



# Analysis of the Impacts of Economic Globalization on Maritime Logistics and Port Revenue in Nigeria

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## ABSTRACT

The evaluated the impacts of economic globalization on maritime trade and revenue earned in Nigerian ports. The specific objectives of the study were to determine the extent of impacts of economic globalization on values of shipping export trade, shipping import trade and revenue earned by Nigerian ports between 2005 and 2019. Quantitative research design was used in which time series secondary data was used to implement the study. Data on the values of shipping import and export trade covering a period of 15 years from 2005 and 2019 was sourced from the Central Bank of Nigeria Statistical reports. Data on the KOF economic globalization indices consisting of values of KOF trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure for Nigeria, was obtained from the database of the International Monetary Fund (IMF). The values of revenue earned by the Nigeria ports each year between 2005 and 2019 was obtained from the Nigerian Ports Authority statistical reports. The log-linear multiple regression analysis method was used to analyze the data obtained. It was found that there is significant impact of economic globalization on the value of shipping export trade, value of shipping import trade and port revenue in Nigeria between 2005 and 2019. The following empirical models among others were developed showing the effects of economic globalization on maritime trade and port logistics in Nigeria:  $\ln EXP_{trade} = 7.484 - 0.428 \ln KOFTRGIDf + 2.046 \ln KOFTRGIDj + 1.95 \ln KOFFGIDj + 0.552 \ln KOFFGIDf + e$ ;  $\ln IMP_{trade} = 23.396 - 2.388 \ln KOFTRGIDf + 8.279 \ln KOFTRGIDj + 3.838 \ln KOFFGIDj - 9.423 \ln KOFFGIDf + E$ ; The policy implications were discussed and recommendations proffered in line with the study findings.

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## 1. Introduction.

Dreher, (2006) argue that the term globalization is used to describe the growing interdependence of the world's economies, cultures, and populations, brought about by cross-border trade in goods and services, technology, and flows of investment,

people, and information. According to Dreher, (2006), nations over the years developed economic ties and partnerships that have ensured cross-border trade in goods and services between trade organizations and individuals in different foreign countries. Economically, globalization entails the exchange between member of the international community and foreign countries, of goods, services, data, technology, capital, economic resources and the expansion of global marketing activities of the exchange of goods and funds; removal of cross-border trade barriers and the consequent formation of global markets (Dreher, 2006; Robinson 2004 and Ricciardi 2006 ). Advances in transportation, like the steam locomotive, steamship, jet engine, and container ships, and developments in telecommunication infrastructure, like the telegraph, Internet, mobile phones, and smart phones, have been major factors in globalization and have generated fur-

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ther interdependence of economic and cultural activities around the globe (Chinn and Ito ,2006; Czaika, Haas and Villares-Varela; 2017). Historically, globalization efforts commenced following centuries of European colonization and trade activity, referred to as ‘ first wave’ of globalization which was propelled by steamships, railroads, the telegraph, and other breakthroughs, and also by increasing economic cooperation among countries. The first wave of globalization waned following the events of World War I, and the consequent postwar protectionism, the Great Depression, and World War II (Dappa et al, 2010).

Maritime logistics is concept that addresses all aspects of logistics and supply chain challenges associated with maritime transportation and the delivery of shipments via the seaports. Its focus is to improve and/or maximize the efficiency, cost-effectiveness, time, safety and security service, quality, utility/customer satisfaction, etc., associated with the use of maritime transport and seaports in the delivery of consignments by shippers and freight forwarders. The Seaports are critical components of the maritime transport systems and important nodes in the transport, logistics and supply networks associated with international trade. They are as a result critical component of the entire maritime logistics systems need efficient implementation of logistical functions to overcome identified major challenges and bottlenecks to the flow of shipping import and export trade. Thus, the level of planning and administration of port operations as major activity area in maritime logistics, significantly influences port costs, freight rates (ocean transport cost) delivery time, Gross Domestic Product of maritime transport, efficiency, safety and security risks associated with the use of maritime transport mode, in delivering international seaborne trade (Nwokedi, Ndikom, Okoroji and Nwaorgu, 2021; Kumar, and J. Hoffmann (2002)

Therefore, the output and measures of the implementation of logistics management functions in the maritime transport sub-sector (maritime logistics) may be viewed from the perspectives of prevailing levels of port costs (dues and charges), volume and tonnage of shipping import and export trade facilitated, value of shipping import and export trade facilitated, freight rates (ocean transport cost), Gross Domestic Product of maritime transport (output), port revenue generated and earned, etc. it is expected that while the implementation of logistics functions in maritime transport should improve the output (GDP) of the sector, it should lead to improvement in volume and tonnage of shipping import and export trade handled in the ports over a given period of time (Aylin & Yucel ,2016; Ubam and Wilcox, 2017). it is believed the trade globalization has serious influences on the maritime trade and the port operations in Nigeria such that an understanding of the impacts of globalization on the trend of shipping export and import trade handled in Nigerian seaports is necessary in order to achieve improved maritime trade and port operations in Nigeria. The influence of globalization of the performance of the maritime sector and port systems in terms of revenue, tonnage cum volume of shipping trade facilitated, ship traffic handled, and the GDP can equally be examined as basis for performance improvement in the face of perceived increasing trend of trade globalization. Thus the basis for un-

derstanding from empirically based information whether the growth in global maritime trade transactions handled in Nigerian ports improved Nigeria’s maritime sector performances is provided in the study. This underscores the need for individual countries to first investigate what influences globalization exert on the economy and the variables of economic development, in order to determine to what extent to allow the full adoption and implementation of globalization strategies and trade liberalization policies (Nwokedi, Ndikom, Okoroji., and Nwaorgu, 2021). The current study is aimed at evaluating to what extent globalization influences shipping import and export trade in the Nigeria maritime sub-sector.

