EJIRO MORRIS EMONENA

INVESTIGATION THE IMPACT OF TRANSPORTATION INFRASTRUCTURAL DEVELOPMENT ON NIGERIA'S ECONOMIC GROWTH (1990-2020)

MASTER THESIS

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NEAR EAST UNIVERSITY

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DEPARTMENT OF BUSINESS ADMINISTRATION

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Approval

We certify that we have read the thesis submitted by Ejiro Morris EMONENA titled **"Investigating the Impact of Transportation Infrastructural Development on Nigeria's Economic Growth (1990-2020)"** and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Business Administration.

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Declaration

I now declare that all information, documents, analysis, and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of the Institute of Graduate Studies, Near East University. As required by these rules and conduct, I also declare that I have fully cited and referenced information and data that are not original to this study.

Ejiro Morris Emonena

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Ejiro Morris Emonena

Abstract

Investigating the Impact of Transportation Infrastructural Development on Nigeria's Economic Growth (1990-2020)

Emonena Morris Ejiro

Supervisor, Assoc. Prof. Dr. Ahmet Ertugan

MBA, Department of Business Administration

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The research examined the impact of Nigeria's expanding transportation network on its economy. The World Bank and Central Bank of Nigeria databases were used to finish this thesis with secondary data. A 32-year span, from 1990 to 2020, saw the data being gathered. The Autoregressive Distributed Lag Model (ARDL) bound test and the Autoregressive Distributed Lag Model (estimate) were used. The co-integration test was carried out using the ARDL bound test, and as it was anticipated that the variables would have a long-term relationship, both the long-run and short-run ARDL models were utilized for data analysis. Except for the government's ongoing spending, all variables, according to the short-term findings, positively affected the Nigerian economy. The government's infrastructure spending will boost the economy over the long run. According to policy recommendations, the report suggests that the government increase funding for transportation-related capital projects. According to the study, increased economic activity is associated with increased capital spending on transportation. Therefore, increasing capital spending on transportation will stimulate the economy. The responsibility for maintaining the country's transportation infrastructure falls on the federal government. The government should expand ongoing investment in the transportation industry since it and its services are crucial for economic growth. Transportation sectors, including aircraft, shipping, and road travel, may get ongoing government assistance.

Keywords: Transportation, Economic Growth, Recurrent Expenditure, Capital Expenditure.

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Araştırma, Nijerya'nın genişleyen ulaşım ağının ekonomisi üzerindeki etkisini inceledi. İkincil verilerle bu tezi bitirmek için Dünya Bankası ve Nijerya Merkez Bankası veri tabanları kullanılmıştır. 1990'dan 2020'ye kadar olan 32 yıllık bir süre, verilerin toplandığını gördü. Hem Otoregresif Dağıtılmış Gecikme Modeli (ARDL) sınır testi hem de Otoregresif Dağıtılmış Gecikme Modeli (tahmini) kullanıldı. Eş bütünleşme testi ARDL sınır testi kullanılarak gerçekleştirilmiş ve değişkenlerin uzun dönemli bir ilişkiye sahip olacağı öngörüldüğü için veri analizinde hem uzun dönem hem de kısa dönem ARDL modelleri kullanılmıştır. Kısa vadeli bulgulara göre, hükümetin devam eden harcamaları dışında tüm değişkenler Nijerya ekonomisi üzerinde olumlu bir etkiye sahipti. Hükümetin altyapı harcamaları uzun vadede ekonomiyi canlandıracak. Politika tavsiyelerine göre rapor, hükümetin ulaşımla ilgili sermaye projeleri için finansmanı artırmasını öneriyor. Araştırmaya göre, artan ekonomik aktivite, ulaşım için artan sermaye harcaması ile ilişkilidir. Bu nedenle ulaştırmaya yönelik sermaye harcamalarının artırılması ekonomiyi canlandıracaktır. Ülkenin ulaşım altyapısını koruma sorumluluğu federal hükümete düşüyor. Hükümet ve sunduğu hizmetler ekonomik büyüme için çok önemli olduğundan, ulaştırma endüstrisinde devam eden yatırımları genişletmelidir. Uçak,

deniz taşımacılığı ve karayolu seyahati dahil olmak üzere ulaşım sektörleri sürekli devlet yardımı alabilir.

Anahtar Kelimeler: Ulaştırma, Ekonomik Büyüme, Cari Harcamalar, Sermaye Harcamaları.

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List of Abbreviations

GDP:	Gross Domestic Product
GRET:	Government Recurrent Expenditure on transportation
GCTI:	Government Rate in Transport Industry
GCET:	Government Capital Expenditure on transportation
CBN:	Central Bank of Nigeria
MNE:	Ministry of National Education
(DPA):	Directly Productive Activities

CHAPTER I
Introduction

1.0 Background to the Study

It is widely acknowledged that transportation infrastructures are vital to the economies of all countries, whether developing or developed. Economists have regarded transportation as one of the most significant infrastructure components for an economy's output and growth since Adam Smith's time. As a result, Nigeria is no exception, as the existing transportation infrastructure has played a vital role in the country's economic growth and development, or lack thereof. Because it links important commercial sites, Nigeria's transportation infrastructure is crucial to its economic growth. (Lingaitiene, 2007). A well-developed transportation network stimulates economic activity by improving accessibility and easing the flow of products, particularly agricultural commodities, across the country. As a result, Oni and Okanlawon (2015) stated that transportation is the backbone of civilization. The introduction emphasized the well-known value of transportation infrastructure to the economy of all nations, including Nigeria. Infrastructure for transportation refers to the physical networks and facilities required for the movement of people, services, and products. It includes a variety of means of transportation, including air, ground, and water travel.

Due to its importance in supporting economic production and growth, economists have long regarded transportation as a vital infrastructure element. To facilitate the interchange of products and the specialization of labor, essential factors in economic progress, Adam Smith, a prominent economist, underlined the need for transportation.

Like any other society, Nigeria's transportation infrastructure is essential to the country's development and progress. Nigeria's transportation system links key commercial locations, facilitating the flow of people, products, and services throughout the nation. Trade, investment, and the operation of several economic sectors depend on this interconnectedness. A well-designed transportation system has several advantageous effects on the economy. Minimizing distances and travel times increases accessibility and enables firms to reach markets more quickly.

Additionally, it makes it easier for goods, particularly agricultural commodities, to move from producing regions to consumers at home and abroad. This efficient flow

of commodities lowers costs, expands market access, and boosts competitiveness. Because it makes it possible to share information, resources, and ideas, facilitating social and economic connections, transportation is sometimes referred to as the backbone of civilization. By linking people and locations, transportation infrastructure promotes economic activities, including commerce, tourism, manufacturing, and services. Additionally, it encourages socioeconomic advancement and regional cohesion. Transportation infrastructure is essential for economic growth and development because it makes it easier to transfer people, products, and services. A robust transportation system is crucial for Nigeria's economy because it increases accessibility, fosters economic activity, and encourages trade and investment. The nation's overall development and prosperity are aided by transportation infrastructure, which improves connection and streamlines the movement of goods.

The origins of Nigeria's transportation networks may be traced to pre-colonial times when indigenous communities living in various regions of the nation established trading relations. Land and sea travel were the most widely used forms of transportation at this period. (Leonard, 2009). Additionally, the pre-colonial era required water-based transportation infrastructure due to the commercial connections between the Efiks in Calabar and the Europeans. Europeans commonly utilized ships moored on the banks of the Cross River at Calabar and Port Harcourt. During the British colonial era, the first railroad in Nigeria, which connected Lagos with Abeokuta, was finished in 1898. (Geary, 2007).

Additional railroads were constructed during the colonial era, linking major commercial hubs and cities in Nigeria, most notably at Kano in 1912 and Port Harcourt in 1916. (Chambers, 2005). Additionally, the development of air travel during World War II contributed to the growth of Nigeria's transportation infrastructure. Nigerian Airways Limited was started as soon as the nation gained independence in 1960, and it is responsible for managing air travel in Nigeria. (Spanks, 2014). Since then, Nigeria's transportation network has expanded to include rail, air, marine, and road transportation.

The majority of Nigeria's transportation system relies on roads at the moment. This is owing to its greater accessibility to the general public and the decline in other forms of transportation in Nigeria, notably railroads. (Ajibogun, 2017). Currently, 90% of import traffic, 85% of export traffic, and 90% of domestic traffic

nationwide are on roads. If the use of rivers, inland waterways, railroads, and pipelines is not revived, this percentage will increase much more in the upcoming years. (Ukegbu, 2016). Major highways in Nigeria have deteriorated over time due to an overreliance on the road transportation system, to the point that many routes linking important commercial hubs and cities are either inaccessible or in bad shape. Obasuyi (2009) argues that while Nigeria's roads are overused and poorly maintained, the nation's waterways have much capacity to be used. Iren (2011) claims that pipelines and railroads were formerly constantly utilized; they are now only sometimes used, whereas airways are heavily used yet still need to be upgraded and expanded. The infrastructure of Nigeria's roads has worsened due to the tremendous strain this has put on the country's road networks.

