IMPACT OF SEAPORT OPERATIONAL EFFICIENCY ON NIGERIA'S SUSTAINABLE INDUSTRIAL DEVELOPMENT

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Abstract: This study investigates the influence of seaport operational efficiency on Nigeria's Sustainable Industrial Development, filling a gap in the literature. The study examines the effects of variations in operational benchmark and seaport delays across seven clearing processes: Form M processing, PAAR processing, custom duty assessment, duty payment, container examination, customs release, and container delivery on sustainable industrial development in Nigeria. The study's data was gathered through a questionnaire survey of manufacturing firms listed on the Nigerian Stock Exchange (NSE) between 2010 and 2019. The study population consisted of 31 firms, including consumer goods, healthcare, and industrial goods manufacturers. These companies regularly import cargoes via Lagos seaports and are required to submit a minimum of 20 import declarations annually. The study utilized the census sampling technique, utilizing all the population as a sample. Out of the 31 questionnaires distributed, 74% were filled and returned. The results of the error correction model (ECM) estimation approach show that in the log-run, standard time and delay in Form M processing negatively and significant impacted on industrial development of the sampled firms. Similarly, standard time and delay in custom duty assessment, examination, and customs release have an indirect influence on sustainable industrial development indicators like turnover, cost of sales and profit respectively. Addressing these delays is crucial for improving turnover, profitability, and promoting sustainable industrial development in Nigeria.
Keywords: Operational-efficiency, sustainable-development, bench-marking, seaport-clearance,

1. Introduction

Efficient seaport operations are crucial for global economic integration, enabling access to resources, improved competitiveness, and scale economies, thereby supporting enterprises. The World Bank and other international financial organizations are promoting effective seaport operations to reduce costs, enhance competitiveness, and foster sustainable industrial development in the globalized world. The World Bank is implementing measures to enhance national logistics performance, including seaports, through logistics performance evaluations and ease of doing business studies. Seaports are enhancing their value in the rapidly evolving global economy by implementing the recommendations from these measures. Reports show a significant link between the growth of economic activities and the operational efficiency of Nigerian seaports. For instance, a study by Delloitte's (2017) revealed a 400% increase in container throughput from 400 twenty-foot equivalent units in 2006 to 1.6 million in 2014 due to increased ship traffic and cargo throughput. Similarly, Nigeria has significantly reduced vessel turnaround time from 30 days to less than a day, benefiting seaport users such as shipping lines, suppliers, distributors, manufacturers, and the economy. The reports indicate that enhanced operational efficiency of seaports can potentially contribute to sustainable industrial development in Nigeria.

The African Development Bank (2021) has emphasized the importance of Nigerian seaports' effectiveness in enhancing their competitiveness with Ghana and Cote D'voire. The World Bank (2023) highlighted the significance of efficient seaports, including those in Nigeria, in reducing transportation costs and enhancing supply chain resilience for sustainable development. The United Nations Conference on Trade and Development (UNCTAD, (2024) highlights Nigerian seaports' role in facilitating trade, promoting industrial development, and ensuring sustainability, efficiency, and resilience through the import and export of equipment and raw materials. Enhancing the efficiency and effectiveness of seaport operations could be a beneficial strategy for promoting sustainable industrial development.

The Manufacturers Association of Nigeria (MAN, 2022) suggests that despite private sector involvement in improving seaport operations, the government should prioritize improving cargo clearance. Since the government's goal in deregulating the seaport is to increase efficiency, it is expected that it will adopt and implement appropriate policies to foster efficient cargo clearance. This is because the government requires the administrative clearance of all imported goods,

including industrial inputs upon arrival at the seaport for national security and import levy administration. Table 1 provides an overview of the import and export processes, timelines, and stages of clearance at Lagos seaports. The table outlines benchmarks for seaport cargo clearance, emphasizing that standard compliance will demonstrate the effectiveness of cargo clearance.

