IMPORTANCE OF PORT-SUPPLY CHAIN INTEGRATION IN ENHANCING MANUFACTURING CAPACITY UTILISATION (MCU) IN NIGERIA

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ABSTRACT
The utilisation of manufacturing capacity at 57% holds significant implications for Nigerian consumers. This paper explores the impact of integrating port supply chains on manufacturing capacity utilisation in Lagos and Ogun States, Nigeria. Secondary sources were employed to collect data on container port throughput (PT) and manufacturing capacity utilisation (MCU) from the Nigerian Port Authority and the Manufacturers Association of Nigeria between 2014 and 2021. The study reveals a positive relationship between Tin Can Port PT and Food and Beverages MCU, indicating that a unit change in Tin Can Island port throughput results in a 35.4% increase in manufacturing capacity utilisation. Conversely, a percentage change in Apapa port throughput only leads to a 0.08% increase in manufacturing capacity utilisation. The findings suggest that port supply chain integration can enhance MCU, provided the policy is tailored to specific ports. The study emphasises the pivotal role of effective policies in boosting Nigeria's manufacturing capacity utilisation, particularly in the food and beverages sector.

Keywords: Port, supply chain, integration, capacity utilisation, manufacturing
JEL code: L95; L91; L98

1. INTRODUCTION

Manufacturing capacity utilisation refers to the optimal use of resources to achieve maximum output in a sector or company at any given time. Manufacturing capacity is crucial for enhancing productivity and expanding a sector or firm's production. Adeyemi and Olufemi, (2016) advocated for capacity utilisation in developing economies like Nigeria where capital is scarce and mostly

under-utilised. Economic theories like economies of scale suggest that cost-minimising firms increase capital utilisation if the return to scale decreases with increased production.

Typically, we measure manufacturing capacity utilisation at 100% efficiency. Afroz and Roy (1976) suggested that in developing economies, capacity utilisation may not exceed 90% due to setbacks in production processes like inadequate labor monitoring, delays, and machine breakdowns. The capacity level determines the additional output achieved by utilising existing capital and defines a firm's capacity expansion for a targeted output level (Afroz and Roy, 1976). The capacity utilisation rate is directly linked to employment levels but inversely related to per unit capital service cost. Thus, increased capacity utilisation decreases the average production cost (Afroz and Roy, 1976). Ike Ibeabuchi, a chemical manufacturer, reported an analysis on Business Day on July 1, 2020, aligning with Afroz and Roy's assertions (1976). XYZ, a leather shoe producer based in Aba, Nigeria, is being utilised. The company's utilisation is 77 per cent, as the machines can produce 300 pairs of shoes, but only 230 pairs are produced annually. Company XYZ is experiencing a higher production cost for producing 230 pairs. The production cost of a pair of shoes is 4,347 naira, assuming it costs one million. If Company XYZ produces 300 pairs of shoes, the cost per pair will be 3,333 naira. By implication, consumers from Company XYZ are paying an additional 1,014 naira for each pair of expensive shoes.

In 2019, Nigeria's manufacturing capacity utilisation stood at 56.8%. In 2018, the percentage increased to 57.75% from 57.13% in 2017. In 2016, manufacturing capacity utilisation (MCU) reached 51.74%, slightly above the 49.32% recorded in 2015. In 2014 and 2013, MCU were 53.08 and 55.06 %, respectively (Manufacturers Association of Nigeria, 2014-2019). Nigerian consumers are significantly impacted by the 57% industrial capacity utilisation rate. With a 57% capacity utilisation, the XYZ Company will produce 171 pairs of shoes instead of 300 pairs. The production cost of one million naira has increased the price of a pair of shoes from 3,333 to 5,847. This means Nigerian customers spend more on Nigerian items, with the manufacturing sector operating at 57% capacity utilisation. The analysis suggests that consumer poverty is on the rise. The urgency is to devise a strategy to enhance the utilisation of the manufacturing sector in Nigeria.