Any economy that lacks adequate transportation loses. The economy suffers, and tremendous business opportunities are discouraged from coming to the nation. A competent train system, navigable canals, and appropriate roadways are necessary for moving commodities from the place of production to the point of sale in agriculture, trade, and other economic activities. However, this is different from the situation in Nigeria. A fundamental challenge for Nigeria's economic growth is the availability of infrastructure to meet the requirements of people and businesses. Developing a country's transportation infrastructure is essential to its economic progress. For different economic activities to flourish, it acts as the lifeblood for supporting the flow of commodities, services, and people. To carry goods effectively from the production site to the point of sale in the agricultural, commercial, and other economic sectors, there must be a well-functioning transportation system, including a capable railway system, navigable canals, and suitable highways.

In Nigeria, fundamental issues prevent the nation's economy from expanding. The poor availability and quality of the transportation infrastructure are significant issues. Nigeria's current transportation infrastructure needs to meet the needs of all types of people and enterprises. A subpar road network, limited rail connections, underused waterways, and insufficient air transportation capacity result from inadequate investment and upkeep in transportation infrastructure. Inefficient transportation infrastructure has many adverse effects. First off, the economy as a whole suffers. It becomes challenging to transfer products and services, which raises transportation costs, extends travel times, and causes delays in supply chains.

Thus, firms operating in Nigeria become less effective and competitive. Second, an efficient transportation infrastructure is needed to deter huge commercial prospects from entering the country. When choosing where to locate their enterprises, investors take the accessibility and connection of transportation networks into account. The expansion of current enterprises might need to be improved by adequate infrastructure, which can repel new investors and prevent employment growth.

Nigeria's poor transportation infrastructure also impacts several industries, including manufacturing, services, and agriculture. For example, insufficient transportation infrastructure in agriculture makes it difficult to transfer agricultural products from rural areas to metropolitan markets efficiently. This may lead to higher post-harvest losses, more difficult market access, and lower farmer profitability.

For Nigeria's economy to expand and thrive, it is essential to address the infrastructure-related problems. The transportation network may be improved and developed with significant expenditures, good planning, and execution tactics. Building a dependable railway system, keeping navigable canals, and building suitable roads are essential to improving connection, lowering transportation costs, and fostering economic activity all around the nation. Additionally, spending on transportation infrastructure might boost the country's economy. In addition to enhancing transportation, it generates job opportunities, propels adjacent businesses like manufacturing and construction, and increases investment across various industries. A robust transportation infrastructure may promote commerce promote regional integration, and increase Nigeria's economy's overall competitiveness.

According to Tony Odiadi (2016), Nigeria has a 35 percent infrastructure stock, compared to 58 percent in India, 87 percent in South Africa, 61 percent in Brazil, and 63 percent in China. Furthermore, according to the National Planning Commission, Nigeria's road density is only approximately a quarter of India's. These sobering figures demonstrate the status of Nigeria's economy. Nigeria's economy may benefit from improved transportation infrastructure by increasing its production capacity and encouraging economic growth and diversification. However, there are worries that Nigeria's unreliable transportation infrastructure will reduce the nation's economic potential. The offered statement highlights the significance of transportation infrastructure for Nigeria's economic growth. It

emphasizes addressing infrastructure deficiencies, particularly transportation, to realize Nigeria's full economic potential. Nigeria can improve connections, encourage economic activity, draw investments, and fuel long-term sustainable growth by investing in its transportation infrastructure. To realize these advantages and optimize the beneficial effects on Nigeria's economy, solving the current issues and worries related to transportation infrastructure is essential.

Therefore, this thesis aims to find out how the increase in Nigeria's transportation infrastructure affects the country's economic development.

1.1 Statement of Problem

In recent years, Nigerian academics have discussed the relationship between transportation and economic growth. Akinyosoye (2010) looked at the economic advantages of a solid infrastructural foundation in Nigeria. According to the conclusions, the government should prioritize sector reforms and adjustments to institutional policy. Siyan and Adegoriola (2017) also looked at the relationship between infrastructure growth and economic growth in Nigeria using data from 1981 to 2014. The findings indicated a long-term connection between infrastructure growth and economic expansion in Nigeria. Similarly, Orji et al. (2017) investigated the impact of infrastructure on Nigeria's industrial sector. The study's results demonstrated that in contrast to the energy consumption index, which had a positive but minor impact on industry-added value gross capital creation, spending by the federal government had an adverse but significant effect on industry value-added. Owolabi-Merus (2015) also examined the relationship between Nigeria's economic growth and infrastructural development. This study's results show that infrastructure upgrading positively and statistically significantly impacts Nigeria's economic development. Similarly, employing an extensive collection of data from 1960 to 2000, Calderon and Serven (2004) empirically examined the effects of the construction of infrastructure on GDP growth and income inequality. The research suggested that;

(a) The stock of infrastructure assets has a positive influence on growth and

(b) Income disparity diminishes as infrastructure quantity and quality rise.

Nedozi et al. (2014) used the same simultaneous equation to investigate the connection between infrastructure improvement and economic expansion in Nigeria. The results showed that infrastructure is vital to Nigeria's economic development.

Although multiple research investigations on Nigeria's structural growth and expansion have been conducted, more emphasis should be paid to the link between the country's transportation system and economic growth. By investigating how Nigeria's prosperity is influenced by the growth of the nation's transportation infrastructure, this research seeks to close a knowledge gap.

1.2 Research Questions

This research project focuses on presenting replies to the following questions.

i. What is the long-term link between Nigeria's economic development and government spending on transportation?
ii. Does Nigeria's transportation system affect the country's economic expansion?

1.3 Objectives of the Study

The main objective of this thesis is to examine how the increase in Nigeria's transportation infrastructure affects the country's economic development. The specific objectives are as follows:

i. To look into the long-term relationship between government investment in transportation and Nigeria's economic expansion.
ii. To evaluate how Nigeria's transportation system affects economic expansion.

1.4 Justification of the Study

This study on the link between the build-up of infrastructure for transportation and growth in the Nigerian economy may help explain the present state of the country's transportation system and how it affects economic growth.

Additionally, the study would help identify the current issues affecting Nigeria's transportation system, their causes, and the initiatives and policies implemented to solve them. This study would help determine how well the Nigerian transportation sector performed under earlier governments. In addition, this research will provide affordable solutions to Nigeria's present transportation issues. The study will show how vital transportation systems are for promoting economic growth and act as a platform to hold local governments responsible for their actions in their communities, so it will also be a source of education and information for the general public and society at large.

Political researchers and analysts believe that this study will contribute to our understanding of the hyperlink between Nigeria's transportation system and economic growth. In studies employing the same characteristics as this one, the effect of Nigeria's public transport system on its economic expansion has yet to be investigated. In this approach, the study will contribute to bridging a knowledge gap. The results will serve as a foundation for further research on the effect of Nigeria's transportation infrastructure on economic development.

1.5 Statement of Hypothesis

The research work formulated the following hypothesis for the investigation's purposes:

Hypothesis 1

H_0: There is no association between government transportation spending and economic development in Nigeria.

H_1: Government transportation spending and economic expansion are related in Nigeria.

Hypothesis 2

H_0: Government capital spending in Nigeria has no appreciable impact on economic expansion.

H_1: Government capital spending significantly affects economic growth in Nigeria.

Hypothesis 3

H_0: In Nigeria, there is no connection between recurrent government spending and economic expansion.

H_1: Economic growth and recurrent government spending are related in Nigeria.

1.6 Scope and Limitations of the Study

The thesis will investigate how Nigeria's economic development is impacted by the development of transportation infrastructure. The research will be place between 1980 and 2021. The selection of this time period allowed for a full analysis of changes in both economic development and transportation infrastructure. This will

allow us to assess if enhancing Nigeria's transportation infrastructure significantly affects the country's economic expansion.

1.7 Definition of Terms

Transportation System:

A transport network, also known as a transportation network, is a type of spatial network that describes a structure that allows for the movement of vehicles or the flow of goods. Roads, trains, air routes, pipelines, aqueducts, and electrical lines are all examples of infrastructure.

Economic Growth:

Economic growth refers to an increase in the ability of an economy to produce goods and services when comparing one time period to the next. Economic growth is a term used to describe a rise in a nation's economic results or production output.

Infrastructure:

This refers to the systems, facilities, and physical and organizational structures required for a society or economy to function. It consists of components including communication networks, utilities (electricity, water supply), public buildings (schools, hospitals), transportation networks (roads, bridges, airports), and other crucial infrastructure.

Recurrent Expenditure:

Recurrent expenses, usually referred to as operational expenses, are the continual costs that governments or organizations spend to operate and maintain their daily activities. This comprises routine costs for the operation of the organization, such as wages, utilities, maintenance, and other costs.