To be able to measure the impacts of economic globalization, Gygli et al (2019) note that the Swiss Economic Institute (SEI) developed the KOF Globalization Index (KOFGI) as a measure of the economic, social and political dimensions of globalization in a given economy . The KOF globalization index identified that globalization in the economic, social and political fields have been on the rise since the 1970s, receiving a particular boost after the end of the Cold War. Table-1 below shows the various types of globalization index identified by the SEI for measuring various aspects of in an economy (Gygli et al, 2019).

In this study, the emphasis is on the influence of economic globalization on maritime trade and port logistics sector in Nigeria. Thus, the influences of the four identified KOF globalization index (KOFGI) namely: Trade globalization, de facto (KOFTrGI<sub>df</sub>), Trade globalization, de jure (KOFFrGI<sub>dj</sub>), Financial globalization, de facto (KOFFiGI<sub>df</sub>) and Financial globalization, de jure (KOFFiGI<sub>dj</sub>) on values of shipping export and import trade, port revenue was evaluated.

The specific objectives of the study include:

- i. To model the relationship showing the effects of economic globalization on the value of Nigeria shipping export trade
- ii. To ascertain the significance of the relationship between economic globalization and value of shipping import trade in Nigeria
- iii. To assess the effects of economic globalization on port revenue in Nigeria over the years

**The following research questions were developed to guide the realization of the the objectives of the study:**

- i. What is the significance of the effects of economic globalization on the value of shipping export trade in Nigeria?
- ii. Is there significant relationship between economic globalization and value of shipping import trade in Nigeria?
- iii. Does globalization significantly affect port revenue in Nigeria?

In line with the research questions, the following hypotheses were developed to guide the realization of the aim and objectives of the study:

**H<sub>01</sub>**: There is no significant effect of economic globalization on the value of shipping export trade in Nigeria

Table 1: KOF Globalization Index.

Dimension	Variable Name	Variable Definitions
Trade globalization, de facto (KOFTrGIdf)	Trade in goods, 2021	Exports and imports of goods (% of GDP).
	Trade in services 2021 Trade partner diversity	Exports and imports of services (% of GDP). Average of the Herfindahl-Hirschman market concentration index for exports and imports of goods (inverted).
Trade globalization, de jure (KOFTrGIdj)	Trade regulations Tared taxes (inverted) Tariff rates Trade agreements, number of bilateral and multi-lateral trade agreements	Average of two subcomponents: Prevalence of non-tariff trade barriers and compliance costs of importing and exporting. Income from taxes on international trade as percentage of revenue, World bank, 2021
Financial globalization, de facto (KOFFiGIdf)	Foreign direct investment foreign direct investments	Sum of stocks of assets and liabilities of foreign direct investments (% of GDP).
	Portfolio investment international equity portfolio investments International income payments	Sum of stocks of assets and liabilities of international equity portfolio investments (% of GDP). Sum of inward and outward stocks of international portfolio debt securities and international bank loans and deposits (% of GDP). Includes foreign exchange (excluding gold), SDR holdings and reserve position in the IMF (% of GDP). Sum of capital and labour income to foreign nationals and from abroad (% of GDP).
Financial globalization, de jure (KOFFiGIdj)	Investment restrictions Capital account openness International investment agreements	Chinn-Ito index of capital account openness. Number of Bilateral Investment Agreements (BITs) and Treaties with Investment Provisions (TIPs)

Source: Adapted from Gygli et a (2019).

$H_{02}$ : There is no significant relationship between economic globalization and value of shipping import trade in Nigeria.

$H_{03}$ : There is no significant effects does globalization on port revenue in Nigeria

## 2. Literature Review.

Yevgeniy, Tim, Philip, and Marc (2015) carried out a study in title: ‘The impact of economic, political and social globalization on overweight and obesity in the 56 low and middle income countries’. The study used primary data obtained from survey to determine the impact of economic globalization, political globalization and social globalization on overweight and obesity in low and middle income countries. The aim of the study is to provide robust quantitative evidence on the claim that globalization plays a major role in inducing overweight and obesity in developing countries. The study conducted extensive econometric analyses of several datasets, using a series of new proxies for different dimensions of globalization aforementioned; potentially affecting overweight in up to 887,000 women aged 15 and 49 living in 56 countries between 1991 and 2009. The study findings indicate that globalization as a whole is substantially and significantly associated with an increase in the individual propensity to be overweight among women. It shows that political and social globalization dominates the influence of the economic dimension (Yevgeniy, Tim, Philip, and Marc; 2015). The study recommended that more consideration

needs to be given to the forms of governance required to shape a more health-oriented globalization process (Yevgeniy, Tim, Philip, and Marc, 2015).