Research indicates that supply chain integration is a proven method for enhancing efficiency and productivity. Chen et al. (2009) emphasised the importance of supply chain integration, which involves restructuring activities to streamline processes, allocate, align, and utilise internal and external resources. The restructuring process aims to decrease redundancy and unnecessary activities within and across firms. The U.S. Agency for International Development-USAID (2010) highlights the benefits of supply chain integration, including enhanced customer service and reduced costs. Hoey (2019) highlights the benefits of supply chain integration, which enhances collaboration, reduces disconnect, and promotes cross-operational visibility, flexibility, waste reduction, and centralised information sharing. Zhang et al (2022) suggest that integrating various aspects of the supply chain enhances operating performance and financial performance of companies involved in the integration process. The potential of supply chain integration suggests that port supply chain integration could be a strategic approach to enhance Nigerian manufacturing capacity utilisation.

Studies have demonstrated a correlation between the port sector and companies' supply chains. For instance, Carbone and Martino (2003) undertook research to examine how and whether port operators can handle the problem of deeper integration, working on the presumption that the more integrated the players are, the more competitive the chain will be. Discovering the need for more

significant interaction with the main clients of port operators is crucial once a port achieves the status of a distribution and production interface. Bichou and Gray's (2004) research validated ideas from supply chain and logistics management for measuring port performance.

Zhang and Lam (2014) studied port strategy from a supply chain perspective. They discovered that the free port and world-class customs clearance status offer the port a sustainable and considerable advantage in shortening transit time. The port is thus a strategic fit for shipping high-value and time-sensitive cargo and should pursue an agile strategy for a responsive supply chain. Again, Han (2018) investigated the impact of port supply chain integration on port performance and found that customer integration has an important effect on quality performance. Furthermore, cost performance positively impacts both ship calls and cargo throughput.

Khaslaskaya, and Roso (2019) investigated how a business such as a supply chain can benefit or enhance its outcomes of cost, responsiveness, security, environmental performance, resilience and innovation by integrating a dry port. The actors discovered that they perceive the six desirable supply chain outcomes - cost, responsiveness, security, environmental performance, resilience, and innovation - which can be enhanced by integrating a dry port into the supply chains. However, they particularly emphasise the importance of inter-modality and rail transportation. The literature indicates that integrating port supply chains has received minimal attention in enhancing manufacturing capacity utilisation in Nigeria. Empirical studies suggest that supply chain integration in Nigeria could improve the capacity utilisation of the Nigerian manufacturing sector. This paper investigates the impact of port supply chain integration on manufacturing capacity utilisation in Lagos and Ogun States, Nigeria. There are five sections in the paper. The second section, which reviews research that connects port supply chain integration to manufacturing capacity utilisation, follows the introduction. Section three describes the methodology, while Section four presents the conclusions and relevant discussions. Section five reports the findings and suggestions.

2. LITERATURE REVIEW

2.1 The role of ports in manufacturing performance

Research has established the causative relationship between the port and manufacturing sectors (Zhang et al., 2015; Munim and Schramm, 2018; Sun and Yu, 2019; Xu et al., 2019; and Song, 2019; Oni et al., 2023). For instance, Zhang et al. (2015) investigated the impacts of emerging global manufacturing trends on Hong Kong Port development. They found that relocation of manufacturing to Western Guangdong benefits Hong Kong Port, while other relocation destinations make Hong Kong Port less attractive or even irrelevant.

Munim and Schramm (2018) investigated the impacts of port infrastructure quality and logistics performance on economic growth. They found that port infrastructure contributes to better logistics performance, leading to higher seaborne trade and economic growth. Sun and Yu (2019) considered the relationship between port logistics and regional economic growth and discovered a long-term equilibrium relationship among variables. They also found that cargo and container throughput, components of port logistics, have bidirectional causality. Furthermore, cargo throughput has a unidirectional causal relationship with economic growth.

Xu et al. (2019) studied the relationship between Zhanjiang port logistics and economic development. They suggested the effective use of port logistics development to promote the development of the regional economy, having found that the container throughput has a more significant effect on the total output value of Zhanjiang City. Similarly, Song (2019) estimated the contributions of major ports to regional economies by applying an econometric analysis that builds on previous studies. He found that the ports of Busan and Incheon, where containerised freight makes up a high proportion of traffic, make a greater contribution to their regional economies. This shows that the economic impact of individual ports is quite different according to the size of port traffic, the cargo composition, and the spatial boundary of the users.