Sadly, despite the deregulation strategy and the support of World Bank Logistics, reports indicate that the cargo clearance procedure at the Nigerian seaport is considered to be incredibly inefficient. For example, Nigeria was ranked 90th out of 139 countries in the World Bank's 2023 Logistics Performance Index report, indicating a high level of inefficiency in customs clearing performance. Consider the scenario investigated and reported by Oni et al. (2022), in which customs and other authorities manually execute 70% of container inspections, resulting in lengthy wait times for businesses to be cleared. The performance of Nigeria appears to be at variance with sustainable industrial growth, based on a comparison of these investigations with international reports and guidelines (World Bank, 2023; African growth Bank, 2021).

Studies suggest Nigeria should address poor industrialization pragmatically to diversify its economy and foster sustainable industrial development (Adofu et al., 2015; Anyaehie and Areji, 2015; Ekpo 2018). Anyaehie and Areji (2015) argued that the Nigerian economy's significant reliance on petroleum exports makes it susceptible to global oil market fluctuations. Nigeria needs economic viability for sustainable development, requiring efficient resource use, innovation, and competitiveness policies to foster diversity, resilience, and adaptability to changing circumstances.

Table 1. Import and Export Processes and Timelines to Complete Stages of the Clearance Process at Lagos Seaports

S/N	Definition of the process	Initialization	Conclusion	Timeline
1	FORM M Authorized by the Customs Department	Approved bank validates the e-form M application, upload it to NCS, and verify it.	Register e-Form M	24 Hours
2	PAAR issue	Approved banks collect data, upload, and verify final papers' scanned versions on the NCS PAAR Portal.	Generate PAAR	24 Hours
3	Release from Examination	Placement of container for physical examination	Release by customs	48 Hours
4	Endorsement of NXP Form for export by custom	Submission of NXP form by exporter or agent	Endorsement and dispatch to exporter or Agent	24 Hours

Source; Nigerian Customs Service, Apapa Command, (2023)

Studies suggest that sustainable development and sustainable manufacturing can effectively address challenges by promoting economic diversification, macroeconomic stability, and human development. Adofu et al. (2015) assert that high productivity is crucial for economic growth and improving living standards, highlighting manufacturing as a more dynamic sector. The transfer of productive resources to more dynamic sectors would potentially lead to economic growth. Dogara (2018) emphasized the manufacturing sector's critical role in Nigeria's economic growth and development, indicating its ongoing policy adoption and concern for development. Victoria (2019) regards the manufacturing sector as a very important sector in an economy because it has the capacity to foster wide and efficient backward and forward linkages among other sectors of the economy. Ekpo (2018) found that the manufacturing sector empowers and diversifies the economy's real sector for growth and development. The research suggests that sustainable industrial growth should be prioritized through effective policies and regulatory frameworks for thriving manufacturing.

The literature investigates the link between seaport operations and the economic sustainability of sustainable development. Omoke et al.'s (2016) study revealed that the gross registered tonnage of a vessel significantly impacts the Nigerian economy. Munim and Schramm's (2018) study reveal that improved port infrastructure enhances logistics performance, leading to increased seaborne trade and consequently, higher economic growth. Sun and Yu's (2019) study reveal a long-term equilibrium relationship between port logistics and regional economic growth, with cargo throughput and container throughput showing bidirectional causality and unidirectional causality. Similarly, Xu et al. (2019) found that effective port logistics development can promote regional economy development in Zhanjiang City, with container throughput significantly impacting total output value.

The literature on sustainable industrial growth in Nigeria has not adequately explored the impact of seaport operations efficiency, specifically the variations between standard time and delays across seven clearing stages. The current study emphasizes the need for a comprehensive analysis of seaport cargo clearance dynamics to prevent potential delays and operational variations that could impede a nation's growth. This study explores the impact of operational benchmark variations and seaport delays on Nigeria's Sustainable Industrial Development, filling a gap in existing literature.

The study examines the standard time and delay across seven clearing processes: Form M processing, PAAR processing, custom duty assessment, payment, container examination, customs release, and container delivery.

This study is organized as follows: following the introduction, Section two provided a detailed explanation of the research methodology and data used. Section three had the empirical findings and discussion, while Section four has the conclusion and suggestions for future research and policymakers.