In another study, Hyyeon-Seung and Cyn-Young (2019) carried out a study seeking to measure the impacts of global integration on economic growth and income inequality. The study developed two major objectives which include first, to develop a new composite index of globalization based on data on 158 economies over the period 2006–2014 and second, to use the new index to evaluate empirically the possible effects of globalization on economic growth and income inequality. The study used secondary data from each country comprised of 25 indicators that represent the key socioeconomic components of global integration. Principal component analysis is used to weight each component and construct an aggregate measure. Unlike previous composite indexes, this study separates the contributions of intraregional and extra regional integration in the construction of the globalization index. The result of the study indicates that although globalization promotes economic growth, it also holds the potentials to worsen income inequality. The result also indicate that High income countries benefit most from globalization in that the positive effects of globalization on economic growth is strongest among high income countries than on low income groups, and they experience a less pronounced widening of income inequality (Hyyeon-Seung and Cyn-Young, 2019). They study further observes that between the two drivers of global economic integration, intraregional in-

tegration is far more important than extra-regional integration. The study also found that extra-regional integration is mainly responsible for the rise in income inequality that has accompanied globalization (Hyyeon-Seung and Cyn-Young, 2019).

Nwokah (2015) examined the socio-economic impacts of globalization in Nigeria. The aim was aimed at assessing the socio-economic impact of globalization in Nigeria; and to compare the differences of these impacts in the public and private sectors in Nigeria. The study used a survey method employing primary data obtained from respondents randomly sampled from the various economic sectors of Nigeria using close-ended questionnaire to elicit information from 233 staff of the Nigeria private and public sectors. The data obtained were analysed by the use of both descriptive and inferential statistics; descriptive statistics – mean and standard deviation. The independent sample t-test was also used to assess the differences in socio-economic impact of globalization as perceived by the Nigeria private and public sectors. It found that skill development, commitment to job and positive work attitude as the major areas that globalization has impacted socio-economic development in Nigeria public and private sectors (Nwoka, 2015). The result of the study also shows that there is a significant difference in the socio-economic impacts of globalization in Nigeria private and public sector, with the private sector being most impacted than the public sector (Nwoka, 2015). The study concluded that globalization impacts significantly on private sector businesses in Nigeria more than it impacts on public sector operations (Nwoka, 2015)

Adesina (2012) in another study examined the negative impacts of globalization on Nigeria. The aim of the study was to investigate the negative effects of globalization on Nigeria, focusing majorly on its impact on science and technology and the environment. The paper argues that although globalization presents many opportunities, it also exposes developing countries like Nigeria to many new challenges. The study used exploratory approach and primary data obtained from survey. It found that while globalization has both positive and negative impacts on the world, Nigeria inclusive, its negative impacts are very weighty. It notes the importance of the need for Nigeria to preserve her culture, science and technology cum environment from the negative impacts of globalization. It concludes that rather than allow globalization to erode and diminish the development of local technology in Nigeria, the country should exploit the process of globalization to develop her local technology for export while preserving her environment for sustainable living (Adesina, 2012; Makinde, 2013; Poopola 2020).

### 2.1. Research Gap.

Though several empirical studies have been carried out to examine the impacts, influences and effects of globalization in Nigeria; most of the studies are concentrated on finding the political, social, cultural and behavioral impacts on globalizations on Nigerian. No empirical study seems to have attempted to investigate the effects of globalization on maritime trade. Few studies that attempted to investigate the economic impacts of globalization used primary data and the aggregated GDP.

Thus there is a huge knowledge and research gap such that there is a seeming lack of information backed by empirical evidence of what constitute the relationship between economic globalization and major indicator variables of maritime trade and port logistics in Nigeria such as the value of seaborne trade, Gross Domestic Product of the maritime transport sub-sector and port revenue generated. This is the knowledge gap which this study is determined to bridge using real time secondary data.

### 3. Data and Methods.

The study used quantitative research approach in which time series (historical) data obtained from secondary sources were used for the study. The secondary data were sourced from the various sources including the International Monetary Fund (IMF), the Central Bank of Nigeria (CBN) Annual Statistical report, and the Nigeria Ports Authority (NPA) Statistical Reports among other sources.

Data on the KOF globalization index for the Nigeria state was obtained from the International Monetary Fund (IMF). Data on the values of shipping export and import trade handled over the years in Nigeria ports were obtained from the Central Bank of Nigeria Statistical reports. Data on port revenue earned by the Nigeria ports over the years was obtained from the Nigeria Ports Authority (NPA). Each data set gathered from the study covered a period of 15 years from 2005 to 2019.