Edeme et al. (2020) investigate the influence of infrastructural development on the value added of manufacturing in African economies. The study indicates that information and communication technology and electricity positively influence manufacturing value added, while transport negatively impacts it. Yusuf's (2023) study explores the correlation between infrastructural development and the performance of the Nigerian manufacturing sector: the moderating role of institutional quality. The study indicates that Nigeria's manufacturing sector performance is significantly enhanced by the development of productive infrastructure. The study suggests implementing policies and measures to promote productive infrastructural development in Nigeria's manufacturing sector to enhance its performance. Sebil's (2023) study examined the impact of fiscal policy on Nigeria's sectoral output using annual data from 1981 to 2021. The study reveals that fiscal policy significantly enhances agricultural output, manufacturing, and mining sectors, while having minimal impact on Building and Construction.

2.2 Ports-Supply Chain Integration

Sayareh and Lewarn (2006) identified that seaports can significantly facilitate trade flow by integrating their functions and the broader logistics activities of others by providing a rapid, safe, and economic gateway to the marketplace. Consequently, seaport organisations can act as centres to manage freight movements from origin to destination, increasing the efficiency of freight movements. Notteboom (2008) observed a shift in port competition strategy among European ports, where ports have moved beyond a place where ships are handled to crucial links within global supply chains. Radhika (2012) stressed the importance of the supply chain orientation for seaports and the consequent maximisation of maritime logistics value by highlighting the different stages of integration of seaports in the supply chain.

Woo Su Han (2010) examined the causal relationships among the Port Supply Chain Integration (PSCI) strategies of seaport terminals along the supply chain, Port Supply Chain Orientation (PSCO) strategies, and Port Performance (PP). We collected the data for these empirical analyses from terminal operating companies, shipping companies, and freight forwarders in South Korea.and the number of responses was 127. The empirical research showed that PSCO has a solid contribution to PSCI, and PSCI has a strong and positive impact on PP, indicating that seaports can enhance their performance by integrating their functions with those of other logistics activities.

Similarly, Lee and Kim (2009) examined the causal relationships between port supply chain orientation and port performance from the viewpoint of shipping companies. They used four constructs, namely, 'relationship with users (RWU)', 'value-added services (VAS)', 'inter-connecting inter-modal infrastructure (ITM)', and 'channel integration practices (CIP)'. Their findings showed that supply chain orientation has a limited effect on customer satisfaction and

port competitiveness, which some implemental and practical issues might have caused. However, the study revealed the potential importance of port supply chain management by empirically demonstrating that "closer relationship with shipping lines" and "innovative value-added service" could function as critical components for container ports/terminals to improve customer satisfaction and enhance their competitiveness (Lee & Kim, 2009).

In addition, Han (2018) investigated the impact of port supply chain integration on port performance by using factor analysis and regression methods in the case of Busan container ports. The study explicitly considers both suppliers and customers of the port supply chain. The empirical results show that customer integration substantially affects quality performance. Furthermore, cost performance positively impacts both ship calls and cargo throughput. Host et al. (2018) also investigated the importance of port integration in the supply chains overall. It also analysed how North Adriatic Ports are integrated into the supply chains. The assumption was that if the business cycle of all firms (classes) included in the port supply chain is correlated, it can indicate that the port is integrated in the supply chain. The analysed data results were ambiguous in that the correlation was rather negative than positive (Host et al., 2018).

Similarly, Kim et al. (2020) examined the link between logistics integration and supply chain performance, focusing only on shipping companies. The study collected data for analysis from 250 South Korean manufacturers. A study showed that building a strategic relationship for logistics services helps manufacturing firms improve their business and operations performances in their supply chain. Furthermore, Parka and Dossanib (2020) analysed the role of port infrastructure in the supply chain integration of the South Asian apparel industry through a case study of Colombo Port. It was found that the Colombo Port transhipment hub and its multi-country consolidation services have improved supply chain integration in these key factors. Nevertheless, there is a need to improve internal logistics and to improve matching port and logistics infrastructure in the rest of South Asia.

Ayesu et al. (2023) studied the efficiency and throughput of seaports to seaborne trade and economic growth in 28 African nations. The study found that seaport effectiveness and port throughput significantly impact economic development, emphasising the importance of enhancing seaport efficiency.

The reviewed literature has not thoroughly examined the significance of port supply chain integration in enhancing manufacturing capacity utilisation in Nigeria. The integration of port supply chains is crucial for maximising manufacturing capacity and fostering a robust, inclusive, and innovative industrial sector. This study investigates the impact of port supply chain integration on the capacity utilisation of the food and beverages sub-sector in Lagos and Ogun States, Nigeria.

