



## Infrastructure Development: A Key to Vessel Turn around and Economy Development

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Abstract

The role of ports in an economy is one that cannot be over emphasized given the part it plays in enabling trade and developing a country. Trade facilitates economic growth, through higher cargo capacity and increased productivity, as well as promotes social development. This study investigates the impact of infrastructure development on vessel turnaround time as well as economic development. The study was carried out in Apapa –Wharf area of Lagos state among 150 respondents using questionnaire. Descriptive statistics was adopted for data analysis and the result revealed that infrastructure development has significant impact on vessel turnaround time and economy development. From the findings conclusions were drawn and recommendations made.

**Keywords:** Infrastructure development, Vessel, turnaround time, economy development.

### 1 Introduction

The role of ports in an economy is one that cannot be over emphasized given the part it plays in enabling trade and developing a country. Trade facilitates economic growth, through higher cargo capacity and increased productivity, as well as promotes social development (Skov, 2015). Trade enables access to knowledge, technologies, enhances entrepreneurship, and creates jobs. In summary it generates resources necessary to foster economic development. An action that enhances trade is the development of infrastructure at terminals to make it adequate for vessels to port, which directly increases employment opportunities and stimulate economic growth at the port.

In china, the international trade and industrialization strategy is such that is heavily reliant on container transportation which serves as an access to reaching global markets (Skov, 2015). This implies that container transport is significant to developing trade and economic growth in China. China was able to achieve this feat using a focused investment strategy, in which some of the best transport infrastructure in the world was obtained by china; which led to some of the world's leading container ports, located in China and developing the container ports worldwide. The example shown by china is an indication that when proper investment is made in infrastructures such as container terminals, it means it is a direct investment on increased productivity and capacity. The effect of which is an increased response of shipping lines services, which translates to bigger vessels, more port calls and increased liner shipping connectivity; as well as increased imports and reduced trade costs.

An industrialized economy is one that is expected to possess adequate infrastructure that positively impacts on a country's economy and enhance the economic growth of the country. The availability of efficient infrastructure generally improves quality of life and promotes rapid industrialization. According to African Development Bank, 2018, infrastructural development is significant to the growth of an economy and living standards. Infrastructural development reduces poverty, contributes to human development and the influences the achievement sustainable Development Goals (African Development Bank, 2018).

A condition for development is the construction of physical infrastructure, which consists of two parts: economic infrastructure which comprises of roads, electricity, telecommunications, and irrigation, while social infrastructure comprises hospitals, water supply, schools and sewage

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systems (Azolibe&Okonkwo, 2020).Industrialization and infrastructure are closely related and significant to growth in any economy which is reflected in the equal of distribution of resources, to enhance production inputs and outputs to ensure sustainable development. Inferring from the above, the provision of infrastructure services is vital to the development of an economy (World bank, 2017).

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## 2 Statement of research problem

Investment potentials and opportunities are closely linked to seaport development. Thus the need for seaport with hat boasts of modern infrastructure cannot be over emphasized. This is because the size of seaport largely determines the type of vessels that can be hosted there. An efficient maritime infrastructure is critical to security and economic development, as well as enhances maritime transportation, vessels operation and cargo movement. The inability of countries to cope with infrastructural realities, will result in a position that makes them incapable of fostering economic development of their trade sector (Adetose&Owolabi, 2020)

It is estimated by the African development bank (2018) that the cost of electricity in Africa triples that of other comparable developing regions. This means that most manufacturers operative in these regions have to rely on alternative and expensive source of power for their production. The effect of this is a poor profit margin. In the same vein poor transportation network causes a serious limitation on the ability of manufacturers to take advantage of regional economies of scale. The problems are caused by a deficit in the infrastructure development of a country which in turn threatens industrialization. The industrialization of a country is dependent on the quality of the infrastructure put in place. Thus, Nigeria as a country is confronted by inadequate and unproductive infrastructure in terms of transport, water and power services necessary for an industry to thrive in with strong comparative advantages (Azolibe&Okonkwo, 2020). Given this view, this study seeks to determine the impact of infrastructure development on vessel turnaround time as key to economic development.

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## 3 Research objectives

1. Determine the impact of infrastructure development on vessel turnaround time
2. Determine the extent to which infrastructure development enhance economy development

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## 4 Research questions

- i. What is the impact of infrastructure development on vessel turnaround time?
- ii. To what extent does infrastructure development enhance economy development?