Capital Expenditure:

On the other hand, capital expenditure describes the money used to buy or upgrade long-term assets. It covers costs related to building new infrastructure, undertaking

construction projects, and making other expenditures that are anticipated to pay off over a lengthy period of time.

Gross Domestic Product:

The entire value of all commodities and services produced inside a nation's boundaries over a given time period, often a year, is known as the gross domestic product. It acts as a gauge of a nation's general economic activity and production. GDP is made up of government expenditure, company investments, household consumption, and net exports (exports minus imports).

Government Recurrent Expenditure:

The term "government recurrent expenditure" describes the continual costs that the government faces over the course of its regular business. It comprises recurring costs like the salaries and wages of public personnel, maintenance and repairs, office overhead, subsidies, and other recurring costs required to maintain the operation of public institutions and services.

Government Capital Expenditure:

Government capital expenditures are money allotted by the government for substantial investments in tangible assets and infrastructure. It covers the costs associated with building, enhancing, or acquiring public infrastructure, such as roads, bridges, schools, hospitals, airports, and utilities. The goal of capital spending is to increase the nation's economic productivity and raise the standard of public services.

Growth Rate on Transportation Industry:

The growth rate of the transportation sector, which includes multiple means of transportation including road, rail, air, and sea, is referred to as the rate of expansion over a certain time period. It is frequently reported as a percentage and is normally calculated by comparing the industry's current size or worth to that of a prior time period. The growth rate reflects changes in infrastructure spending, technology improvements, and other variables influencing the expansion of the sector. It also represents changes in the demand for transportation services.

CHAPTER II

Literature Review

2.0 Introduction

The main aim of this section is to examine previous research. Studies have been conducted on governmental spending on transportation and the impact that this spending has on the expansion of the economy. Following a discussion of the idea of transportation, in which the various forms of transportation and the benefits of an efficient transportation system are also covered, the idea of economic growth is considered. In addition, the theoretical framework contains discussions of hypotheses that explain the correlation between the funds spent by the government on transportation and the economy's growth. The study was founded on several economic growth theories, including Adam Smith's Theory of Economic Growth, Solow Swan's Model of Economic Growth, and Rostov's Stages of Economic Growth. The theoretical framework served as an anchor for the investigation. In addition, the empirical study consists of a discussion of previous studies on the relationship between governmental spending on transportation and economic growth and the findings of such studies. During the investigation into the empirical studies, it was discovered that the primary topic of debate among previous academics centered on the relationship between government expenses on infrastructure and its impact on economic growth in a general sense.

In this section of the thesis, research on the relationship between government spending on transportation and infrastructure and economic growth in Nigeria will be used to provide clear explanations. The subject was the subject of the research. Definitions covering everything from the most fundamental modes of transportation to the different modes in the nation, the evolution of transportation, Nigeria's economy, and the economy's development over time will be made known. Additionally, various data will be used to give a more detailed account of the research work. They would be represented in a graphically appealing manner to improve understanding. This study used Nigeria's GDP growth rate as a proxy for economic growth. In contrast, the following independent variables were used: government capital expenditure on transportation, government recurrent

expenditure on transportation, growth rate of the transportation industry, and inflation rate from 1980 to 2021.

2.2 The Big Picture of Transportation in General Concept

In the same way as other economic subfields, the transportation industry performs its duty within the context of a national economy. Despite this, there are particularities in this procedure that are legal, as well as those that are corporate and economic. Because the legal climate varies from nation to nation, we will not go into the specifics of the legal system but instead focus on the commercial and economic environment. The transportation industry differentiates itself from other economic sectors because it cannot keep these expenses in reserve; instead, they can only be rendered as costs. The capability to react and the markedly different cost structure are two distinguishing features of the supply side. The supply side, both temporally and spatially, might happen very quickly. This instability can also be found on the supply side. As a direct result, this industry's market and competitive landscape diverge from those in other industries.

We can state that transportation is the movement of people or the transfer of products and services from one location to another if we have a more complex concept of what is meant by the term. Traveling from one place to another is nearly as old as humanity. Transportation means transferring people and objects from one place to another. This word comes from the Latin words "to carry across" (portable) and "***trans***," which means "***across***" (Avonds & Gilot, 2002). The act of facilitating the physical movement of humans and things from one location to another is called transport (Cameron, 1982). In addition, Hershey and Blanchard (2018) define *transportation* as transferring products or people from one location to another. Various modes and transportation systems range from land to air to sea. The various types of transportation are:

1. Land Transport
2. Pipeline Transport
3. Water Transport
4. Air Transport

2.2.1 Transportation's Role in the Economy and Its Contributions

The economy can reap many benefits from transportation, including accelerating economic operations, creating new wealth, and improving the circulation of existing wealth within the nation. According to Banister and Berechman (2001), the following are some of the goals served by various modes of transportation:

The growth of industries whose products require rapid marketing is facilitated by transportation. Through transportation, perishable goods like fish and vegetables in their green state can be promptly delivered to various consumers in distant markets. Transportation contributes to an increase in the demand for products. Transport enables more accessible contact with new clients in new locations, paving the way for introducing items to those customers. Transport is the most critical factor in today's national and international markets.

The existence of transport confers utility on a location. Because of variables such as geography and climate, many businesses are forced to operate in areas that are remote from consumer populations and where there is little to no demand for their products. The gap between the production and consumption centers can be bridged via transportation. The provision of transport generates time savings. In recent times, transport has begun to create time utility as well. As a result of advancements in the speed of many modes of transportation, this is now feasible. It expedites the process of distributing the product to the greatest extent possible. Transportation contributes to the price stability achieved. The movement of various commodities from surplus regions to deficit regions is facilitated by transport, which has a considerable impact on the price stability of a number of these commodities. This brings the supply and demand factor into equilibrium, stabilizing commodity prices and ensuring they are identical. The steady delivery of goods into the hands of consumers throughout the consumption period is made possible by transporting such goods. Because of transport, customers can take advantage of the benefits offered by commodities not produced nearby. This results in an improved standard of living, essential for the economy and marketing's continuous growth. Transportation creates more market rivalry, which in turn results in lower prices. The advantages of transit for large-scale production also reduce the costs of the goods produced. The only reason the benefits of large-scale production are achievable is because of transport. The mobility of both labor and capital is increased by transport. It causes people to travel from one location to another for

employment opportunities. Capital, machinery, and equipment are brought in from other countries only through conveyance.

2.3 Transportation Means Available

Three major categories can be used to classify the various modes of transportation: land travel, water transport, and air transport. It is vital to remember that several subcategories and specific modes of transportation within each category serve varied demands and goals. For instance, there are specialized vehicles for land transport, including bicycles, motorbikes, and heavy-duty trucks. Similar to air travel, water travel involves a variety of boats, such as cruise ships, ferries, and cargo ships. Passenger airlines, cargo airlines, and chartered flights are all included in air transportation.

Policymakers, urban planners, and transportation authorities may efficiently plan and construct transportation infrastructure, distribute resources, and satisfy the different transportation demands of civilizations by comprehending and categorizing transportation modes into these groups. Each mode has advantages, disadvantages, and adaptability for travel, shipping, and geographical circumstances.

2.3.1 Land Transport

Regarding "land transport," we refer to activities that include moving goods and passengers over LandLand. This travel is accomplished via roadways, railroads, rope, or pipes (Rashed, 2015). Land transportation can be subdivided into road, rail, ropeway, and pipeline transportation. Tell us what you know about each one of them.

2.3.2 Road Transport

How one point on the outer layer of the land is connected to another site in a specific part of the world is known as a road. You must have gone down several roads in your hamlet and nearby towns and cities. There are differences among all of them in terms of appearance. Sand is an ingredient in constructing some of them, while others might be composed of chips, cement, or coal tar. On the roadways, you can come across various vehicles, including bullock carts, cycles, motorcycles, cars, trucks, and buses. These are all forms of vehicular transit operating on roads (Oliver et al., 2018). When going shorter distances, people also use rickshaws and

bicycles as modes of transportation. Some carts are pulled by animals, such as bullocks, camels, horses, or donkeys, and are used in rural areas to transport crops, straw, fodder, and occasionally even humans. There are times when animals are used in the direct transport of products from one location to another. Sleds that dogs draw can transport people and cargo in regions often blanketed in snow (Lin et al., 2016). The importance of motor-driven road transportation modes has grown, especially compared to man-driven and animal-driven modes. This is because they move quickly and have a bigger capacity for carrying items. The construction of highways that reach every part of the country has contributed to an increase in the use of automobile transportation. Autorickshaws, scooters, vans, buses, tempos, and trucks are examples of motor vehicles that can transport passengers and cargo (Lakshmanan, 2011).