2. Methodology

2.1. Theoretical Framework

2.1.1. Total Logistics Cost Theory

This paper is based on the Total Logistics Cost Theory or Total Cost Concept. The Total Logistics Costs Theory suggests that logistics costs should be assessed and minimized based on the total cost of logistics, rather than focusing on individual components or functions. Initially presented by Bowersox, Closs, and Cooper (2002), this concept has gained widespread acceptance and been used in supply chain management and logistics ever since. According to the concept, the costs of seaport operations including inventory, warehousing and storage, order processing and administration, and materials handling are some of the components that make up the total logistics costs.

Following the Total Logistics Cost Theory, logistics managers should aim to minimize the overall costs of logistics rather than concentrating only on individual cost components because lowering one component could result in a rise in another. Since the costs of port operations, including freight clearance, seaport administration, materials handling, warehousing, and storage, are part of a company's logistics costs, it is only reasonable that these costs can significantly impact a company's performance, affecting turnover and profits. The study thus suggests a relationship between turnover, sales costs and profits of Nigerian enterprises, and seaport cargo clearance, and concludes that the Total Logistics Cost hypothesis is the best suitable hypothesis for the analysis.

Since the study examines standard time and delay across seven clearing processes: Form M processing, PAAR processing, custom duty assessment, payment, container examination, customs release, and container delivery, the empirical model is stated as:

$$sid_{i,t} = \sigma_0 + \pi_1^{'} frm_{i,t} + \pi_2^{'} paar_{i,t} + \pi_3^{'} acd_{i,t} + \pi_4^{'} pcd_{i,t} + \pi_5^{'} ex_{i,t} + \pi_6^{'} cr_{i,t} + \pi_7^{'} dlv_{i,t} + \upsilon_{i,t} \quad (1)$$

Where: *sid* denotes a vector of sustainable industrial development measured by turnover, cost of sales and profits; *frm* is a vector of Form M processing regarding standard time and delay; *paar* denotes a vector of PAAR processing concerning standard time and delay; *acd* is a vector of assessment of custom duty as regards standard time and delay; *pcd* denotes a vector of payment of custom duty with regard to standard time and delay; *ex* represents container examination as to standard time and delay; *cr* is a vector of custom release in view of standard time and delay; *dlv* denotes a vector of container delivery as to standard time and delay; σ_0 is a constant; $\pi_1', \pi_2', \pi_3', \pi_4', \pi_5', \pi_6', \pi_7'$ are vector of container clearing time's parameters, *i* is surveyed companies; *t* is time; and υ is disturbance term.

2.2 Data Description and Sources

In this study, a survey research design was used. Data for the study was collected via a questionnaire survey of industrial companies that were listed between 2010 and 2019 on the Nigerian Stock Exchange (NSE). Thirty-one businesses representing consumer goods, healthcare, and industrial goods made up the research population. Companies that often import goods through the seaports in Lagos must file at least 20 import declarations a year to be included in the study. The study used a sample drawn from the entire population using the census sampling approach.

Out of the 31 questionnaires distributed, 74% were filled and returned. The survey gathers data about the respondents' age, industry, educational background, and work history. Other details include the rate of business turnover, sales costs and profits, the difference between the average and standard times, the reasons for delays, the average clearance rate, the cost, the steps in the process, the agencies involved, the documents, and the mode of operation (computerized or manual).

In order to investigate the impact of operational benchmark variations and seaport delays on Nigeria's sustainable industrial development, the study took into account both independent and dependent variables. While operational benchmark fluctuations and seaport delays are independent variables, sustainable industrial development is the dependent variable. As an indicator for operational benchmark variations and seaport delays, the study examined seaport standard time

and delay across seven clearing processes: Form M processing, PAAR processing, custom duty assessment, payment, container examination, customs release, and container delivery. Additionally, manufacturing firms' turnover, sales cost, and profitability were examined in order to measure sustainable industrial development.

3. Results and Discussion

This section of the study provides the estimated results of how standard time and clearance delays affect the turnover, sales cost, and profitability of manufacturing enterprises in order to assess Nigeria's sustainable industrial development. The study reported the findings of descriptive statistics and correlation analysis before the results of both short- and long-term estimations.

