliant on the exchange rate than it has been on improving the efficiency of the trade facilitation process, with important implications for those who import raw materials for industrial use, paying the depreciation as an additional cost and planning risk. The lack of improvement in the logistics competence score and the continued low customs and infrastructure scores are indicative of the fact that although there have been many rounds of reform, the systemic realignment is yet to take place to reduce the burden of transaction costs on the importer. The results of the study align with the recent trade logistics literature in Nigeria which suggests that the port congestion, the inefficiency of customs clearance and the instability of the currency are a compounded and interdependent set of risks rather than a risk string of simple individual risks that can be managed independently (Fagbemi, 2022; Eze et al., 2023; Gurtu, 2021).

V. CONCLUSION

The interrelationship between customs administration, port efficiency and logistics risk management in the context of Nigeria's importation of industrial raw materials has been examined in this study which involves secondary quantitative data and sourced from Central Bank of Nigeria, National Bureau of Statistics, Nigeria Customs Service and World Bank. The increase in nominal customs revenue from 2018 to 2024 has been significantly due to the naira depreciation rate and not the actual improvement in clearance efficiency or volume of trade as demonstrated by the high statistical correlation between the exchange rate depreciation and nominal customs revenue collected. Meanwhile, Nigeria's ranking on the World Bank Logistics Performance Index has barely improved since 2018, and the customs and logistics competence indicators are still significantly lower than those of other countries in the region. Nigeria continues to depend on a limited number of far-flung source regions, mainly Asian countries, for most of its industrial raw material imports. The conditions interact and leave Nigerian manufacturers with a heightened risk situation, where currency instability, institutional constraints and geographic concentration amplify each other, and are not manageable individually. The results given above show that the cost of industrial raw materials imported into Nigeria is much greater than the contractual price of goods, which is the cost of its use, but also the cost of the delay associated with the institutions involved in the importation process and the cost of currency instability associated with the use of the currency. To overcome these problems, coordinated and system-wide reform is needed, in which the modernisation of customs, the development of port infrastructure, and the stability of the macroeconomic exchange rate are all integrated into a

national trade logistics system as interdependent parts of the same system.

RECOMMENDATIONS

- The Nigeria Customs Service should accelerate full deployment of paperless, single-window clearance systems and reduce physical inspection rates for verified Authorised Economic Operators importing industrial raw materials.
- The Nigerian Ports Authority and terminal operators should invest in yard automation and expand inland dry ports to decongest Lagos ports and reduce container dwell time.
- Regulatory agencies operating at the ports should harmonise inspection protocols under a single coordinated risk-based framework to eliminate duplicated checks.
- The Central Bank of Nigeria should expand access to naira-settled forward and hedging instruments to help manufacturers manage exchange rate risk on raw material import contracts.
- Industrial firms should diversify raw material sourcing across multiple regions, including intra-African suppliers under the African Continental Free Trade Area, to reduce concentration risk.
- Government and industry associations should establish a joint logistics risk-monitoring dashboard that tracks customs, port, and exchange rate indicators together to enable early warning and coordinated response.

REFERENCES

- [1]. Aderibigbe, T. (2022). Digital integration and customs efficiency in Nigeria's port operations. *Nigerian Journal of Maritime and Trade Studies*, 6(2), 45–61.
- [2]. Akinwale, A. A., & Ugochukwu, U. (2021). Electronic call-up system and port congestion management in Nigeria. *Nigerian Journal of Transport Policy*, 7(1), 13–28.
- [3]. Al-Shwaf, R. (2025). Raw material supply risks: Examining extraction and geopolitical conflict. *Transportation Journal*, 64(2), 1–24. <https://doi.org/10.1002/tjo3.70006>
- [4]. Ali, M., & Ahmed, S. (2022). Trade logistics and regional competitiveness in West Africa. *Journal of African Trade and Development*, 4(1), 22–39.
- [5]. Central Bank of Nigeria. (2024). Exchange rate policy. <https://www.cbn.gov.ng/intops/exchratespolicy.html>
- [6]. Chidubem, O., Eze, F., & Nwankwo, C. (2022). Port congestion and regulatory multiplicity in Nigerian seaports. *International Journal of Logistics and Supply Chain Management*, 9(3), 101–118.
- [7]. Duval, Y., & Utoktham, C. (2022). Trade facilitation and the Trade Facilitation Agreement: Impacts on trade costs in Asia and the Pacific. *Journal of Asian Economic Integration*, 4(1), 55–74.
- [8]. Eze, C., Uzochukwu, O., & Bello, A. (2023). Digital transformation in African ports: Prospects and