2.3.3 Rail transport

Rail transport is the term used to describe the process of moving passengers and cargo along rail lines using trains. It is the most dependable method of transporting passengers and products over extended distances, and it holds a significant position in the land transportation systems of most of the world's nations. In some major metropolitan areas, in addition to serving as a mode of long-distance passenger transportation, local trains, and metro-rail systems transport passengers locally. The only areas of the country that need access to rail travel are particularly hilly or mountainous. There are two distinct varieties of trains found in India. The first is a passenger train, and the second is a freight train. Goods trains are employed solely to transport goods from one location to another, unlike passenger trains, which carry people and a certain amount of cargo. Rail engines, powered by diesel, steam, or electricity, propelled these trains (Goetz, 2011).

2.3.4 Pipelines transport

Pipelines are used in the modern world for a wide variety of reasons. Pipelines ensure that residential and business areas continue to receive their water supply. Pipelines. Pipelines also play a role in transporting petrochemicals and natural gas from one location to another. If the amount of petroleum and natural gas that needs to be carried is substantial, this is the most expedient and cost-effective mode of transportation available compared to the road and rail transport options.

Nevertheless, installation and upkeep expenses necessitate a significant financial investment (Fujimura, 2004).

2.3.5 Water Transport

The movement of products and passengers over waterways is called water transport. Water transport can be accomplished by utilizing a variety of vessels, including boats, steamers, launches, ships, and others. Goods and passengers can be transported to many locations, both inside and outside the country, using these various methods. Rivers and canals around the nation allow boats, launches, and other watercraft to travel freely throughout the land. This mode of transportation is known as "inland water transport" because the cargo and passengers travel within the country's borders. *Ocean transport* is the term given to transporting passengers and products along the sea route by utilizing various modes of transportation (Ferrari et al., 2012).

Inland water transport

The transportation of passengers and commodities along river and canal routes is handled by inland waterways using various vessels, such as boats, launches, barges, and streamers, among other things. The transportation of significant commodities through these routes, known as inland waterways, is considered part of domestic or home trade. In our country, the transportation of passengers via rivers is less common than in other places. (Driffield, 2006).

Ocean transport

The term "ocean transport" refers to transporting people and cargo using ships to cross the ocean or other ocean waterways. It is a crucial factor in developing global trade in the contemporary era. In coastal areas, it is also used for the movement of both goods and people. The route taken by ocean transport is relatively consistent and connects a significant majority of the world's nations (Birkinshaw, 2000).

2.3.6 Air Transport

This is the quickest mode of transportation—various aircraft transport passengers and products through the airways, including passenger aircraft, cargo aircraft, and helicopters. In addition to passengers, it typically transports products that are either less cumbersome or of higher value. Air travel is an essential and convenient mode of transportation in regions that are steep or mountainous and need access to other modes. Most of the time, it is used for transporting goods and people in the aftermath of natural disasters such as earthquakes and floods. Air transport is significant in moving military personnel and supplies to the necessary locations during the conflict—the possibility of classifying air travel as either domestic or international. In contrast to domestic air travel, which primarily serves the purpose of easing travel inside a nation's borders, international air travel is utilized for the shipment of both products and passengers between other nations. The operation of aircraft occurs along predetermined flight paths or fixed air routes, which link virtually every nation in the world (Lakshmanan, 2007).

2.4 The General Idea Behind Nigeria's Transport System

Nigeria ranks as one of the most heavily populated nations in the world, with a population of over 200 million. The oil boom was one of the factors that helped propel the nation's economy into free fall in 1973. Furthermore, this had a significant effect on Nigeria's transportation system. The transportation improvement was a direct result of the rise in demand for infrastructure, which led to this state of affairs. In the country's early history, walking served as Nigeria's primary mode of transportation. People can get to almost any place in the world by utilizing only their feet. Horses were a standard mode of transportation in Nigeria, yet only the most prosperous citizens could afford to own them. Then, when the Western world started to gain hold of Nigeria, modes of transportation started altering slightly, and people started using bicycles as their primary mode of mobility. Bike-sharing services, which offer riders access to a diverse fleet of bicycles, emerged due to the gradual integration of technology into the transportation sector.

2.4.1 Transportation Methods Available Throughout Nigeria

Nigerians can go across the country via various forms of transportation, including air, water, and land. Here are a few options for learning about Nigeria. It is crucial

to remember that different parts of Nigeria may see differences in the accessibility and effectiveness of transportation options. While rural communities could rely more on sparse road networks or waterways, major cities often have more robust transportation infrastructure and more alternatives for travel. Additionally, distance, cost, time restrictions, and personal preferences affect the selected transportation method.

Nigerians have alternatives for traveling inside the nation and connecting to other areas because of the country's variety of transportation options, including air, water, and land travel. Each method has advantages and things to keep in mind, and they all address various requirements and conditions of people, enterprises, and the economy as a whole.

Trains

The development of railroads occurred sometime after the invention of bicycles. Rail lines link together a number of the nation's disparate regions. First, I traveled from Lagos to Kano and then from Kano to Enugu. This laid the groundwork for Nigeria's earliest and most effective means of modern transportation, which was later developed. The railroad is still operating, although it has undergone various significant upgrades. The Nigerian Railway Corporation (NRC) is accountable for the upkeep and operation of the railway, which extends for 3.984 kilometers in total length. It is now possible to go to Lagos and Nguru by train as a direct result of completing the western rail link. The section of the railroad line operates in an easterly direction.

On the other hand, it paves the way for establishing a connection between Maiduguri and Port-Harcourt by laying the necessary infrastructure. The Lagos-Kano Standard Gauge Railway is an extra rail line that can be utilized in Nigeria. It makes its way between the Nigerian cities of Kano and Lagos.

Automobiles

Automobiles constitute yet another mode of public transit. When they arrived in Nigeria, only a tiny percentage of the population could purchase automobiles, but today, most people travel by charter. As Nigeria became more developed, there was a discernible increase in the number of automobiles driving on its highways as of 1990. There are stretches of highway in Nigeria that are as long as 10,800

kilometers. The Federal Road Maintenance Agency is in charge of maintaining the nation's roadways. State highways exist in addition to federal roadways, and the corresponding state governments maintain them. Nigeria's traffic jams and pollution levels keep worsening since people may now buy second-hand cars there even if they do not have the money to buy brand-new ones. A significant number of the roadways in Nigeria are currently experiencing gridlock.

Boats and Ships

These had been a part of Nigeria for a more extended period than some of the other modes of transportation detailed earlier. Nigerians have been using boats, particularly in regions with a plentiful water supply. These boats began life with fundamental designs but have evolved significantly throughout their history. The Nigerian waterways are home to many motor boats, except engine-powered ones. A significant number of ships also travel through the waters of Nigeria. Many of these vessels are employed in various business endeavors. In the region of Nigeria known as the Niger Delta, there are many of them, and along the Benue and Niger Rivers, you can find several smaller ships and boats.

Airplanes

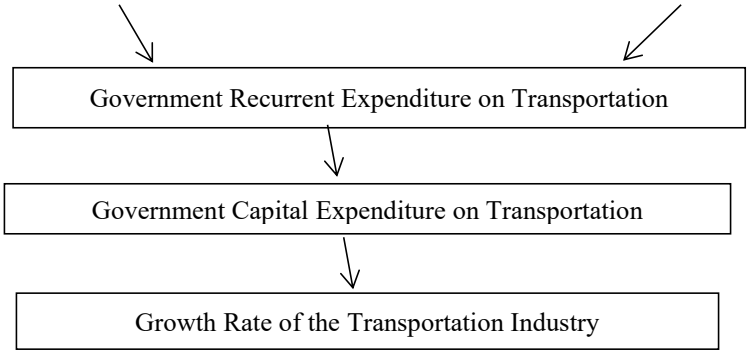
One of the very few remaining modes of transportation in use in Nigeria is the airplane. The number of airplanes that could be found in Nigeria was relatively low in the past, but these days, there are a large number of them, and there are also a large number of jets privately owned in Nigeria. Additionally, there has been a significant rise in the number of airports in Nigeria.

2.5 The Overarching Conceptual Structure of this Research

Gross Domestic Product (GDP) Growth Rate

This thesis uses a structural and conceptual framework to demonstrate the data used to describe the dependent variable, the gross domestic product growth rate. This variable serves as a proxy for economic growth in Nigeria. An overview of the variables that were independently used in this investigation is provided below: government capital expenditure on transportation, government recurrent

expenditure on transportation, the growth rate of the transportation industry, and the inflation rate. The following graphical depiction illustrates the conceptual framework.



2.6 Theoretical Review

The relationship between theories of growth and other relevant theories to the current investigation will be examined in this part and discussed in connection to the goal of this research project. Researchers can examine how transportation infrastructure fits with the primary drivers and processes of various growth theories by assessing these theories and the study project's objectives. For instance, investing in transportation infrastructure may increase physical capital accumulation and productivity, according to neoclassical growth theory. In contrast, the endogenous growth theory may emphasize the role of transportation infrastructure in promoting knowledge spillovers and innovation. The institutional elements driving transportation infrastructure development and its subsequent effects on economic growth may also be better understood by considering theories like New Institutional Economics. Examining topics like governance arrangements, public-private partnerships, legal frameworks, and financial incentives might be part of this.