3.1 Summary Statistics

In this subsection, Table 3.1 presents the descriptive statistics of variations in operational benchmark and seaport delays, as well as Nigeria's sustainable industrial development. The table included the mean, maximum, minimum, standard deviation, kurtosis, and skewness values for each variable. On average, the sustainable industrial development variables' profit, cost of sales, and turnover are N62,359,843,188, N46,656,350,909, and N25,497,368,514 respectively.

It is observed that the average profit of the sampled firms during the study periods shows an improvement in the business operations of the manufacturing industry. However, the series of the variables has several variances because the standard deviation of each variable is greater than its mean value. Furthermore, the three indicators of sustainable industrial growth are suitably slanted to the extent that the skewness values are positive. Each Kurtosis series is not generally dispersed since profit is leptokurtic and turnover and cost of sales are platykurtic.

For each of the seven clearing processes—Form M processing, PAAR processing, customs duty assessment, customs duty payment, container examination, customs release, and container delivery—standard time and delay pertaining to seaport delays and operational benchmark variations were considered. With 48 and 20 hours as the maximum and 24 and 24 hours as the minimum, the typical processing time and delay for Form M is 25.04 and 60.57 hours. Additionally, processing PAAR takes an average of 34.44 and 81.43 hours at regular time and delay, respectively. They have maximum values of 72 hours and lowest values of 24 and 48 hours.

and 144 hours, respectively. The standard time and delay for assessing custom duty are 24 and

Table 3.2: Descriptive statistics

Variables		**Mean**	**Std Dev.**	**Maximum**	**Minimum**	**Kurtosis**	**Skewness**	**Obs.**
Business Performance	Turnover	62359843188	70248911210	2.8404E+11	1460728000	1.749	1.541	230
	Cost of sales	41821513216	46656350909	2.004E+11	604670000	1.795	1.500	230
	Profit	20431789321	25497368514	1.2815E+11	684666000	3.859	1.963	230
Processing of Form M	Standard Time	25.044	4.9050	48	24	18.471	4.507	230
	Delay	60.571	26.373	120	24	0.216	1.031	210
Processing of PAAR	Standard Time	34.435	15.581	72	24	0.279	1.211	230
	Delay	81.143	27.254	144	48	-0.479	0.595	210
Assessment of Custom Duty	Standard Time	24	0	24	24	-	-	230
	Delay	50.4	28.367	96	0	-0.496	-0.749	200
Payment of Custom Duty	Standard Time	26.087	6.777	48	24	6.767	2.951	230
	Delay	46.588	30.302	96	0	-1.049	-0.424	170
Examination	Standard Time	51.130	28.639	120	24	1.674	1.612	230
	Delay	57.818	33.754	120	0	-0.462	0.039	220
Customs Release	Standard Time	39.652	15.226	72	24	-0.668	0.446	230
	Delay	78	42.956	192	0	0.528	0.681	200
Delivery	Standard Time	32.348	15.226	72	24	1.353	1.624	230
	Delay	69.714	31.415	120	0	-0.484	-0.081	210

Source: Author's computation (2023).

50.4 hours on average, but the minimum and maximum hours are 0 and 24 and 96 and 24 hours, respectively.

Furthermore, the average duration and delay for paying customs duties are 26.09 and 46.59 hours, 48 and 96 hours, and 24 and 0 hours, respectively. There is a maximum of 120 hours and a minimum of 24 and 0 hours for the cargo examination, with an average standard time and delay of 51.13 and 57.82 hours, respectively. For customs release, the typical average time and delay are 39.65 and 78, respectively. Hours ranged from 24 and 0 at the minimum to 72 and 192 at the maximum. The maximum and lowest hours for cargo delivery are 72 and 120 and 0 hours, respectively, while the average standard time and delay are 32.35 and 69.71 hours.

The standard deviation value, together with the maximum and minimum values, further illustrates the broad range of variance between the series of seaport clearance times. It is also not regularly distributed because the Kurtosis values are not equal to 3. Of the variables, three are leptokurtic, and the rest are platykurtic. In a similar vein, most of the series are positively skewed, with only three variables being skewed right.