#### 3.1. Method of Data Analysis: Log-Linear Multiple Regression.

Using the Log-Linear multiple regression model approach, the influence of economic globalization on maritime trade (shipping export and import trade) was estimated. The KOF economic globalization index was used to denote globalization. The KOF economic globalization index according to the IMF is further divided into four parts as listed below:

- i. KOF trade globalization de facto (KOFTrGldf),
- ii. KOF trade globalization de jure (KOFFiGldj)
- iii. KOF financial globalization de facto (KOFFiGldf)
- iv. KOF financial globalization de jure (KOFFiGldj)

The effects of each of the four identified indices of economic globalization above on each of shipping export ( $EXP_{trade}$ ) trade, shipping import ( $IMP_{trade}$ ) trade and port revenue in Nigeria port ( $POREV$ ) were estimated.

where:

- i. Trade globalization, de facto (KOFTrGldf)
- ii. Trade globalization, de jure (KOFFiGldj)
- iii. Financial globalization, de facto (KOFFiGldf)
- iv. Financial globalization, de jure (KOFFiGldj)

Having identified in line with the objectives of the study the relationships to be estimated and the associated variables of the study we specified the models of the study as shown below:

### 3.2. Model Specification.

$$EXP_{trade} = \beta_0 + \beta_1 KOFFiGIdf + \beta_2 KOFFiGIdj + \beta_3 KOFTrGIdf + \beta_4 KOFTrGIdj + \varepsilon \quad (1)$$

$$IMP_{trade} = \beta_0 + \beta_1 KOFFiGIdf + \beta_2 KOFFiGIdj + \beta_3 KOFTrGIdf + \beta_4 KOFTrGIdj + \varepsilon \quad (2)$$

$$POREV = \beta_0 + \beta_1 KOFFiGIdf + \beta_2 KOFFiGIdj + \beta_3 KOFTrGIdf + \beta_4 KOFTrGIdj + \varepsilon \quad (3)$$

Ordinary least square estimation can be used to estimate the effects of each economic globalization variable on the variables of maritime trade and logistics.

However, to ensure that all variables of the study assume the same unit of measurement, we took the natural log (In) of each set of data and used the Log-linear multiple regression analysis method to analyze the data obtained. The above models are re-expressed in log-linear regression model formats as shown below:

$$\ln EXP_{trade} = \beta_0 + \beta_1 \ln KOFTrGIdf + \beta_2 \ln KOFTrGIdj + \beta_3 \ln KOFFiGIdf + \beta_4 \ln KOFFiGIdj + \varepsilon \quad (4)$$

$$\ln IMP_{trade} = \beta_0 + \beta_1 \ln KOFTrGIdf + \beta_2 \ln KOFTrGIdj + \beta_3 \ln KOFFiGIdf + \beta_4 \ln KOFFiGIdj + \varepsilon \quad (5)$$

$$\ln POREV = \beta_0 + \beta_1 \ln KOFTrGIdf + \beta_2 \ln KOFTrGIdj + \beta_3 \ln KOFFiGIdf + \beta_4 \ln KOFFiGIdj + \varepsilon \quad (6)$$

Using the methods discussed above, the study analyzed the data obtained in order to provide answers to the research questions. They hypotheses were also tested using the t-test corresponding to the log-linear multiple regression estimates of each of the above relationships.

## 4. Results and Discussion.

### 4.1. Results.

Table 2 shows that the mean values of economic globalization index for Nigeria measured by the KOF trade globalization de facto (KOFTRGIDF), trade globalization de jure (KOFTRGIDJ), financial globalization de facto (KOFFGIDF) and financial globalization de jure (KOFFGIDJ) for Nigeria between 2005 and 2019 is 45.4667, 51.1333, 57.6000, and 36.8667 for trade globalization de facto, trade globalization de jure, financial globalization de facto, and financial globalization de jure respectively with respective standard deviations of 0.86115, 0.55948,

0.96016 and 1.17865. By implication, KOF financial globalization de facto, which measures the level of foreign direct investment, Portfolio investment, international equity portfolio investments and International income payments has the highest mean score per annum between 2005 and 2019 of 57.600 among the four variables of economic globalization. This is seconded by KOF trade globalization de jure with mean score of 51.1333.

Similarly, the mean value of maritime trade comprised of shipping import and export trades handled per annum over the same period between 2005 and 2019 is 9070292506.0 Trillion naira and 12003171608.6 Trillion naira respectively for shipping import trade and export trade with respective standard deviations of 4095360633.56747 and 3995937545.37559. The range indicates the differences between the maximum and minimum values of each of the proxies used to identify maritime trade and economic globalization.

Similarly, average revenue generated by the ports and the Gross Domestic Product representing the output of the maritime transport and port logistics sub-sector per annum over the period is 145402.0 Billion naira and 57511.53 Billion naira respectively with respective standard deviations of 78624.36901 and 11620.44077.

The coefficient of correlation R which measures the degree of correlation between the shipping export trade and economic globalization in Nigeria is 0.82. This implies the existence of about 82% correlation between Nigeria's shipping export trade and economic globalization measured by the KOF economic globalization index- trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure.

The model showing the relationship depicting the influence of economic globalization measured by the KOF economic globalization index- trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure on Nigeria's value of shipping export trade between 2005 and 2019 is:

$$\ln EXP_{trade} = 7.484 + 0.428 \ln KOFTRGIDF + 2.046 \ln KOFTRGIDJ + 1.95 \ln KOFFiGIdf + 0.552 \ln KOFFiGIdj + e$$

This implies that a unit annual increase in KOF trade globalization de facto, such as trade in goods, trade in services and trade partner diversity decreases value of Nigeria's maritime trade- value of shipping export by 0.428 units. The indication is that diversifying trade with numerous trade partners causes a decline in the value of Nigeria's export earnings. A unit increase in KOF trade globalization de jure causes a 2.046 units increase in the value of shipping export trade by Nigeria. This implies that KOF trade globalization de jure such as the prevalence of non-tariff trade barriers and compliance costs in exporting causes increase in Nigeria's shipping export trade earnings over the years covered in the study.