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## 5 LITERATURE REVIEW

### Overview of infrastructure development

Every country strives for sustainable growth and development and this can be stimulated through creating adequate domestic physical capital. Infrastructure is fundamental to any successful public policy and a critical component of a nation's development. Cantu (2017) defined infrastructure by classifying it four ways: type, sectors, levels, and dimensions stating that they coexist in the societal area for ideal development. Infrastructure development is the creation of elementary foundational services in order to stimulate economic growth and quality of life improvement. Infrastructure is the universal term for the basic physical systems of an industry, state, or country such as transportation systems, green infrastructure (reuse and recycling), digital infrastructure, social infrastructure, transportation, energy production and delivery, water resource management, treatment and flood prevention, transportation, sewage, communication networks, water and electric systems. These systems tend to be capital intensive and high cost investments and are crucial to a country's economic development and growth (Boyle, 2021). Several developed economies have gone through periods of intensive infrastructure building that have improved efficiency (Spacey, 2018). Infrastructural development is a priority for governments worldwide as policymakers believe that it is key to social and economic development and growth. In Nigeria, the importance of infrastructure cannot be over-emphasized as it contributes to aggregate economic performance for evaluating the growth effects of fiscal interventions in the form of public investment changes, or for assessing if public infrastructure investments can be self-financing (Ogbaro&Omotoso, 2017).

In Nigeria like in other developing countries, infrastructure development is more challenging as there is inaccessibility to the government. The

educational sector is faced with different challenges such as inadequate provision of utilities, especially water, and electricity. On the other hand, education is highly underdeveloped in Nigeria. There are insufficient schools to accommodate the number of pupils. This implies that there is a short fall in school construction and for the country to move forward additional schools must be constructed (Umar et al., 2019). There is shortage in infrastructural facilities in schools as many of the laboratories and workshops are outdated. Infrastructural facilities are in appalling state in Nigeria as the resources for provision of infrastructure are always scarce and this lack has opened uncountable loopholes for infrastructural deficits (Umar et al., 2019).

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## 6 Empirical review

Owusu-Manu et al., (2019) assessed the impact of infrastructure development on Ghana's economic growth using data obtained from the World Bank's World Development Indicators, the United States' International Energy Statistics and the Central Intelligence Agency's Factbooks between 1980 to 2016. Findings indicated a statistically significant relationship between infrastructure development and economic growth. The study also revealed that electricity-distribution loss has a significant negative effect over both long- and short-run periods and that the greatest positive impact on economic growth is derived from electricity-generation capacity.

Similarly, Owolabi-Merus (2015) used Ordinary Least Squares and Granger Causality econometric techniques to investigate the infrastructural development and economic growth nexus in Nigeria using. He reviewed the period from 1983 to 2013 obtaining data from the World Bank's Africa Development Indicators and the empirical results revealed that the economic growth of Nigeria is positively impacted by infrastructural development.

Also, Azolibe and Okonkwo (2020) used a panel data set of 17 countries spanning from 2003 to 2018 to examine how the state of infrastructure development in Sub-Saharan Africa stimulates industrial sector productivity. The findings indicated that the quality and quantity of telecommunication infrastructure majorly influences industrial sector productivity in Sub-Saharan Africa. Analysis further showed that the relatively low level of industrial sector productivity in Sub-Saharan Africa is largely due to their poor electricity and transport infrastructure and underutilization of water supply and sanitation infrastructure.

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## 7 Theoretical framework

The Structural Functionalist Theory was developed by Talcott Parsons and is chosen because it explains the functions performed by the structures in a system. The theory suggests that the different parts of each society contribute positively to the functioning of the entire system. It argues that for there to be balance, every system has structures that must function and if one structures changes, balance is temporarily disrupted until other structures change to create a new equilibrium else the entire system may malfunction. To relate this theory to this research, an infrastructure is the structural, basic and functional element required for economic development to take place. For an effective political system, every facility must be made available and efficient. Infrastructural facilities must be adequately provided and developed to suit the people's needs else there may be an incomprehensible level of institutional decay and backwardness these infrastructures are essential for the survival of the society.

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## 8 Research Methodology

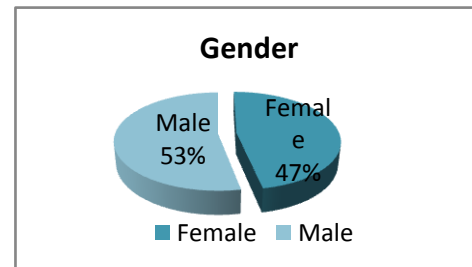
The paper adopted descriptive survey research method in carrying out this study. The population of the study comprised of maritime workers in Apapa Wharf located in Lagos. The study purposively selected five shipping companies located in Apapa, while random sampling was used in selecting thirty workers from each of the selected companies. This brought the sample size to 150 respondents. Using questionnaire distributed to the selected respondents, data was collected for the study's use. The questionnaire was structured using the four point likert scale format, and sectioned into two. Section A covered the respondent's demographic information, while section B covered the questions formulated for the study. The questionnaires were distributed with the aid of research assistants, which were retrieved immediately. The data was analyzed descriptively using mean and standard deviation