3.2 Correlation Matrix

The partial correlation coefficients between seaport delay indicators and operational benchmark variations, as well as Nigeria's sustainable industrial development, are shown in Table 3.2. The indicators of seaport delays, operational benchmark variances, and Nigeria's sustainable industrial development all have positive and negative correlation coefficients of varying magnitudes.

Specifically, the standard time of PAAR processing, custom duty assessment, custom duty payment, examination, and delivery has a negative correlation with turnover, cost of sales, and profit, while the timing of their delays has a negative correlation with Nigeria's sustainable industrial development indicators; standard time and customs release delay have a positive correlation with turnover, sales cost, and profit, respectively; however, the standard processing time for Form M processing delays has a negative correlation with profit, but a positive correlation with turnover and sales cost.

Table 3.2: Correlation Matrix

		Turnover	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
Cost of sales(1)		0.886	1															
Profit(2)		0.854	0.790	1														
Processing of Form M	Standard Time(3)	0.017	0.060	-0.063	1													
	Delay(4)	-0.254	-0.258	-0.227	-0.107	1												
Processing of PAAR	Standard Time(5)	-0.116	-0.092	-0.154	0.515	0.026	1											
	Delay(6)	0.220	0.258	0.136	0.320	0.414	0.174	1										
Assessment of Custom Duty	Standard Time(7)	-0.264	-0.197	-0.157	0.069	0.032	0.213	0.013	1									
	Delay(8)	0.300	0.326	0.233	0.175	-0.459	0.259	0.080	0.310	1								
Payment of Custom Duty	Standard Time(9)	-0.218	-0.229	-0.186	-0.066	-	0.507	-	0.091	-	1							
	Delay(10)	0.429	0.443	0.370	0.210	-0.525	0.289	-0.024	-0.194	0.893	-	1						
Examination	Standard Time(11)	-0.271	-0.293	-0.213	-0.202	0.030	0.321	-0.245	-0.267	-0.194	0.744	-0.267	1					
	Delay(12)	0.084	0.100	0.044	-0.064	-0.571	0.215	-0.354	0.141	0.507	0.020	0.591	-0.072	1				
Customs Release	Standard Time(13)	0.242	0.262	0.194	0.454	-0.336	-0.267	0.287	0.087	0.102	-0.318	0.071	-0.344	-0.263	1			
	Delay(14)	0.250	0.275	0.189	0.225	-0.013	0.226	0.726	0.242	0.442	-	0.261	-0.519	-0.104	0.281	1		
Delivery	Standard Time(15)	-0.199	-0.216	-0.156	-0.117	0.267	0.585	0.048	-0.131	0.102	0.318	-	0.171	0.093	-0.566	0.259	1	
	Delay(16)	0.097	0.079	0.125	0.016	0.168	0.302	0.250	0.134	0.235	-	0.303	0.206	0.016	-0.440	0.224	0.498	1

Source: Author's computation (2023).

Additionally, the correlation coefficient values of the indicators of sustainable industrial development show a strong relationship with one another. Furthermore, the correlation between seaport delays and the series used to measure operational benchmark variations is relatively weak, having both positive and negative coefficients. Although the indicators of sustainable industrial growth have a significant direct link with one another, multicollinearity is avoided since the variables are not calculated in the same regression equation.

Thus, the problem of multicollinearity is avoided in the empirical analysis. The estimation results of the correlation analysis, however, are merely preliminary assessments that will be verified in section 3.3 following the consideration of all other variables influencing standard time and delays.

3.3 Short-Run and Long-Run Estimates

In this section, the study also uses the error correction model (ECM) estimation approach to empirically evaluate the short- and long-term impacts of seaport delays and operational benchmark variations on Nigeria's sustainable industrial development. The lag lengths of the variables were selected using the Akaike Information Criterion (AIC) to ensure a sufficient degree of freedom. Three was chosen as the AIC. Additionally, Tables 3.3 and 3.4 display the results of the short-run and long-run. Table 3.3 indicates that parameter estimates for the error correction factors are negative for all models of sustainable industrial development indicators.