3. METHODOLOGY

3.1 Theoretical Framework Model Specification

This study is based on the strategy-structure-performance (SSP) Theory. The strategic supply chain management theory applies to supply chain management (Chen et al., 2009). The theory suggests that a harmonious balance between a company's strategy and structure can enhance performance. Logistics and supply chain management researchers have expanded the SSP framework to a supply chain context. For example, Defee and Stank developed SSP in the supply chain context, citing

Christopher's (2005) notion that competition occurs at the supply chain rather than the company level. Chow, Heaver, and Henriksson (1995) emphasise the importance of a suitable organisational structure across firm boundaries for successful supply chain process integration. Thompson (1967) proposes considering external relationships in managing organisational structure. Defee and Stank (2014) suggest that firm strategy, structure, and performance measurement systems should be complementary, enhancing understanding of strategic decisions influencing supply chain development and performance.

To achieve successful strategy implementation in seaports and supply chains, one must strike a harmonious balance between strategy and structure, providing the necessary systems and processes (Chen et al., 2009). Coherence and synergy are essential for manufacturing and port supply chain strategies. If seaport strategies do not complement supply chain strategies, the manufacturing sector's performance is expected to decline. Various factors influence the performance of the manufacturing sector. Through the degree of integration between seaports and supply chains (Chen et al., 2009 and Woo, 2010). The SSP theory's application in supply chain management indicates that port supply chain integration is linked to improved manufacturing performance.

3.2. Data and Variable Description

The study focuses on the food and beverage manufacturers in Lagos and Ogun states. Between 2014 and 2017, Lagos and Ogun States manufacturers accounted for over 75% of all manufacturing investments in Nigeria (MAN, 2018; Field Services, Manufacturer Associations of Nigeria- MAN, 2020). Firms in these locations operate in major industrial clusters like Ilupeju, Agbara, Ewekoro, Ikeja, Ikorodu, Isolo, Oregun Ota, and Shagamu. The study emphasises the significance of Lagos Seaports, which house Nigeria's main container terminals, AP Moller Terminal and Tin Can Island Container Terminal, handling over 70% of total containers.

The study examined the correlation between port supply chain integration and manufacturing capacity utilisation, utilising data on port throughput, the total number of containers handled by Lagos Seaports (Ayesu et al, 2023) and the Nigerian manufacturing sector's capacity utilisation, assessed through the food and beverages sub-sector (Ekpo 2018; and Afolabi and Laseinde 2019). In 2019, the food and beverages manufacturing sector, the largest sub-sector of Nigerian manufacturing, contributed five per cent to the total GDP.

This study used secondary sources to gather data on container port throughput and manufacturing capacity utilisation from the Nigerian Port Authority and Manufacturers Association of Nigeria between 2014 and 2021.

3.3. Estimation Techniques

A multiple linear regression model was used to study the effect of port throughput (Apapa and Tin-can Island ports) on the manufacturing utilisation capacity of the food and beverages sub-sector. The functional relationship is presented in model 1;

$$MCU = \beta_0 + \beta_1 PT_1 + \beta_2 PT_2 + e \quad (1)$$

Where MCU = Manufacturing Utilisation Capacity of the sub-sector

PT_1 = Port Throughput for Apapa port

PT_2 = Port Throughput for Tin-Can Island port

β_0 = constant or intercept

β_1 & β_2 = regression coefficients

e = error term

4. RESULTS AND DISCUSSION OF FINDINGS

This section provides the estimation findings of the impact of port throughput on manufacturing capacity utilisation in Food and Beverages sector in Lagos and Ogun states, Nigeria. The study reported the results of descriptive statistics and the model summary accordingly.

4.1. Descriptive Analysis

The summary statistics of the time series data for the explanatory variables in the multiple regression models are presented in Table 1. The data for the Manufacturing Utilization Capacity (MCU) is presented in percentages. The statistical tools for the descriptive analysis include the mean, median, maximum value, minimum value, standard deviation, skewness, kurtosis, and the Jarque-bera.