Overall, examining the connection between growth theories and the study project aids in providing a theoretical foundation and framework for comprehending how the expansion of transportation infrastructure may support Nigeria's economic progress. It enables researchers to extrapolate knowledge from accepted economic theories and apply it to the particular circumstances of the study.

2.6.1 A Theory of Uneven or Unbalanced Growth

According to Albert O. Hirschman's theory of uneven growth (UG), no LDC has enough resources to enable it to invest concurrently in every sector of the economy to achieve equal growth. Concerning Rostov's leading sector theory, Hirschman argues that "investments in purposefully selected industries or sectors of the economy will lead to new investment prospects and, therefore, pave the way to further economic expansion." Hirschman found that there were both convergent and divergent investment series. The projects that make up a convergent sequence of investments are the ones that take from existing economies more than they add to them. In contrast, the projects that make up a divergent series of investments add to existing economies more than they take away from them. According to Hingham, the goal of development policy ought to be to encourage divergent investments rather than prevent converging investments. Therefore, a strategy that aims to unbalance the economy intentionally ought to be developed for development to occur. This can be accomplished by investing in either social overhead capital (SOC) or directly productive activities (DPA). Not because of its direct effects on the final production, but since it invites and promotes DPA engagement, putting effort into SOC is advised. Investment in the SOC is a prerequisite for DPA investment and must come before it. Hirschman claims that substantial investments are necessary for long-term economic growth and development in power, schooling, public transit, housing, and medical treatment. It is also possible for growth across several economic sectors to be uneven or imbalanced. For instance, if a nation invests heavily in transportation infrastructure favoring specific businesses or sectors, such as manufacturing or export-oriented sectors, those sectors may expand more quickly than others. This may lead to an imbalance in economic growth, with specific industries boosting the economy while others experience relatively sluggish growth.

It is crucial to remember that uneven or unbalanced growth is only sometimes harmful or unwanted. Gains in productivity and efficiency can be encouraged by some degree of industry specialization and regional economic activity concentration. However, excessive growth discrepancies can result in geographical disparities, social and economic inequality, and a lack of inclusive development. Policymakers must ensure that transportation infrastructure investments are targeted and dispersed strategically across industries and regions to solve the issues associated

with unequal or unbalanced growth. This calls for thorough planning, considering the particular requirements and possibilities of various nationwide regions and industries. Efforts should be made to enhance connection, accessibility, and infrastructure in undeveloped regions or industries to encourage more equitable economic growth and lessen inequities.

In conclusion, the idea of uneven or unbalanced growth postulates that variations in transportation infrastructure investment and development may prevent economic progress from occurring equally across sectors or areas. Policymakers must have a solid understanding of this idea to alleviate imbalances, encourage inclusive growth, and ensure that transportation infrastructure investments benefit all economic sectors and regions.

2.6.2 The Theory of Growth Proposed by Adam Smith

Adam Smith felt that the process of economic development was fully endogenous, as described in his work, The Wealth of Nations, which had first been released in 1776. He gave particular attention to how the growth of capital affected the efficiency of labor. He was mainly interested in the variables influencing overall worker productivity growth and the rise in median salary. In this context, Smith believes that the division of the workforce, the width of which is controlled by the building up of capital, is the element that defines the degree of labor productivity. He went on to explain that the growth in labor productivity is contingent on a significant improvement in the dexterity of workers, the saving upside, and, most crucially, the invention of particular pieces of machinery. The argument put forth by Smith establishes a basis for the role that technological advancement plays in growth. He was willing to concede the point that the accumulation of wealth both creates new markets and expands the markets that already exist. According to documentation provided by Heinz D. Kurz and Neri Salvador, Adams Smith laid the groundwork for two fundamental notions that have come to dominate the body of work known as "new growth theory," namely, That there is such a thing as "new advances of art," which are produced through specialized activity within the framework of the economic system. This new technical information either already is or will eventually become a public good, which means that it cannot be competed for and cannot be excluded from access by anybody.

Additionally, Smith's thesis emphasized the significance of free markets and the idea of the invisible hand. In the framework of competitive markets, he said that when people follow their interests, the invisible hand of the market mechanism directs their behavior to provide the best results for society. This idea contends that economic progress and prosperity may be produced by pursuing individual self-interest with the freedom to trade and participate in market exchanges.

Adam Smith also understood the significance of capital accumulation as an economic expansion engine. He stated that when people and companies save and invest their money, capital is built up, which results in higher production and output. Expanding tangible assets like equipment and infrastructure boosts productivity and fosters economic growth. Smith's theory of growth also strongly emphasized the value of institutions and the state's function in fostering economic growth. He promoted the creation of strong institutions that uphold the rule of law, safeguard property rights, and uphold contracts as necessary elements of economic development. Smith acknowledged the importance of the state in supplying public amenities, infrastructure, and essential rules to enable long-term prosperity and facilitate economic activity.

In conclusion, Adam Smith's development theory strongly emphasizes specialization, the division of labor, unrestricted markets, capital accumulation, and enabling institutions to promote economic expansion. His contributions laid the groundwork for comprehending the processes that underlie economic growth, and his ideas still impact contemporary economic theory. By emphasizing the positive effects of personal self-interest, Smith's theory offers insights into how countries might achieve long-term economic progress and prosperity by highlighting the relevance of institutions and the function of markets.

2.6.3 Solow-Swan Model: The Neoclassical Growth Theory

The macroeconomic growth hypothesis postulated that an increase in the supply of capital goods served as the main engine of economic growth. This theory, independently put out by Robert Solow and Trevor W. Swan in 1956, held that economic growth results from more significant growth in capital than labor, given that workers are more productive with more significant investment. In 1956, these concepts were separately published. The Solow-Swan Model explains sustained development as a consequence of capital accumulation, worker productivity, and

technological advancement. Alan Solow and Robert Swan created the model, predicated on the idea that capital is vulnerable to declining returns in a closed system. This is a mathematical modification to the Harrod-Domar model, which may be written in the following manner:

Y(t) = K (t) α(A(t) L(t)) 1-α

Yt represents total output, Kt is the capital supply, Lt is the labor force, and advancement of innovation or technological innovation makes laborers' duties easier. Expansion is believed to be defined in the short run by the transition to a "steady state" generated by capital investment (whose level is determined by the interest rate), labor force expansion, and the depreciation rate. Growth ultimately results in the new "steady state." The notion has primarily been attacked negatively since a "stationary state" would imply that the economy does not expand over the long term. The Solow-Swan growth theory is relevant to this study because Solow made it feasible to categorize the elements of economic growth into three different groups: labor, capital, and technical development.

Nevertheless, it is conceivable to view technological development as substantially dependent on infrastructure, even when "capital" already considers some aspects of infrastructure. Because "capital" already encompasses infrastructure, this is the case. The fundamental tenet of the Solow-Swan Model is that technological innovation and the accumulation of physical capital, such as machinery, equipment, and infrastructure, propel economic expansion. The model assumes that the production function connects labor and capital inputs to the output of products and services. The model's most basic form assumes constant returns to scale, indicating that increasing inputs proportionally causes output to rise proportionately.

The Solow-Swan Model identifies three key factors that determine economic growth:

Capital Accumulation: The model predicts that a rise in capital accumulation would result in economic expansion. This happens due to increased production and productivity brought about by investments in physical capital. However, the model also considers declining marginal returns to capital, which means that as the capital

stock grows, so does the incremental contribution made by each unit of capital to production.

Technological Advancement: The Solow-Swan Model also takes into account technological advancement. It stands for improvements in knowledge, creativity, and the capacity to generate more output from the same amount of input. Since technological advancement impacts both the efficiency and productivity of capital and labor, it is sometimes referred to as total factor productivity (TFP) growth.

Population increase: The model considers how population growth affects economic expansion. A more considerable workforce results from an increase in population, which can help to improve output levels. The model does acknowledge that the pace of capital accumulation and technical advancement determine how population expansion affects per capita income. If population expansion outpaces capital accumulation and technical advancement, per capita income may stagnate.
The Solow-Swan Model gives policy recommendations and insights into the factors influencing long-term economic growth. According to this, sustainable economic growth needs a mix of higher expenditures in physical capital, technological advancements, and effective resource allocation. Policies that stimulate investment, technical advancement, and human capital development may drive economic growth in the long term. It's important to note that the Solow-Swan Model simplifies the complex dynamics of economic growth and has its limitations. For instance, it does not explicitly incorporate factors such as human capital, institutional factors, or the role of entrepreneurship. Nonetheless, it serves as a valuable framework for understanding the fundamental drivers of economic growth and informing policy discussions.