## 9 Data presentation, Analysis and Result

### Demographic information of the respondents

**Table 1: Gender**

Gender	Frequency	Percentage
Female	70	46.97
Male	79	53.02
<b>Total</b>	<b>149</b>	<b>100</b>

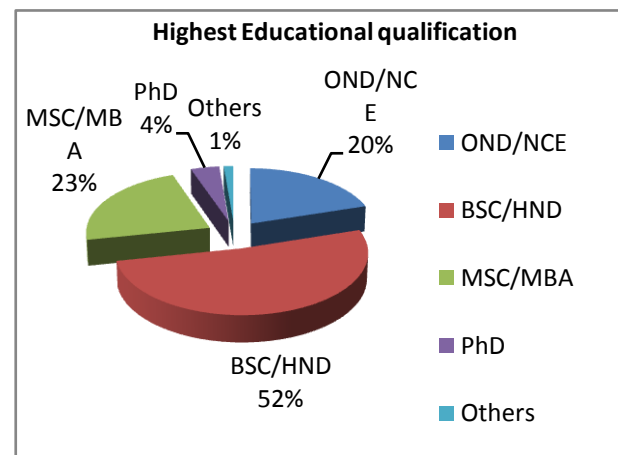


Source: Field survey 2021

### Educational attainment of the respondents

**Table 2: Highest Educational qualification**

Option	Frequency	Percentage
OND/NCE	30	20
BSC/HND	77	52
MSC/MBA	34	23
PhD	6	4
Others	2	1
<b>Total</b>	<b>149</b>	<b>100</b>



Source: Field survey 2021

Fig. 2, Highest Educational qualification

The participants in the study have achieved different level of education. 20% had OND/NCE; 52% of the participants had BSC/HND; 23% of the respondents had MSC/MBA; 4% of the respondents had 4%; while 1% selected others. This shows that all the participants had achieved some degree of formal educational attainment.

**RQ1: What is the impact of infrastructure development on vessel turnaround time?****Table 3: The respondents' opinion on the impact of infrastructure development on vessel turnaround time**

Options		SA	A	NN	D	SD	Total % in Agreement	Ranking
Infrastructure development eliminates unnecessary delays that hinder effective sea transportation	F	79	53	10	3	3	88.6	2nd
	%	53.0	35.6	6.7	2.0	2.0		
Infrastructure development enhance the productivity level of vessel operators	F	55	67	13	11	3	81.8	7th
	%	36.9	44.9	8.7	7.4	2.0		
Infrastructure development influences accessibility to global markets which enhances economic growth	F	59	68	11	8	3	85.2	6th
	%	39.6	45.6	7.4	5.4	2.0		
Infrastructure development increases the profitability of maritime sector and its contribution to the economy	F	69	64	12	0	4	89.2	1st
	%	46.3	42.9	8.0	0	2.6		
Infrastructure development increases port cargo throughput which can increase GDP per capita growth	F	70	51	10	9	9	87.8	4th
	%	46.9	34.2	6.7	6.0	6.0		
Infrastructure development increases the ability of companies to export their goods and services globally	F	65	67	13	1	3	88.5	3rd
	%	43.6	44.9	8.7	0.7	2.0		
Infrastructure development increase a country's global economic footprint	F	59	68	11	8	3	85.5	5th
	%	39.6	45.6	7.4	5.4	2.0		

*Field Survey 2021*

Table 3 presents the respondents' opinion on the impact of infrastructure development on vessel turnaround time. As indicated 88.6% are in agreement to the statement that "Infrastructure development eliminates unnecessary delays that hinder effective sea transportation"; 81.8% supports that: "Infrastructure development enhance the productivity level of vessel operators"; 85.2% of the respondents are in agreement to the statement "Infrastructure development influences accessibility to global markets which enhances economic growth; 89.2% are in agreement that 'Infrastructure development increases the profitability of maritime sector and its contribution to the economy; 87.8% are in agreement that "Infrastructure development increases port cargo throughput which can increase GDP per capita growth.

**RQ2: To what extent does infrastructure development enhance economy development?****Table 4: The respondents opinion on the extent to which infrastructure development enhance economy development**

Options		SA	A	NN	D	SD	Total % in Agreement	Ranking
Infrastructure development improves living conditions	F	59	68	11	8	3	85.2	5th
	%	39.6	45.6	7.4	5.4	2.0		

Infrastructure development boosts the accumulation of other factors of production	F	69	64	12	0	4	89.2	1st
	%	46.3	42.9	8.0	0	2.6		
Infrastructure development helps to increase returns on investment by reducing production cost and improving transition efficiency	F	70	51	10	9	9	87.8	3rd
	%	46.9	34.2	6.7	6.0	6.0		
Infrastructure development helps to alleviate poverty	F	65	67	13	1	3	88.5	2nd
	%	43.6	44.9	8.7	0.7	2.0		
Infrastructure development provides the transport facilities necessary to operate decentralized production processes.	F	59	68	11	8	3	85.5	4th
	%	39.6	45.6	7.4	5.4	2.0		