Table 1 – Desriptive Statistics of Core Variables

Statistics	MCU	PT_1	PT_2
Mean	0.575794	5.741060	5.842279
Median	0.562000	5.746386	5.866342
Maximum	0.721000	5.839217	5.967808
Minimum	0.498000	5.550000	5.619266
Std. Dev.	0.060467	0.078695	0.094042
Skewness	0.766052	-0.77964	-0.71323
Kurtosis	2.958363	3.182541	2.964764
Jarque-Bera	1.566050	1.643115	1.357333
Probability	0.457022	0.439746	0.507293
Observations	16	16	16

Source: Outputs from E-View 9 (2022)

Table 1 presents descriptive statistics for the study's three core variables: MCU, PT1, and PT2. The mean for MCU is 0.576, with a minimum of 0.498 and a maximum of 0.721. The standard deviation for MCU is 0.060, suggesting that the data is relatively clustered around the mean. MCU's skewness is 0.766, indicating a slight rightward skew. The kurtosis is 2.958, offering a moderate leptokurtic distribution. For PT1, the mean is 5.741, with a minimum of 5.550 and a maximum of 5.839. The standard deviation is 0.079, suggesting the data is relatively clustered around the mean. PT1's skewness is -0.780, indicating a slight leftward skew. The kurtosis is 3.183, indicating a highly leptokurtic distribution.

For PT2, the mean is 5.842, with a minimum of 5.619 and a maximum of 5.968. The data exhibits a relatively spread-out nature, as evidenced by a standard deviation of 0.094. The data suggests a slight leftward skewness with a skewness value of -0.713. Additionally, it exhibits moderate leptokurtosis, as indicated by a kurtosis value of 2.965. We conducted the Jarque-Bera test to assess

normality, and the results show that MCU, PT1, and PT2 are normally distributed with probabilities of 0.457, 0.440, and 0.507, respectively. Overall, these statistics provide a helpful summary of the distribution of the core variables in the study, which can help to inform the analysis and interpretation of the regression results presented in Table 3.2.

4.2. Impact of Port Throughput on Manufacturing Capacity Utilization.

A multiple linear regression model was used to examine the impact of port throughput on manufacturing capacity utilisation. The result of the econometric analysis of the model is presented in Table 2.

Table 2: – Parameter Estimates of Model 1
Dependent Variable – MCU

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.54131	1.062942	-1.45005	0.0171
PT_1	0.007671	0.222115	0.034535	0.0197
PT_2	0.354839	0.185867	1.909107	0.0286
R-squared	0.311331		F-statistic	2.938493
Adjusted R-squared	0.205382		Prob (F-statistic)	0.008852
			Durbin-Watson stat	2.499426

Source: Outputs from E-View 9 (2022)

$$MCU = -1.541 + 0.008PT_1 + 0.355PT_2 \quad (1)$$

Table 2 presents the parameter estimates of Model 1, with the dependent variable being MCU (Manufacturing Capacity Utilization) and two independent variables, PT1 and PT2, representing the throughput of two different ports. The results show that the intercept (C) is -1.54131, indicating that MCU would be negative without port throughput.

The coefficient for PT1 is 0.007671, with a standard error of 0.222115 and a t-statistic of 0.034535. The p-value for this coefficient is 0.0197, which is statistically significant at the 5% level. This indicates that PT1 positively affects MCU, but the effect is small. The coefficient for PT2 is 0.354839, with a standard error of 0.185867 and a t-statistic of 1.909107. The p-value for this coefficient is 0.0286, which is also statistically significant at the 5% level. This indicates that PT2 has a stronger positive effect on MCU compared to PT1. The R-squared value for the model is 0.311331, indicating that the model explains 31.13% of the variation in MCU. The adjusted R-squared value is 0.205382, which adjusts for the number of variables in the model and is lower than the R-squared value.

The F-statistic for the model is 2.938493, with a p-value of 0.008852, indicating that the overall model is statistically significant at the 5% level. The Durbin-Watson statistic, which tests for autocorrelation in the residuals, is 2.499426, within the acceptable range of 1.5 to 2.5, indicating no significant autocorrelation. In conclusion, the results suggest that the throughput of the two ports, PT1 and PT2, positively affects MCU, but the effect is more substantial for PT2. These

findings are statistically significant and highlight the importance of port throughput in the manufacturing sector in Lagos and Ogun States, Nigeria.

5. CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Conclusion

The study explores the potential of integrating Lagos Seaports into the food and beverage manufacturing sector's supply chain networks in Lagos and Ogun States. The study reveals that Port Throughput significantly impacts the utilisation of manufacturing capacity. The impact of Port throughput varies across ports, with Tin Can Port experiencing a greater impact than Apapa Port. The study's findings have significant implications for the manufacturing sector. The study examines port-supply integration by comparing two ports and focusing on a specific manufacturing industry sector. The study indicates that the policy implications regarding port-supply chain integration should be customized for each port individually. The impact of ports supply chains on food and beverage sector capacity utilisation varies across ports, as demonstrated in Apapa and Tin Can Ports. Policymakers should consider the port-specific aspects of supply chain integration to maximize the economic benefits of port development.

The other implication pertains to the development of infrastructure. Munim and Schramm's (2018); Yusuf's (2023) and Sebil's (2023) studies highlight the importance of productive port infrastructure and fiscal policies in improving manufacturing performance. This study suggests that port supply integration could be a potential strategy for enhancing manufacturing capacity utilization in Lagos and Ogun States, suggesting a potential investment in infrastructure. This study also supports Zhang et al.'s (2022) finding that the integration of different supply chain components improves the operational and financial performance of the participating enterprises. The study's findings have led to the recommendation of the following measures:

5.2 Recommendations

i. The study indicates that the government should establish interconnections between port and manufacturing policies in terms of infrastructure and facilities.
ii. The Apapa and Tin Can ports should establish a mechanism for aligning strategies and structures between the ports and manufacturing firms using them.
iii. Ports should prioritise supply chain solutions to boost cargo throughput, as firms choose ports based on their advantages.

REFERENCES

Adeyemi, p. A., and Olufemi, O. B., (2016). The determinants of capacity utilization in the Nigerian manufacturing sector. *Journal of Economics and Sustainable Development*, 7 (5), (Online)

Afolabi A. and Laseinde O. T. (2019), Manufacturing sector performance and economic growth in Nigeria, Journal of Physics: Conference Series. Phys.: Conf. Ser. 1378 032067

Afroz, G., and Roy, D. K., (1976). Capacity utilization in selected manufacturing industries of Bangladesh. The Bangladesh Development Studies.

Ayesu, E. K., Sakyi, D., and Darku, A. (2023) Seaport efficiency, port throughput and economic growth in Africa, *Maritime Economics & Logistics*, 25 (3), 479-498.

Bichou, K. and Gray, R. (2004), "A logistics and supply chain management approach to port performance measurement", Maritime Policy & Management, 31 (1), 47-67.

Business Day (2020, July 13). What 57% capacity utilization means for Nigerian consumers. Retrieved from www.google.com

Carbone, V. and DE Martino, M. (2003), "The changing role of ports in supply-chain management: an empirical analysis", *Maritime Policy & Management*, 30 (4), 305-320.

Chen H. Daughterty, P. J. and Landry T. D, (2009) Supply chain process integration: A theoretical framework, *Journal of Business Logistics*, 30 (2), 27-46 OI: 10.1002/j.2158-1592.2009.tb00110.x

Chow, Garland, Trevor D. Heaver, and Lennart E. Henriksson (1995), Strategy, structure and performance: A framework for logistics research. *Logistics and Transportation Review*, 3 (4), 285-308.

Defee, C. Clifford and Theodore P. Stank (2005). Applying the Strategy-Structure-Performance Paradigm to the Supply Chain Environment. *The International Journal of Logistics Management*, 16, (1), 28-50.

Edeme, R. K., Buzugbe, N. P., Nkalu, N. C., & Arazu, W. O. (2020). Assessing the impact of infrastructural development on manufacturing value added and employment in Africa emerging economies. *Journal of Applied Economic Sciences*, 2 (68), 366-376.

Ekpo U. N. (2018) 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.

Han, C. (2018). Assessing the impacts of port supply chain integration on port performance, *The Asian Journal of Shipping and Logistics* 34 (2) 129-139.

Hoey, B., (2019). 5 benefits of supply chain integration. Retrived from www.google.com

Host, A., Skender, H. P., and Zaninovi P. A., (2018). The perspectives of port intergration into the global supply chains-the case of North Adriatic Ports. *Scientific Journal of Maritime Research*, 32 (1), 42-49.

Khaslavskaya, A. and Rosso. V. (2019). Outcome driven supply chain perspective on dry ports, *Sustainability*, 11 (5), 1492.