Similarly, a unit annual increase in KOF financial globalization index de jure causes an increase of about 1.95 units in ship-

Table 2: Average values of Nigerian maritime trade and economic globalization indicators between 2005 and 2019.

	N	Range	Minimum	Maximum	Sum
	Statistic	Statistic	Statistic	Statistic	Statistic
IMPTREADE	15	16085566800.00	10433200.00	16096000000.00	136054387590.00
EXPTRADE	15	11772456200.00	7246543800.00	19019000000.00	180047574130.00
KOFTRGDF	15	10.00	42.00	52.00	682.00
KOFTRGDJ	15	8.00	49.00	57.00	767.00
KOFFGDJ	15	14.00	28.00	42.00	553.00
KOFFGDF	15	14.00	51.00	65.00	864.00
Valid N (listwise)	15				

## Descriptive Statistics

	Mean		Std. Deviation
	Statistic	Std. Error	Statistic
IMPTREADE	9070292506.0000	1057417568.70135	4095360633.56747
EXPTRADE	12003171608.6667	1031746637.71497	3995937545.37559
KOFTRGIDF	45.4667	.86115	3.33524
KOFTRGIDJ	51.1333	.55948	2.16685
KOFFGIDJ	36.8667	1.17865	4.56488
KOFFGIDF	57.6000	.96016	3.71868
Valid N (listwise)			

Source: Author's calculation.

Table 3: Average value of port revenue and GDP Maritime sector in Nigeria between 2005 and 2019.

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
POREV	15	53400.00	277680.00	2181030.00	145402.0000	78624.36901
GDPMARITIME	15	37474.95	69799.94	862672.99	57511.5327	11620.44077
Valid N (listwise)	15					

Source: Author's calculation.

ping export earnings in Nigeria while a unit increase in KOF financial globalization index de facto such as a foreign direct investment inflow into Nigeria induces a 0.552units increase in Nigeria's shipping export trade earnings between 2005 and 2019.

The coefficient of determination  $r^2$  which measures the explanatory power of the model is 0.678. This indicates that only about 68% variation in the value of Nigeria's shipping export trade earnings is explained by economic globalization.

The coefficient of correlation R which measures the degree of correlation between the value of maritime trade- value of shipping import trade and economic globalization in Nigeria is 0.75. This implies the existence of about 75% correlation between Nigeria's shipping import trade value between 2005 and 2019, and economic globalization measured by the KOF economic globalization index- trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure.

The model showing the relationship depicting the influence of economic globalization measured by the KOF economic globalization index- trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure on Nigeria's value of shipping import trade between

2005 and 2019 is:

$$\begin{aligned} \ln IMP_{trade} = & 23.396 + 2.388 \ln KOFTRGIDf + \\ & 8.279 \ln KOFTRGIDj + 3.838 \ln KOFFiGIDj + \\ & 9.423 \ln KOFFiGIDf + e \end{aligned}$$

This implies that a unit annual increase in KOF trade globalization de facto, such as trade in goods, trade in services decreases value of Nigeria's maritime trade- value of shipping import by 2.388units. The indication is that the value of seaborne import trade in Nigeria between 2005 and 2019 decreased by 2.388units for every 1unit increase in KOF trade globalization index de facto. A unit increase in KOF trade globalization de jure causes about 8.279units increase in the value of shipping import trade by Nigeria. This implies that KOF trade globalization de jure such as the prevalence of non-tariff trade barriers and compliance costs in importing causes increase in Nigeria's shipping import trade earnings over the years covered in the study.

Similarly, a unit annual increase in KOF financial globalization index de jure causes an increase of about 3.838 units in the value of shipping import in Nigeria while a unit increase

Table 4: The Relationship showing the effects of economic globalization on the value of Nigeria shipping export trade.

	Mean	Std. Deviation	N
InEXP <sub>trade</sub>	23.1560	.33641	15
InKOFTRGIDf	3.8145	.07277	15
InKOFTRGIDj	3.9336	.04132	15
InKOFFGIDj	3.5995	.13225	15
InKOFFGIDf	4.0516	.06434	15

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.820 <sup>a</sup>	.678	.580	.29269	1.323

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.728	4	.182	6.181	.041 <sup>b</sup>
	Residual	.857	10	.086		
	Total	1.584	14			

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations
		B	Std. Error	Beta			Zero-order
1	(Constant)	7.484	11.618		.644	.534	
	InKOFTRGDF	-.428	1.137	-.093	-.377	.714	-.073
	InKOFTRGDJ	2.046	2.124	.251	.964	.358	.004
	InKOFFGDJ	1.950	.727	.767	2.683	.023	.617
	InKOFFGDF	.552	1.567	.106	.352	.732	-.204

a. Dependent Variable: InEXTRADE

Source: Author’s calculation.

in KOF financial globalization index de facto such as a foreign direct investment inflow into Nigeria induces a 9.423units decrease in the value of Nigeria’s shipping import trade between 2005 and 2019.