In terms of magnitude, the turnover, cost of sales, and profit models have short-term error correction coefficients of -0.063, -0.060, and -0.130, respectively. As a result, the error correction term's probability value is less than 5% for the profit model and greater than 5% for the cost of sales and turnover models. The empirical models of sustainable industrial development in terms of turnover, cost of sales, and profit correct their short-run disequilibrium at a speed of adjustment of 6.28%, 6.02%, and 13.03%, respectively, to return to the long-run equilibrium, according to the values of the error correction term.

The results additionally prove the presence of a long-term association between operational benchmark variations and seaport delays on Nigeria's sustainable economic development. As a result, it confirmed the equilibrium nature of the models' long-term validity.

Table 3.3: Short-Run Estimates

Variables		**Dependent Variables:** Shippers' Business Performance		
		Δ(log(turnover))	**Δ(log(cost of sales))**	**Δ(log(profit))**
Δ(Processing of Form M)	Standard Time	0.0194***(0.0073)	0.0267**(0.0109)	0.0197**(0.0092)
	Delay	0.0006(0.0011)	0.00003(0.0011)	0.0026(0.0021)
Δ(Processing of PAAR)	Standard Time	-0.0059*(0.0032)	-0.0081*(0.0048)	-0.0048(0.0038)
	Delay	0.0009(0.0014)	0.0008(0.0014)	-0.0012(0.0023)
Δ(Assessment of Custom Duty)	Standard Time	-16.35(18.524)	-12.378(18.114)	-49.329(32.340)
	Delay	0.0019**(0.0010)	0.0013(0.0010)	0.0030**(0.0015)
Δ(Payment of Custom Duty)	Standard Time	0.0045(0.0053)	-0.0017(0.0076)	0.0091(0.0081)
	Delay	-0.0026**(0.0012)	-0.0020*(0.0012)	-0.0050**(0.0020)
Δ(Examination)	Standard Time	0.0001(0.0008)	0.0007(0.0010)	0.00001(0.0010)
	Delay	0.0010(0.0008)	0.0013*(0.0008)	0.0013(0.0014)
Δ(Customs Release)	Standard Time	-0.0019(0.0019)	-0.0032*(0.0018)	-0.0023(0.0033)
	Delay	-0.0006(0.0007)	-0.0007(0.0008)	0.0004(0.0011)
Δ(Delivery)	Standard Time	-0.0004*(0.0027)	0.0033(0.0035)	-0.0058*(0.0035)
	Delay	-0.0010***(0.0006)	-0.0020***(0.0008)	-0.0005(0.0009)
Error Correction Term (-1)		-0.0628(0.0233)	-0.0602*(0.0233)	-0.1303***(0.0282)
Constant		391.9(444.5)	296.7(434.7)	1183.5(776.0)
Adjusted R-squared		0.2597	0.2527	0.1943
F-Statistics		1.8724	1.7641	2.4291
Prob.(F-Stat)		(0.0281)	(0.0423)	(0.0029)

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Source: Author's computation (2023).

As for the short-run coefficients in Table 3.3, the results show that standard time in Form M processing positively and significantly affects turnover, profit, and cost of sales—all of which are indicators of sustainable industrial development. According to the results, a 10% change in standard time for processing Form M will lead to increases in turnover, cost of sales, and profit of 0.19%, 0.27%, and 0.20%, respectively. At the 5% level, the Form M processing delay has a positive impact on sustainable development, but it is not statistically significant.

Standard time has a negative impact on sustainable industrial development in relation to PAAR processing, even though this effect is only statistically significant for turnover and cost of sales at the 10% level. Indicators of sustainable industrial development are not statistically impacted by PAAR processing delays. Nevertheless, turnover, cost of sales, and profit are all negatively impacted by the custom duty assessment delay, even if it is not statistically significant at the 5% level. A delay in custom duty assessment has a statistically negligible effect on sales costs at the 5% level, but it significantly affects turnover and profit.