2.6.4 W.W. Rostov's Model of Economic Development Described in Stages

The hypothesis of Stages of Growth by Walt Whitman Rostov was initially printed in 1960. According to this theory, every economy must pass through the same five developmental phases before reaching maturity: the conventional society, the prerequisite for take-off, the take-off of the platform, the drive towards maturity, and the time of high mass consumption. The prerequisite for the take-off phase emphasizes the importance of infrastructure, particularly expenditures totaling more

than 5% of the country's gross domestic product. Rostov thought that this stage is typically characterized by a gradual structural shift from an agrarian society to an industrial society, the spatial expansion of the markets, the utilization of surplus for the development of industries, infrastructure (particularly transport, communications, and raw materials), and preparation for self-sustaining growth.
The "Stages of Economic Growth," commonly known as W.W. Rostow's concept of economic development, offers a framework for comprehending the procedure by which nations switch from conventional agricultural economies to contemporary industrialized societies. The foundation of Rostow's model is the assumption that economic growth happens in a sequence of stages, each of which is distinguished by specific economic activity, technology, and social structures. Let's examine this assertion in further detail.

The five stages of economic growth, as described by Rostow's model, are as follows:

Traditional Society: This early period's economy was primarily agricultural, with low production levels and few technical breakthroughs. The main drivers of economic activity are primary production and subsistence farming. Most people work in agriculture, and social and economic systems are usually based on tradition and hierarchy.

Preconditions for Take-Off: Conditions that allow the economy to progress toward industrialization and steady economic growth are created during this phase. A better-educated workforce, improved infrastructure, higher agricultural output, and the growth of financial institutions and markets are a few examples of these circumstances. These elements aid in the progressive transition of agricultural to industrial areas.

Take-off: The take-off phase is characterized by accelerated industrialization and economic expansion. Manufacturing-related key industries frequently see tremendous growth and evolve to become the backbones of the economy. Entrepreneurship, technical breakthroughs, and capital investment play significant

roles in propelling this process. The economy starts to diversify beyond agriculture as urbanization rises.

Drive to Maturity: The economy continues to industrialize and diversify throughout this phase. As more sectors emerge, technological innovation spreads widely. A contemporary infrastructure is built to facilitate economic activity as the service sector grows. Trade and investment help the nation's economic integration into the world market.

High Mass Consumption: High levels of industry, broad wealth, and a society focused on consumption define the last stage. Service-related businesses dominate the economy, and the majority of people live well. Consumer demand and a robust local market are the main drivers of economic growth.

It is important to note that Rostow's model has faced criticism and is considered simplistic by some scholars. Critics argue that it overlooks the complexities of economic development, the influence of political factors, and the variations in development paths across different countries. Additionally, it has been criticized for its linear and Western-centric view of development. Nevertheless, Rostow's model is still widely used and offers a comprehensive framework for comprehending the broad phases of economic growth. It emphasizes the significance of a few prerequisites and elements that support industrialization and economic progress. However, it is essential to remember that development processes might differ significantly among various nations and areas due to unique historical, cultural, and institutional aspects.

In conclusion, Rostow's economic development model outlines a sequential process by which nations advance from primitive agricultural cultures to contemporary industrialized economies. Each stage represents various economic endeavors, scientific developments, and social systems. Despite criticism, a model is still an effective tool for analyzing the trajectory of economic growth in general. However, it should be used in conjunction with other ideas and viewpoints.

2.7 Empirical Review

The literature on development provides abundant evidence supporting the significance of transportation for economic growth. At this point, however, the

numerical degree of this relevance or significance is still a contentious subject at best.

Enriquez and Stamoulis (2007) examined the connection between the amount of money the government spends on transportation, the level of poverty, and the transportation industry's role in general development, rural development, and poverty reduction. In his research, he found that one of the primary issues facing less developed nations is that their governments need to allocate sufficient funds to modernize their transportation infrastructure. The historical perspectives on the function of the primary sector in the development process were presented, and then they were followed by the use of the primary data. According to the study's findings, a long-standing bias against the primary sector laid the groundwork for an anti-agricultural bias in public policy up until the late 1980s. This bias served as a foundation. The author of this study should have looked at how the amount of money the government spends on transportation affects the rate of economic expansion, which is a significant omission from the research.

Gusztáv (2005) explored the reasons for the frequent failures of rural development policies and identified some potential improvements in rural policymaking in Europe. The study argued that rural development policies tend to fail because the central bureaucratic system imposes top-down control and objectives throughout the development process, thus failing to sufficiently promote the reconfiguration of local resources, which is better achieved through bottom-up processes and the local heuristic system. The study concluded that a lack of governmental expenditure on transportation was a cause of the failure of rural development policies. This study, however, failed to focus on the relationship between government expenditure on transportation and economic growth.

Kamar et al. (2014) studied the problems and prospects for sustainable rural development in Nigeria. The study highlighted a problem: With all the effort put into developing Nigeria, rural areas still need to be developed in that direction. The studies showed that there had to be a significant increase in government spending on infrastructure for the rural economy in Nigeria to boom. The study, however, should have focused on the relationship between government expenditure on transportation and economic growth.

Aschauer (1989) investigated whether all government expenditures are produced using a production function in which output depends on public capital, private capital, and employment. The problem he identified was the slow economic growth experienced in Austria. His result showed that the output elasticity concerning public capital was between 0.34 and 0.39. This result was interpreted to mean that the marginal productivity of public capital is 70 cents to a dollar. He recommended a reduction of government expenditure on capital assets and increasing expenditure on the service sector. The study, however, should have explicitly focused on transportation infrastructure.

Other studies, such as **Eisner et al. (1991) and Holtz-Eakin (1988)**, using a macro-time series approach, all found evidence in support of Aschauer (1989). However, their results showed that the public-capital elasticity of output was significantly lower than Aschauer's earlier claim. They all found the marginal products of government capital higher than the marginal products of private capital. These studies have been criticized based on several issues, including their definition of government capital, their failure to recognize the data's time series properties, and the potency of the econometric method's analysis.

Aigbokhan (2010) submits that studies have found that as an economy grows, its infrastructural capacity grows. The problem he identified, however, was that these studies were carried out in semi-developed countries in Europe and, as a result, only applied to Europe. He concluded that step-by-step infrastructure capacity growth can only be done with significant expenditure on infrastructure development. The study, however, failed to focus specifically on transportation infrastructure.

Akinyosoye (2010) studied the benefits of a solid infrastructure base for the Nigerian economy. The study showed that the government needs to focus intensely on institutional policy changes and sector reforms. Infrastructure development is essential to encourage economic growth and development in Nigeria. More than infrastructure investment is needed to realize its advantages. In order to fully capitalize on the benefits of a solid infrastructure foundation, Akinyosoye's analysis underlines the Nigerian government's need to prioritize institutional policy changes and sector reforms.

Modifying institutional policies is crucial to fostering the development of an infrastructure-friendly environment. To do this, the infrastructure industry must solve inefficiencies in bureaucracy, cut red tape, and improve openness and accountability. The government may hasten infrastructure projects' planning, carrying out, and upkeep by simplifying administrative processes and enhancing governance. Moreover, encouraging private investment in infrastructure through open decision-making and solid regulatory frameworks can open new financing channels.

Siyan and Adegoriola (2017) investigated the nexus between infrastructural development and Nigerian economic growth using data from 1981 to 2014. The results showed a long-run relationship between infrastructure development and Nigerian economic growth. Their research sought to determine if the nation's infrastructure and economic expansion are related over the long term.

According to Siyan and Adegoriola's research, infrastructure expansion and Nigerian economic growth are significantly related over the long term. This suggests that infrastructure developments significantly impact the country's total economic performance. According to the report, Nigerian investments in infrastructure, such as those related to transportation, electricity, communications, and water resources, may eventually spur economic growth. Infrastructure development is essential to sustaining economic activity by providing a solid basis for diverse industries. For instance, investments in transportation infrastructure, such as roads, railroads, airports, and ports, make it easier to move people and commodities while lowering transportation costs and enhancing connectivity. This, in turn, promotes trade, investment, and commercial activity, which helps the economy as a whole flourish.

Additionally, by removing bottlenecks and inefficiencies, infrastructure improvement increases production. Businesses may run more effectively thanks to adequate infrastructure, which lowers production costs and boosts competitiveness. Higher economic production and growth may result from this improved efficiency and productivity.

The research done by **Orji et al. (2017)** provides insight into how Nigeria's industrial sector is impacted by infrastructure. The index of electricity consumption,

which measures the quantity of power utilized by companies, is one of the aspects the research looked at. The results show that energy use has a small but beneficial effect on industry value added. This suggests that rising industrial output levels correlate with rising levels of power consumption. The statistical research, however, indicates that this link needs to be stronger and could not significantly affect the value added by Nigeria's industrial sector. Access to inexpensive, dependable power is essential for the industrial sector to be productive and competitive. It allows businesses to run smoothly, power their equipment, and effectively complete manufacturing procedures. However, Nigeria has long struggled with issues in the electricity industry, including insufficient generating capacity, transmission losses, and ineffective distribution. These problems have led to frequent power outages, interfering with business operations and reducing output. The study's results by Orji et al. (2017) reveal that, despite attempts to strengthen the power system, energy consumption alone may not be the primary predictor of industry value-added in Nigeria. The influence of federal government spending on industrial value-added is also examined in the study. Surprisingly, the findings show that federal government expenditure significantly and negatively affects industrial value-added. This conclusion implies that more lavish government spending in some industrial-related sectors may only sometimes result in an equivalent rise in added industry value. It is significant to note that the report does not mention the precise kind of governmental expenditure or the causes of the adverse effects. More research and analysis of particular government spending and its efficacy in fostering industrial growth are required to comprehend this link fully.