The coefficient of determination  $r^2$  which measures the explanatory power of the model is 0.569. This indicates that about 57% variation in the value of Nigeria’s shipping import trade is explained by economic globalization.

Table 6 shows the result of the estimates of the relationship between economic globalization on the port revenue generated in Nigeria ports. It indicates that the coefficient of correlation R which measures the degree of correlation between port revenue in Nigeria ports and economic globalization in Nigeria is 0.923. This implies that there is very high positive correlation between port revenue and economic globalization measured by the KOF economic globalization index- trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure.

The equation of the relationship depicting the influence of economic globalization measured by the KOF economic globalization index- trade globalization de facto, trade globalization de jure, financial globalization de facto and financial globalization de jure on the revenue generated in Nigeria ports is:

$$InPOREV = -128.319 - 9.574InKOFTRGIDf - 10.290InKOFTRGIDj + 29.690InKOFFiGIDj + 26.627InKOFFiGIDf + e$$

This implies that a unit annual increase in KOF trade globalization de facto, such as trade in goods, trade in services leads to decrease in port revenue in Nigeria ports by 9.574units. A unit increase in KOF trade globalization de jure causes about 10.290units decrease in the revenue generated in Nigeria sea-ports.

Similarly, a unit annual increase in KOF financial globalization index de jure causes an increase of about 29.690units in port revenue in Nigeria ports while a unit increase in KOF financial globalization index de facto such as a foreign direct investment inflow into Nigeria induces a 26.627units increase in the revenue generated in the ports in Nigeria.

The coefficient of determination  $r^2$  which measures the explanatory power of the model is 0.852. This indicates that about 85% variation in the volume of revenue generated in the ports in Nigeria ports is explained by economic globalization.

Table 5: The Relationship between economic globalization on the value of Nigeria shipping import trade in Nigeria.

	Mean	Std. Deviation	N
InIMP <sub>trade</sub>	22.4909	1.78180	15
InKOFTRGIDf	3.8145	.07277	15
InKOFTRGIDj	3.9336	.04132	15
InKOFFGIDj	3.5995	.13225	15
InKOFFGIDf	4.0516	.06434	15

  

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.754 <sup>a</sup>	.569	-.461	1.83511	2.917

  

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.771	4	2.693	5.800	.052 <sup>b</sup>
	Residual	33.676	10	3.368		
	Total	44.447	14			

  

Coefficients <sup>a</sup>							
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations
		B	Std. Error	Beta			Zero-order
1	(Constant)	23.396	72.839		.321	.755	
	InKOFTRGIDf	-2.388	7.129	-.098	-.335	.745	.007
	InKOFTRGIDj	8.279	13.316	.192	.622	.548	-.048
	InKOFFGIDj	3.838	4.557	.285	.842	.419	.402
	InKOFFGIDf	-9.423	9.822	-.340	-.959	.360	-.404

a. Dependent Variable: InIMTRADE

Source: Author's calculation.

#### 4.2. Test of Hypotheses.

In this section, the research hypotheses were tested using F-statistics (F-test). However, the significances of the individual effects of the KOF trade globalization index de facto, trade globalization index de jure, financial globalization index de facto and financial globalization index de jure on each of the dependent variables were all tested using the t-test.

The test of hypothesis  $H_{01}$  shown in table-4.6 shows F-score of 6.181, F-critical of 3.68, and p-value of 0.041. Since F-score is greater than F-critical, ( $6.181 > 3.68$ ), we reject the null hypothesis  $H_{01}$  and accept the alternate. We conclude that there is significant effect of economic globalization on the value of shipping export trade in Nigeria between 2005 and 2019.

Similarly, t-test was conducted to investigate the significance of the individual effects of trade globalization index de facto, trade globalization index de jure, financial globalization index de fact and financial globalization index de jure on the value of shipping export trade in Nigeria over the 15 years covered in the study. As shown in the table above, only KOF financial globalization index de de jure has t-cal score greater than t-critical ( $2.63 > 1.75$ ). Thus only KOF financial globalization index de jure has significant effect of the value of shipping export trade in Nigeria between 2005 and 2019. KOF trade globalization index de factor, KOF trade globalization index de jure and

KOF financial globalization index de facto all have t-cal. less than t-critical (i.e.:  $0.377 < 1.75$ ;  $0.964 < 1.75$  and  $0.352 < 1.75$ ).

The test of hypothesis  $H_{02}$  shown in table-4.7 shows F-score of 5.800, F-critical of 3.68, and p-value of 0.052. Since F-score is greater than F-critical, ( $5.800 > 3.68$ ), we reject the null hypothesis  $H_{02}$  and accept the alternate. We conclude that there is significant effect of economic globalization on the value of shipping import trade in Nigeria between 2005 and 2019.

Similarly, t-test was conducted to investigate the significance of the individual effects of trade globalization index de facto, trade globalization index de jure, financial globalization index de fact and financial globalization index de jure on the value of shipping import trade in Nigeria over the 15 years covered in the study. The KOF financial globalization index de jure, KOF trade globalization index de factor, KOF trade globalization index de jure and KOF financial globalization index de facto all have t-cal. less than t-critical (i.e.:  $0.335 < 1.75$ ;  $0.662 < 1.75$ ,  $0.842 < 1.75$  and  $-0.959 < 1.75$ ). We conclude that, none of the individual KOF economic globalization index has significant effect on the value of shipping import trade in Nigeria between 2005 and 2019.