Table 3.4: Long-Run Estimates

Variables		**Dependent Variables:** Shippers' Business Performance		
		log(turnover)	**log(cost of sales)**	**log(profit)**
Processing of Form M	Standard Time	-0.1207***(0.0227)	-0.1076***(0.0263)	-0.1447***(0.0185)
	Delay	-0.0379***(0.0042)	-0.0428***(0.0048)	-0.0288***(0.0026)
Processing of PAAR	Standard Time	0.0388***(0.0091)	0.0368***(0.0105)	0.0396***(0.0080)
	Delay	0.0347***(0.0047)	0.0401***(0.0055)	0.0210***(0.0035)
Assessment of Custom Duty	Standard Time	-1232.5***(82.933)	-1276.4***(96.117)	-1103.8***(40.460)
	Delay	-0.0182***(0.0043)	-0.0178***(0.0050)	-0.0278***(0.0025)
Payment of Custom Duty	Standard Time	-0.0928***(0.0193)	-0.1109***(0.0224)	-0.0954***(0.0112)
	Delay	0.0369***(0.0047)	0.0390***(0.0054)	0.0471***(0.0032)
Examination	Standard Time	-0.0086**(0.0034)	-0.0084**(0.0040)	-0.0013(0.0020)
	Delay	-0.0205***(0.0026)	-0.0228***(0.0030)	-0.0202***(0.0015)
Customs Release	Standard Time	-0.0198***(0.0068)	-0.0270***(0.0079)	-0.0077*(0.0039)
	Delay	-0.0139***(0.0027)	-0.0167***(0.0031)	-0.0065***(0.0022)
Delivery	Standard Time	0.0259***(0.0080)	0.0277***(0.0093)	0.0334***(0.0078)
	Delay	-0.0072**(0.0028)	-0.0097***(0.0033)	-0.0015(0.0017)
	Constant	29611.4***(1990.4)	30665.6***(2306.8)	26520.9***(971.0)
Adjusted R-squared		0.7999	0.7704	0.7748
F-Statistics		66.412	55.87	235.65
Prob.(F-Stat)		(0.0000)	(0.0000)	(0.0000)

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Source: Author's computation (2023).

Furthermore, the short-term effects of standard time in custom duty payment on sustainable industrial development are insignificant. As for delay in custom duty payment, its adverse effect on turnover and profit is significant at 5% level but its negative impact on cost of sales is significant at 10% level. Concerning the standard time in container examination, its direct impact on industrial development is not significant statistically at 5% level.

However, at the conventional level, turnover and profit are not significantly influenced by container examination delays; instead, they only have a 10% impact on sales costs. In the meantime, there is no significant effect of customs release delays on the development of sustainable manufacturing. Similarly, standard time in custom release has an insignificant effect on profit and turnover, but at 10% levels, it has significant negative effects on cost of sales. Additionally, while the direct effect on cost of sales is not statistically confirmed, the study reveals a significant negative impact of container delivery on turnover and profit at a standard time of 10%. During the periods under study, container delivery delays had an insignificant impact on profit but a negative and significant effect on turnover and sales costs.

The long-term relationship between operational benchmark variations as well as seaport delays and sustainable industrial development for 23 Nigerian manufacturing companies is shown in Table 3.4 for the years 2010–2019. The industrial development of the sampled firms was found to be negatively and significantly impacted by standard time and delay in Form M processing. Similarly, standard time and delay in custom duty assessment, examination, and customs release have an indirect influence on sustainable industrial development indicators like turnover, cost of sales and profit respectively. However, PAAR processing was found to positively impacted turnover, cost of sales and profit of the 23 sampled manufacturing firms over the periods, 2010-2019. In the case of standard time and delay in custom duty payment, the former indirectly influenced industrial development variables while the latter had a positive impact on sustainable industrial development. All are statistically significant at the conventional level. As for container delivery, the standard time and delay were found to have a direct and an indirect impact on the three business performance variables respectively. To end with, the adjusted R-squared shows that operational benchmark variations and seaport delays explains about 79.9%, 77.04% and 77.48% total variations in turnover, cost of sales and profit correspondingly. In addition, the F-statistics

show that there is overall significance relationship between operational benchmark variations and seaport delays and sustainable industrial development.

4. Conclusion

The study examined how operational benchmark variations and seaport delays affect Nigeria's sustainable industrial development by examining variables like turnover, sales cost, profitability, standard time (benchmark), and seaport clearance delays. The study finds that the industrial development of the investigated firms in the log-run is significantly impacted by standard time and delay in Form M processing. Standard time and delay in custom duty assessment, examination, and release have an indirect effect on firms' profit, turnover, and cost of sales indicators.