Owolabi-Merus (2015) investigated Nigeria's infrastructural development and economic growth nexus. The empirical results from this study reveal that infrastructural development has a positive and statistically significant impact on Nigeria's economic growth. However, although numerous studies have been conducted on the relationship between infrastructural development and economic growth in Nigeria, most of these studies still need to focus specifically on the relationship between Nigeria's transportation system and economic growth. As a result, this research aims to close this gap in the existing body of information by analyzing how the expansion of Nigeria's transportation infrastructure affects the country's rate of economic expansion.

A Brief Synopsis of the Available Literature

Table 1.1: A Synopsis of the Research Conducted

Author	The Purpose of this Research	Date and Country	Methodology	Results
Anriquez and Stamoulis (2007)	The connection between the amount of money the government spends on transportation and the level of poverty, as well as the part that the transportation industry	Africa, America, Asia,	OLS,Johansen's Co-Integration	In his research, he found that one of the primary issues facing less developed nations is the fact that their governments do not allocate sufficient funds toward the modernization of their transportation infrastructure.
Gusztáv (2005)	Explored the reason for frequent failures of rural development policies and identifies some potential improvements in rural policy making in Europe.	Europe	ARDL bound tests and ARDL	The study concluded that a lack of governmental expenditure of transportation was a cause of failures of rural development policies.

Kamar, Lawal, Babangida and Jahun (2014)	Studied the problems and prospects for sustainable development of rural development in Nigeria.	Nigeria	ARDL	The studies showed that there had to be significant increase in the government spending on infrastructure for the rural economy in Nigeria to boom.
Aschauer (1989)	investigated whether all government expenditures are productive using production function in which output depended on public capital, private capital and employment	Austria	ARDL	He recommended a reduction of government expenditure on capital assets and increase in expenditure on the service sector
Eisner, (1991), Ford and Poret, (1991), Holtz-Eakin (1988);	The study made use macro time series approach to examine the public capita elasticty of output.	United States of America and the EU	macro time series approach and VAR	their results showed public capita elasticity of output significantly lower than Aschauer earlier claim
Aigbokhan (2010)	Submits that studies have found that as an economy grows, its infrastructural capacity grows.	Nigeria	OLS	He concluded that infrastructure capacity grows step by step can only be done with significant expenditure on infrastructure development

Akinyosoye (2010)	studied the benefits of a strong infrastructure base to the Nigerian economy	Nigeria	Augmented mean Group Estimator and heterogeneous panel causality method	The study showed that the government needs to focus strongly on institutional policy changes and sector reforms
Siyan and Adegoriola (2017)	investigated the nexus between infrastructural development and Nigerian economic growth using data from 1981 to 2014	Nigeria (1981-2014)	FMOLS and DOLS	The results of the study showed that the index of electricity consumption exerted a positive but insignificant impact on industry value-added gross capital formation and federal government spending had a negative but significant impact on industry value-added on industry value-added
Owolabi-Merus (2015))	investigated the infrastructural development and economic growth nexus in Nigeria	Nigeria 2014	Panel Co-integration	The results showed that growth is positively affected by the stock of infrastructure assets, and (b) income inequality declines with higher infrastructure quantity and quality time.

CHAPTER III
Methodology

3.1 Introduction

The present section of the thesis provides a detailed account of the many methods, procedures, and strategies used to gather the necessary data for the study. This is carried out in order to present the study's findings. In-depth analyses and descriptions of the many statistical techniques utilized to analyze the secondary data amassed throughout this investigation are also provided in this part. The abovementioned methods were used to examine the data gathered from secondary sources. In this context, explaining the specific methods, procedures, and strategies used in the data collection process would be beneficial. This could include details on the selection criteria for the secondary data sources, data extraction or retrieval procedures, data quality assessment, data pre-processing or cleaning techniques, and any necessary transformations or adjustments made to the data to ensure its suitability for analysis.

Similarly, elaborating on the statistical techniques employed to analyze the secondary data would add value to the study. This could involve discussing the specific statistical tests, models, or algorithms used to examine relationships or patterns within the data. Additionally, explaining any assumptions, limitations, or considerations associated with the chosen statistical techniques would provide transparency and demonstrate the rigor of the analysis.

Overall, providing a comprehensive account of the methods, procedures, strategies, and statistical techniques used to gather and analyze the data ensures the study's credibility, reliability, and reproducibility.

3.2 Types of Data and Sources

The author used a secondary source of data collecting for their thesis study. The data the author used to produce this article came from additional resources and the World Bank database. The data was collected over 30 years in Nigeria, starting in 1990 - 2020. The independent variables were the growth rate of the transportation industry, government capital expenditure on transportation, government recurrent expenditure on transportation, and the growth rate of the gross domestic product

(the dependent variable) and the proxy for economic growth and development in the thesis.

3.3 Variables and the Measurement of Variables

The World Bank database provided the secondary data for this study. The gross domestic product (GDP) growth rate was used as a proxy for economic growth, government capital expenditure on transportation, government recurring expenditure on transportation, and the growth rates of the transportation industry, which served as the dependent variables for the present research objectives.

3.4 Model Specification

The ARDL was applied in order to estimate the short-run and long-run model connection between the dependent variable, Gross Domestic Product growth rate (GDP), Government Capital Expenditure on Transportation (GCET), Government Recurrent Expenditure on Transportation (GRET), and the Growth Rate of the Transportation Industry (GRTI), as well as the bound test for co-integration. This was done in order to determine the short-run and long-run model connection. The ARDL bound test was carried out to determine long-term correlation. We also utilized the serial correlation test, the heteroskedasticity test, and the normality test as it is the dependability of it. In order to determine whether or not the model is stable, we used the CUSUMSQ test with a significance level of 5%.

The operational factors and model requirements acceptable for the ARDL used in this research are listed in the table below:

$$\Delta GDP_t = \alpha_{0j} + \sum_{i=1}^{p} \beta_{ij}\Delta GCET_{t-1} + \sum_{i=1}^{q1} \beta_{2J}\Delta GRET_{t-1} + \sum_{i=1}^{q2} \beta_{3j}\Delta GRTI_{t-1} + \sum_{i=1}^{q3} \beta_{4j}\Delta INF_{t-1} + \mu_i \text{ .... } (1)$$

Where GDP represents Gross Domestic Product, GCET represents Government Capital Expenditure on Transportation, GRET represents Government Recurrent Expenditure on Transportation, and GRTI represents the Growth Rate of the Transportation Industry. Also, i represents the Number of variables in the Model, j represents the Number of time lags, p represents Dependent Variable Lag Values, q represents the regressor Variable Lag orders, μi represents Error terms.

β1, β2 and β3 are the coefficients of the variables. β0 is the constant, and ε it is the error term. The apriori expectation is GCET is predicted to have a positive impact on GDP (β1 > 0), GRET is expected to impact GDP positively (β2 > 0), GRTI is predicted to have a positive impact on GDP (β3 > 0).

3.5 Unit Root Analysis

Any research project must first pass the unit root test before using the ARDL model, which is a requirement that must be met; this requirement states that the dependent variable must be integrated at the first difference I (0), and other variables should be integrated at the first difference and level, i.e., I (0) and I(1). Our results have been confirmed using the augmented Dickey-Fuller (ADF) and Philips-Peron (PP) models.

3.6 ARDL Bound Test and ARDL Model

The ARDL Bound test is a test employed to examine the long-form correlation between variables; it shows whether or not the independent variables have an effect or influence in the long run on the dependent variable.

ARDL Model Mathematical Expression:

ARDL (p,q) $Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_1 Y_{t-1} + \beta_1 Y_{t-1} + \ldots + \beta_p Y_{t-p} + \delta_1 X_t + \delta_2 X_{t-2} + \delta_2 X_{t-2} + \delta_3 X_{t-3} + \ldots + \delta_q X_{t-q} + \varepsilon_t$ ..... (2)

ARDL Bound Test Mathematical Expression Pesaran and shin (1998), Pesaran et al., (2001)

$$\Delta Yt = \beta_0 + \sum_{i=1}^{p} \lambda_i \Delta Y_{t-1} + \sum_{i=0}^{q} \delta_i \Delta X_{t-1} + \phi 1 Y_{t-1} + \phi_2 X_{t-1} + \upsilon_t \quad (3)$$

ARDL Short run terms **ARDL long run terms**

The complete study's data were analyzed using the ARDL bound test to establish whether the variables are co-integrated. For instance, when the F-statistics is greater than the upper and lower bound at a 5% significance level, we reject the null hypothesis that there is no long-term co-integration. Following the ARDL bound test, the research results are determined by short- and long-term form evaluations. Additionally, when regressed in the ARDL short run, the error correction term

(ECT) must be statistically significant, fall between 0 and 1, and have negative coefficients.