The test of hypothesis  $H_{06}$  shown in table-4.8 shows F-score of 14.431, F-critical of 3.68, and p-value of 0.000. Since F-score is greater than F-critical, ( $14.431 > 3.68$ ), we reject null

Table 6: The relationship between economic globalization and port revenue in Nigeria ports.

	Mean	Std. Deviation	N
InPOREV	9.4395	3.86996	15
InKOFTRGDF	3.8145	.07277	15
InKOFTRGDJ	3.9336	.04132	15
InKOFFGDJ	3.5995	.13225	15
InKOFFGDF	4.0516	.06434	15

  

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.923 <sup>a</sup>	.852	.793	1.75953	1.600

  

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	178.713	4	44.678	14.431	.000 <sup>b</sup>
	Residual	30.959	10	3.096		
	Total	209.673	14			

  

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-128.319	69.839		-1.837	.096
	InKOFTRGIDf	-9.574	6.835	-.180	-1.401	.192
	InKOFTRGIDj	-10.290	12.767	-.110	-.806	.439
	InKOFFGIDj	29.690	4.369	1.015	6.795	.000
	InKOFFGIDf	26.627	9.417	.443	2.828	.018

a. Dependent Variable: *InPOREV*

Source: Author's calculation.

hypothesis  $H_{06}$  to accept the alternate. We conclude that there significant effect of economic globalization on port revenue in Nigeria between 2005 and 2019.

Similarly, t-test was conducted to investigate the significance of the individual effects of trade globalization index de facto, trade globalization index de jure, financial globalization index de facto and financial globalization index de jure on port revenue generated over the period covered in the study. The result shows that only of KOF financial globalization index de facto and KOF financial globalization index de jure have t-cal. greater than 1.75 (i.e.:  $6.795 > 1.75$ ; and  $2.828 > 1.75$ ). We conclude that KOF financial globalization de facto and KOF financial globalization de jure both have significant effect on port revenue generated in in Nigeria ports between 2005 and 2019. KOF Trade globalization index de facto and KOF trade globalization index de jure with  $1.401 < 1.75$  and  $0.806 < 1.75$  respectively; both have no significant effects on port revenue generated in Nigeria between 2005 and 2019.

## Conclusion.

Economic globalization in Nigeria has significant effects on the value of shipping export trade, value of shipping import trade, as well as port revenue generated in Nigeria between

2005 and 2019. Only KOF financial globalization index de jure has significant effect of the value of shipping export trade in Nigeria between 2005 and 2019. KOF trade globalization index de facto, KOF trade globalization index de jure and KOF financial globalization index de facto all have t-cal. less than t-critical and have no significant effects on shipping export trade in Nigeria.

The KOF financial globalization index de jure, KOF trade globalization index de facto, KOF trade globalization index de jure and KOF financial globalization index de facto all have t-cal. less than t-critical (i.e.:  $0.335 < 1.75$ ;  $0.662 < 1.75$ ,  $0.842 < 1.75$  and  $-0.959 < 1.75$ ). We conclude that, none of the individual KOF economic globalization index has significant effect on the value of shipping import trade in Nigeria between 2005 and 2019.

The findings of the study reveal that KOF financial globalization de facto and KOF financial globalization de jure both have significant effect on port revenue generated in in Nigeria ports between 2005 and 2019. The result also shows that KOF financial globalization de facto and KOF financial globalization de jure both have significant effect on port revenue generated in in Nigeria ports between 2005 and 2019. KOF Trade globalization index de facto and KOF trade globalization index de jure with  $1.401 < 1.75$  and  $0.806 < 1.75$  respectively; both have

Table 7: Test of  $H_{01}$ : There is no significant effect of economic globalization on the value of shipping export trade in Nigeria.

Hypotheses	F-cal.	F-critical	p-value/sig.	Decision
$H_{01}$	<b>6.181</b>	3.68	0.041 <sup>b</sup>	Reject $H_{01}$
Variable	t-cal.	t-critical	p-value/sig.	Decision
InKOFTRG Df	-0.377	1.75	0.714	Not significant
InKOFTRG Dj	0.964	1.75	0.358	Not significant
InKOFFG Dj	2.683	1.75	0.023	significant
InKOFFG Df	0.352	1.75	0.732	Not significant

Source: Author's calculation. Reject null hypotheses if  $F\text{-cal} > f\text{-critical}$ ; Reject null hypotheses if  $F\text{-cal} < F\text{-critical}$ .

Table 8: Test of  $H_{02}$ : There is no significant relationship between economic globalization and value of shipping import trade in Nigeria.

Hypotheses	F-cal.	F-critical	p-value/sig.	Decision
$H_{01}$	<b>5.800</b>	3.68	.052 <sup>b</sup>	Reject $H_{02}$
Variable	t-cal.	t-critical	p-value/sig.	Decision
InKOFTRG Df	-0.335	1.75	.745	Not significant
InKOFTRG Dj	0.622	1.75	.548	Not significant
InKOFFG Dj	0.842	1.75	.419	Not significant
InKOFFG Df	-0.959	1.75	.360	Not significant

Source: Author's calculation. Reject null hypotheses if  $F\text{-cal} > f\text{-critical}$ ; Reject null hypotheses if  $F\text{-cal} < F\text{-critical}$ .

no significant effects on port revenue generated in Nigeria between 2005 and 2019.