The study indicates that longer delays can lead to decreased firm turnover, sales costs, and profitability, and vice versa. The decrease in turnover is anticipated to lead to decreased revenue, increased costs, and reduced competitiveness, which could hinder sustainable industrial development. Longer delays will also affect sales costs by increasing labor, transportation, inventory holding, opportunity costs, and reputational harm. Reduced revenue, increased costs, decreased efficiency, and opportunity costs can significantly affect a firm's profitability. Addressing these delays is vital for enhancing turnover, profitability thereby promoting sustainable industrial development in Nigeria.

This study suggests the following recommendations

i. The customs benchmark must be strictly followed.
ii. The root cause of delays must be thoroughly investigated and necessary corrections made.
iii. Firms that are erring should be penalized.
iv. The ease of tracking in the clearance system can significantly decrease delays.

REFERENCES

Adofu, I., Taiga, U.U., and Tijani, Y. (2015) Manufacturing sector and economic growth in Nigeria (1990-2013), *Donnish Journal of Economics and International Finance* 1(1), 001-006

African Development Bank (2021). Overcoming binding constraints to manufacturing for intra-regional trade, African Development Group. Retrieved fromafdb.org/en/news.

Anyaehie, M. C., & Areji, A. C. (2015). Economic Diversification for Sustainable Development in Nigeria. *Open Journal of Political Science*, 5, 87-94.

Bowersox, D. J., Closs, D. J., & Cooper, M. B. (2002). Supply chain logistics management. McDraw-Hill

Delloitte, (2017). Public private partnership as an anchor for diversifying the Nigeria economy Lagos Container Terminals Concession as a Case Study. Retrieved from https://www2delloitte.com

Dogara E. J., (2018) The impact of manufacturing on economic growth in Nigeria: an autoregressive distributed lag model approach, *International Journal of Economics and Management* 5 (8) 14-19.

Ekpo, U. N., (2019) Rekindling Nigeria's manufacturing sector performance for economic growth and development, *International Journal of Latest Research in Humanities and Social Science* (IJLRHSS), 2 (1), 10-24.

Manufacturers Association of Nigeria (2022). Manufacturers decry impediments in cargo clearing procedures at seaports. Retrieved from nigeriamaritime360.

Munim Z. H. and Schramm H. (2018) The impacts of port infrastructure and logistics performance on economic growth: the mediating role of seaborne trade *Journal of Shipping and Trade* 3:1 DOI 10.1186/s41072-018-0027-0

Nigerian Customs Service (2023). Import and export Timelines. Retrieved from https//customs.gov.ng

Nigerian Stock Exchange NSE (2020). Listed companies. Retrieved from https://ngxgroup.com>equeties>

Omoke, V., Aturn A.C, Nwaogbe O.R, Ajiboye, A.O., and Diuqwu L., (2018). Analysis of the impact of port operations on Nigerian economy: A Focus on Apapa seaport. Retrieved from Research Gate, https://www.researchgate.net>3298

Oni B. G. and Ojekunle J. A., (2022). Determining the effects of customs procedure on cargo clearance time in Nigerian seaports. International Journal of Social Sciences and Humanities Studies, 1 (3), 23-35.

Sun, J.H. and Yu, S.Q. (2019) Research on Relationship between Port Logistics and Economic Growth Based on VAR: A Case of Shanghai. *American Journal of Industrial and Business Management*, 9, 1557-1567.

United Nations Conference on Trade and Development (2024). Review of maritime transport, United Nations, Geneva.

Victoria A. S. (2019), Determinants of manufacturing sector performance and its contribution to Gross Domestic Product in Nigeria, Munich Personal RePEc Archive. Retrieved from https://mpra.ub.uni muenchen.de/93293/MPRA Paper.

World Bank (2023). Sustainable developments in shipping and ports. World Bank Group. Retrieve from worldank.org/en/topic

World Bank, (2023) Logistics Performance Index LPI. Retrieved from https://www.worldbank.org>news