Kim S. T., Lee Hong-Hee and Hwang T., (2020) Logistics integration in the supply chain: a resource dependence theory perspective. *International Journal of Quality Innovation* 6 (5), 2-14.

Lam J. S. L. and Song D. (2013), Seaport network performance measurement in the context of global freight supply chains, *Polish Maritime Research* special Issue, 79 (20), 47-54 10.2478/pomr-2013-0026.

Lee Sang-Yoon and Kim Yong-Hee (2009). Effectiveness of supply chain orientation in container ports: liners' perspective, *Journal of International Logistics and Trade*, 7 (1), 25-37.

Manufacturers Association of Nigeria (2014-2019) Economic Review, January-December

Manufacturers Association of Nigeria, (2020). Field services, MAN house, Ikeja, Lagos.

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), 1-19. DOI 10.1186/s41072-018-0027-0

Notteboom T. I. (2008), The relationship between seaports and the intermodal hinterland in light of global supply chains, European challenges, discussion paper no. 2008-10- c OECD/ITF

Oni, B. G., Ojekunle, A. J., Irinyemi, A. and Adekunle, O. A., (2023). The firm's location in relation to the seaport as a key factor in enhancing firm performance in the manufacturing supply chain, *Journal of Economics and Allied Researches,* 8 (3), 74-84.

Park Y. and Dossani R. (2020). Port infrastructure and supply chain integration under the belt and road initiative: role of Colombo Port in the Apparel Industry in South Asia, *Transportation Research Procedia,* 48 (5), 307-326.

Radhika D. (2012). The new role of seaports as integral part of global supply chains *EXCEL International Journal of Multidisciplinary Management Studies* 2 (4), 13-144. ISSN 2249 8834 Online available at http://zenithresearch.org.ins,

Sayareh J. and Lewarn B. (2006). Efficient supply chains through effective seaport organizations, Conference Paper. Retrieved from https://www.researcggate.net/publication/308023514

Sebil, O. O., (2023). Fiscal policy and sectorial output growth in Nigeria: A new empirical evidence, *Journal of Economics and Allied Researches,* 8 (3), 18-34.

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. https://doi.org/10.4236/ajibm.2019.97102

Woo Su Han, (2010) Seaport supply chain integration and orientation and their impacts on port performance. A thesis submitted in fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY in CARDIFF UNIVERSITY July 2010

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 (7), 1557-1567. https://doi.org/10.4236/ajibm.2019.97102

Thompson, James D. (1967), Organizations in Action, New York: McGraw Hill.

Tongzon, J., Chang, Y.T. and Lee, S.Y., (2009), How supply chain oriented is the port sector? *International Journal of Production Economics*, 122 (1), 21-34.

USAID. (2010). Implementation of the Global Health Initiative: Consultation Document. http://www.usaid.gov/our_work/global_health/home/Publications/docs/ghi_consultation_document.pdf

Woo, S. H, Pettit, S., Berestford, A., (2013). An assessment of the integration of seaport into supply chain using a structural equation model, *Supply Chain Management*, 18 (3), 235-252.

Woo, S.H., Pettit, S. and Beresford, A.K.C. (2011) Port evolution and performance in changing logistics environments, *Maritime Economics and Logistics*, 13(3), 250-277

Xu, Y., Stanley, H. E., and Su, Y., (2019). Econometric Analysis on Development of Port Logistics Industry in Zhanjiang. *Advances in Intelligent Systems Research*, 164 (0), 128-131.

Yusuf S. N., (2023). Nexus between infrastructure development and manufacturing sector performance in Nigeria: the moderating role of institutional quality. Journal of Economics and Allied Research, 8 (1), 151-165

Zhang A., Loh H. S., and Thai V. V. (2015), Impacts of global manufacturing trends on port development: The case of Hong Kong. *The Asian Journal of Shipping and Logistics*, 31 (1), 135-15

Zhang, A., Lam, J.S.L. and Huang, G.Q. (2014), Port strategy in the era of supply chain management: the case of Hong Kong, *Maritime Policy & Management*, 41 (4), 367-383.

Zhang, X., Li, R. Y. M., Sun, Z., Li, X., Samad, S., Comite, U., and Matac, L. M (2022) Supply chain integration and its impact on operating performance: Evidence from Chinese Online companies. *Sustainability*, 14, (14330), 1-16.