### Recommendation.

It is recommended among other things, in line with the findings of the study that:

1. Economic globalization has significant effects on Nigeria export trade earnings. Therefore, local regulations should be implemented to protect local producers and to help improve their operations for improved export earnings.
2. Economic globalization has significant effect on value of shipping import trade in Nigeria. Local authorities in Nigeria should implement regulations to protect the economy from dumping and other negative effects of import dependency such as capital flight and depletion of foreign reserve among others.

### References.

1. Aylin C. & Yucel O. (2016) Maritime Logistics. Retrieved: 06/07/2021, from <http://www.IGglobal.com>. DOI: 10.401-8/978-1-4666-9779-9.ch019.
2. Adesina O.S. (2012) The Negative Impact of Globalization on Nigeria. International Journal of Humanities and Social Science Vol. 2 (15) 193-102.
3. Chinn M. and Ito H. (2006) What matters for financial development, capital controls, institutions and interactions. Journal of development economics 8(1) 456-461.
4. Czaika M., H. de Haas and M. Villares-Varela (2017), The Global Evolution of Travel Visa Regimes, *Population and Development Review*. 44(3): 589-622.
5. Dappa T.G. and Thom-otuya B. (2010) The Effects of Globalization on Developing Economies: The Nigerian Experience. Sophia: An African Journal of Philosophy, Vol. 12 (2)203-221.
6. Dreher, A. (2006): external page Does Globalization Affect Growth? Evidence from a new Index of Globalization. *Applied Economics* 38, 10: 1091-1110.
7. Gygli, Savina, Florian Haelg, Niklas Potrafke and Jan-Egbert Sturm (2019): The KOF Globalisation Index – Revisited, *Review of International Organizations*, 14(3), 543-574 external page <https://doi.org/10.1007/s11558-019-09344-2> call.made.
8. Hyeon-Seung H. and Cyn-Young Park (2019) A New Index of Globalization: Measuring Impacts of Integration on Economic Growth and Income Inequality. Asian Development Bank (ADB) Economics Working Paper Series No. 587 | July 2019.
9. Kumar, S., and J. Hoffmann (2002), Chapter 3 Globalization: the Maritime Nexus, in *Handbook of Maritime Economics and Business*, edited by C. Grammenos, pp. 35-62, Informa, Lloyds List Press, London.

Table 9: Test of  $H_{07}$ : There is no significant effect of globalization on port revenue in Nigeria.

Hypotheses	F-cal.	F-critical	p-value/sig.	Decision
$H_{07}$	14.431	3.68	.000 <sup>b</sup>	Reject $H_{07}$
Variable	t-cal.	t-critical	p-value/sig.	Decision
InKOFTRGIDf	-1.401	1.75	0.192	Reject $H_{02}$
InKOFTRGIDj	-0.806	1.75	0.439	Reject $H_{03}$
InKOFFGIDj	6.795	1.75	0.000	
InKOFFGIDf	2.828	1.75	0.018	

Source: Author's calculation. Reject null hypotheses if  $F\text{-cal} > f\text{-critical}$ ; Reject null hypotheses if  $F\text{-cal} < F\text{-critical}$ .

10. Makinde H.O. (2013) An Appraisal of the Effects of Globalization on the Nigerian Economy. *American Journal of Business and Management*, Vol. 2 (4) 296-303. DOI: 10.11634/216796061302462. <http://www.worldscholars.org>.
11. Nwokah N.G. (2015) The Socio-Economic Impact of Globalization in Nigeria. *Journal of Economics and Sustainable Development* Vol. 6 (10) 238-249.
12. Nwokedi T.C., Ndikom O.B., Okoroji L. I., and Nwaorgu J. (2021) Determinant Port-related Factors Affecting the Flow of Shipping Trade and Logistics in Nigerian Seaports. *LOGI – Scientific Journal on Transport and Logistics* Vol. 12 (1)261-270. DOI: 10.2478/logi-2021-0024.
13. Popoola J. (2020) Globalization and Nigeria's Economic Development—A Study of the Interconnectedness. *Open Journal of Political Science*, 10 (2020) 460-480. doi: 10.4236/ojps.2020.103028.
14. Robinson, W.I. (2004). *A Theory of Global Capitalism: Production, Class and State in a Transnational World*. Baltimore, MD: The Johns Hopkins University Press.
15. Ricciardi, A. (2006), Patterns of invasion in the Laurentian Great Lakes in relation to changes in vector activity, *Diversity and Distributions*, 12(4),425-433.
16. Ubam R. E. and Wilcox R. I. (2017) A Review of the Effects of Globalization on Nigeria Economic Development. *International Affairs and Global Strategy* Vol.49, (2016)12-22.
17. Yevgeniy G., Tim L., Philip W., James T., Marc S. (2015) The impact of economic, political and social globalization on overweight and obesity in the 56 low and middle income countries. *Social Science & Medicine* 133 (2015) 67-76.