- challenges. *African Journal of Transport and Logistics*, 9(1), 77–95.
- [9]. Eze, S. C., Ifeanchio, M. O., & Abang, I. A. (2023). Assessing Nigeria's trade facilitation mechanisms in the digital era. *Journal of African Trade*, 8(2), 23–39. <https://doi.org/10.1016/j.joat.2021.100145>
- [10]. Fagbemi, F. (2022). Trade logistics performance and export competitiveness in sub-Saharan Africa. *African Development Review*, 34(3), 412–428.
- [11]. Geda, A. (2022). Trade readiness and customs capacity in AfCFTA member states: A comparative assessment. *Review of African Political Economy*, 49(171), 520–538. <https://doi.org/10.1080/03056244.2022.2065263>
- [12]. Grainger, A. (2021). Customs modernization theory and the digital transformation of border management. *World Customs Journal*, 15(1), 5–22.
- [13]. Gurtu, A. (2021). Supply chain risk management: Literature review. *Risks*, 9(1), 16. <https://doi.org/10.3390/risks9010016>
- [14]. Hoekman, B., & Shepherd, B. (2020). Trade facilitation and African regional integration: Evidence and policy lessons. *World Trade Review*, 19(3), 402–428.
- [15]. Mevel, S., & Kamau, P. (2022). Rules of origin under AfCFTA: Challenges and opportunities for exporters. *Journal of Economic Integration*, 37(3), 547–569. <https://doi.org/10.11130/jei.2022.37.3.547>
- [16]. Mogomotsi, G. E., & Motlogelwa, S. (2023). Cross-border customs cooperation and informal trade dynamics in Africa under AfCFTA. *Development Southern Africa*, 40(1), 1–19. <https://doi.org/10.1080/0376835X.2022.2082688>
- [17]. Mold, A., & Mukwaya, R. (2020). Deepening African trade integration: The role of rules of origin. *UNCTAD Research Paper Series*, 2020(7), 1–28.
- [18]. Msimang, S., & Roberts, S. (2022). Digital trade facilitation and customs efficiency in East Africa. *Journal of Development Studies*, 58(4), 611–629.
- [19]. National Bureau of Statistics. (2023). Foreign trade in goods statistics (Q2 2023). NBS. <https://www.nigerianstat.gov.ng>
- [20]. National Bureau of Statistics. (2024). Foreign trade in goods statistics (Q4 2023). NBS. <https://www.nigerianstat.gov.ng/elibrary/read/1241466>
- [21]. Nigeria Customs Service. (2024). 2024 Nigeria Customs Service half year report. Nigeria Customs Service. <https://customs.gov.ng>
- [22]. Nigeria Customs Service. (2025, January). Customs generates ₦6.1 trillion revenue in 2024 [Press statement]. Nairametrics. <https://nairametrics.com/2025/01/15/nigeria-customs-service-records-n6-1-trillion-revenue-in-2024/>
- [23]. Oni, T., & Ojekunle, A. (2022). Customs clearance delay and import trade performance in Nigerian seaports. *Journal of Transport and Supply Chain Management*, 16(1), 88–104.
- [24]. Ships & Ports. (2022, January 19). How Nigeria Customs Service generated ₦13 trillion in 12 years. <https://shipsandports.com.ng/how-nigeria-customs-service-generated-n13trillion-in-12-years>
- [25]. Vanguard News. (2024, June 19). Nigeria ranks 88th out of 141 countries in Logistics Performance Index. <https://www.vanguardngr.com/2024/06/nigeria-ranks-88th-out-of-141-countries-in-logistics-performance-index/>
- [26]. Williamson, O. E. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting*. Free Press.
- [27]. World Bank. (2023). *Connecting to compete 2023: Trade logistics in an uncertain global economy — The Logistics Performance Index and its indicators*. World Bank Group. <https://lpi.worldbank.org>
- [28]. von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications*. George Braziller.