*Field Survey 2021*

Table 4 presents the respondents opinion on the extent to which infrastructure development enhances economy development. As indicated in the table, 85.2% of the respondents are in agreement to the statement that: "Infrastructure development improves living conditions"; 89.2% of the respondents are in agreement to the statement: "Infrastructure development boosts the accumulation of other factors of production"; 85.2% of the respondents are in agreement to the statement: "Infrastructure development improves living conditions"; 89.2% of the respondents are in agreement that "Infrastructure development boosts the accumulation of other factors of production"; 87.8% supports that 'Infrastructure development helps to increase returns on investment by reducing production cost and improving transition efficiency'; 88.5% approves that: 'Infrastructure development helps to alleviate poverty'; while the 85.5% supports that Infrastructure development provides the transport facilities necessary to operate decentralized production processes'.

## 10 Discussion, Conclusion and recommendations

The result of this study has revealed that infrastructure development has significant impact on vessel turnaround time. Vessel turnaround time is used to describe the total time it takes a vessel to spend in the port, from its arrival to its departure. The earlier and faster it moves the higher will its turnover and thus profitability. This is so because trade plays essential roles in economic development. It facilitates economic growth, through higher cargo capacity and increased productivity, as well as promotes social development (Skov, 2015). Trade enables access to knowledge, technologies, enhances entrepreneurship, and creates jobs. One means of trading large quantity of goods or product is through the sea. According to Bauer (1988) about 90% of the world's merchandise are carried out by means of seas are carried by sea and the reason is that there are multiple benefits for foreign trade compared with rail, air, or road transport. In a globalized economy where people ordered goods from different part of the world, the volume of goods that are being shipped had long increased and thus necessary infrastructures should be put in place to facilitate vessels turnaround time. This is important because shipping remains indispensable to the world (Sekimizu, 2021). Another result of this study revealed that infrastructure is essential for economic development which supports the study by Umar et al (2019) who also found infrastructure as essential for economy development. In same vein, the studysupport earlier studies such as Dhesi (2017), Palei (2015), Chukwumeka, Nyewe and Ugondah (2013), Sojoodi, Zonuzi, and Nia (2012), respectively who also found a connection between economic development and infrastructure development.

The study therefore concludes that vessel turnaround time could be improves due to infrastructure development; and the increase in infrastructure development results in improvement in economic development. Thus, the study recommends that government should improve in the area of infrastructure since it has indirect impact on all factors of production. The study also recommends policy makers need to formulate suitable policy meant to enhance the development of infrastructure as well as the protection of these infrastructures against vandals.

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**Appendix****INFRASTRUCTURE DEVELOPMENT: A KEY TO VESSEL TURN AROUND AND ECONOMY DEVELOPMENT REQUEST FOR INFORMATION**

Dear Respondent,

I am carrying out a study on “infrastructure development: a key to vessel turn around and economy development”, and you have been chosen to be part of the study. This questionnaire is only for academic purposes. Kindly select the response which applies to you and all information will be kept confidential

**SECTION A**

**Gender:** Male (  ) Female (  )

**Education qualification**

- OND/NCE
- B.Sc./ HND
- M. Sc./MBA
- Others  Specify.....

**SECTION B:**

Instructions: Please tick (√) as appropriate where

SA = Strongly Agree (SA), A = Agree, UN=Undecided (UN); D = Disagree (D), SD = Strongly Disagree (SD)

S/N	ITEMS	SA	A	UN	D	SD
<b>RQ1</b>	<b>What is the impact of infrastructure development on vessel turnaround time?</b>					
1	Infrastructure development eliminates unnecessary delays that hinder effective sea transportation					
2	Infrastructure development enhance the productivity level of vessel operators					
3	Infrastructure development influences accessibility to global markets which enhances economic growth					
4	Infrastructure development increases the profitability of maritime sector and its contribution to the economy					
5	Infrastructure development increases port cargo throughput which can increase GDP per capita growth					
6	Infrastructure development increases the ability of companies to export their goods and services globally.					
7	Infrastructure development increase a country's global economic footprint					
<b>RQ2</b>	<b>To what extent does infrastructure development enhance economy development</b>					
8	Infrastructure development improves living conditions					
9	Infrastructure development boosts the accumulation of other factors of production					
10	Infrastructure development helps to increase returns on investment by reducing production cost and improving transition efficiency					
11	Infrastructure development helps to alleviate poverty					
12	Infrastructure development provides the transport facilities necessary to operate decentralized production processes.					