3.7 Residual Diagnostics and Stability Test

To ascertain the confidence level in the models and variables used for regression, the author carried out a diagnostic test known as the residual diagnostic test. Researchers may use this test to validate the models they are employing. Additional evaluations, in addition to those previously discussed, are being utilized in this investigation to evaluate the credibility of the employed model. This category of tests includes the tests known as heteroskedasticity assessments, normality assessments, and serial correlation evaluations. In order to verify that the data were reliable, CUSUM and CUSUMsq tests were conducted. This graph shows two red lines at significance levels of 5% and stability and a blue line that depicts data mobility. The parameters individually are stable at a 5% significance level if the blue line is between the two red lines.

CHAPTER IV

Findings

4.0 Introduction

This chapter presents the data collected on the various factors in a tabular format and analyzes the data to draw inferences from the data. In order to provide a believable interpretation of the conclusions made from the investigated data, a succinct description of the empirical results of the data is provided. This chapter will analyze and interpret the collected data to assess how government transportation expenditure has affected Nigeria's economic development. Once the research model had been constructed, numerous analytic techniques were used for the estimating task. E-views, a statistical analysis application, was used to estimate the model's parameters. In the first section, descriptive statistics were presented, followed by the unit root for the stationary test, the ARDL bound test, the ARDL long-run and short-run analysis, the residual diagnostic test composed of the Normality test, the serial correlation LM-test, and the heteroskedasticity test, and finally the stability test.

4.1 Descriptive Statistics

The descriptive statistics of this study were prepared using EViews to make them more accessible to researchers who already have some experience with the data. It is easy to see how the findings of this study compare to those of past investigations. In this part of the report, we discovered that the growth of transportation infrastructure and other independent factors has slowed down over time. The table that follows provides a summary of the findings.

Table 1: Descriptive Statistics

	GDP	GCET	GRET	GRTI
Mean	4.341822	549708.4	164833.8	25.55806
Median	4.631193	179751	97786.69	8.900000
Maximum	15.32916	1618901	900310.0	156.50000
Minimum	-2.035119	2375.100	1849.150	5.100000
Std Dev.	4.081692	579746.4	207658.4	34.79761
Skewness	0.413103	0.492537	1.931145	2.540285
Kurtosis	3.180687	1.582619	6.924163	8.998231
Jarque-Bera	0.923882	3.848313	39.15861	79.81334

Probability	0.630059	0.145999	0.000000	0.000000
Observations	31	31	31	31

Based on the data and period that was investigated, it has been hypothesized that the average mean GDP is 4.341822. On the other hand, estimates put the average mean for GCET, GRET, GRTI, and INF as 549708.4, 164833.8, 25.55806, and 16.99212, respectively; these figures are based on national statistics. The GDP had the maximum number presented as 15.32916, considered the maximum the country's GDP can reach. According to the chart just presented, this is considered a high level for a country that falls into this category. All of the skewed results are favorable and go to the right. The Kurtosis value for the GCET is platykurtic (less than 3), but the values for other variables are mesokurtic (more than 3). Additionally, the Jarque-Bera test demonstrates that residuals are not standard distribution since GRET, GRTI, and INF have p-values less than 5%. In contrast, GDP and GCET have p-values more prominent than the 0.05 significance threshold. The outcomes of the descriptive statistical analysis for the GDP growth rate and other independent variables for the study's chosen time frame of 1990 to 2020 are impressive. This is particularly true when contrasted with the results of past research.

4.2 Unit-Root Test

In this study, the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) criteria will be used to execute the stationary test, also known as the unit root test. The tables below display the unit root results. The equation included potential results for both the point of intercept and the interception and trending criteria for the unit root.

Table 2: Unit Root Test

ADF				***PP***			
Variables	T-Statistics	Prob	Integration	Variables	T-Statistics	Prob	Integration
GDP	-3.777530	0.0077	I(1)	GDP	-3.92848	0.0053	I(1)
LGCET	-5.690842	0.0010	I(1)	LGCET	-8.344718	0.0000	I(1)
LGRET	-7.147493	0.0000	I(1)	LGRET	-8.3708818	0.0000	I(1)
GRTI	-2.654859	0.0937	I(0)	GRTI	-2.654859	0.0937	I(0)

The results of the Unit root show that the dependent variable is stationary at the first difference I (1), and there is a mix of integration at I (0) and I (1), which conforms with the theory that a result was dependent variable is stationary at I (1). There is a mix of integration in the Unit root; the ARDL method can be employed by the researcher for the regression of data. The Augment Dickey-Fuller test and the Philips-Peron test were used as the base test in this paper when running the stationary test.

4.3 ARDL Bound Test

Table 3: ARDL Bound Test

F-Statistics	**Sign**	**I (0)**	**I (1)**
5.044384	10%	2.37	3.2
K	5%	2.79	3.67
	1%	3.65*	4.66*

The researcher of the present investigation used the ARDL Bound evaluation to ascertain if the Variables had co-integration. We have rejected the null hypothesis, which states that there is no co-integration and, as a result, there is no long-run effect on the independent variables toward the dependent variables if the F-statistics is more significant than both the lower bound I (0) and the upper bound I(1) at 1% level of significance. The results showed a long-run relationship between the government's expenditures on the transportation Industry, and hence, the author proceeded with the long-run and short-run ARDL test.

4.4 ARDL Long-Run Test

Table 4: ARDL Long Run Test

Variable	**Coefficient**	**Std. Error**	**T-Statistics**	**Prob***
lnGCET	-1.987359	0.920090	-2.159961	0.0445**
lnGRET	2.801359	1.291064	2.169805	0.0437**
lnGRTI	0.078127	0.028001	2.790104	0.0121**

In the long-run ARDL results, the data shows the correlation between the dependent and the independent variables generally. The results show that in the long run, GRTI and GRET have a significant and positive effect on the GDP at a 5% significance level, meaning that if GRTI increases by 1%, GDP will also increase by 7.8%. When GRET increases by a percentage change, the economy will progress at 280% in the long run. Also, the GCET should have an opposing link in the long run, showing that for every 1 percent change in capital expenditure, economic growth will fall by 198%. The Government capital expenses have a negative effect on economic growth because, for a developing country, the priority of the government is to increase the standard of living; as much capital investment is essential, the study shows that more funds should be given to investing in the recurrent expenses more in Nigeria as it has a positive impact in the long- run such as job creation, subsidized ticketing, etc.…

4.5 ARDL Short-Run and Error Correction Model

Table 5: ARDL Short Run and ECM

Variable	Coefficient	Std. Error	T-Statistics	Prob*
GDP(-1)	0.347929	0.097121	3.582446	0.0021**
DLGCET	-1.295899	0.654535	-1.979877	0.0632**
DLGRET	1.826684	0.883034	2.068646	0.0533**
DGRTI	0.021770	0.012105	1.798392	0.0889**
ECT (-1)	-0.652071	0.117444	-5.552188	0.0000
Durbin-Watson	2.461111		Prob(F-statistics)	0.002051

The threshold for acceptance was at the 0.05 significance level, as seen in the table, and all variables are statistically significant and dependable for this study effort. The table above displays the findings of the auto-regressive distributive lag model for the thesis. GCET, the results reveal a negative link between transportation capital spending and economic growth in the short term; this suggests that for every 1 unit change or increase in capital spending, economic growth will fall by 129%. GRET positively correlates with economic growth, meaning that as recurrent government expenses increase, the economy will increase by 182%. Results for GRTI showed negative and statistically significant, and the probability is 0.0075, which is less than a 5% significance level. This means that for every unit increase in GRTI, the economic growth increases by 2.1%.

4.5.1 Reliability of Short-Run Findings

Gross Domestic Product growth per year, a proxy for economic growth employed in this thesis, was the dependent variable, and the Adjusted R-squared result revealed that 69.25% of all independent factors could explain it. The F-statistics demonstrated that it was significant and that the sum of all independent variables was significant and reliable to our study's conclusions. The error correction model was negative and significant, with a 5% significance level. The ECM shows that the speed of adjustment to equilibrium, in the long run, was 65.20%, and it agrees with economic criteria that ECM must be negative and between 0 and 1 and must be statistically significant to be reliable.

4.6 Residual Diagnostic

Normality Test		Serial Correlation LM Test		Heteroskedasticity Test	
Jarque-Berra	Prob.	F-statistic	prob. F(1,8)	F-statistic	prob. F(1,24)
0.489877	0.78275	0.0695	0.7987	0.073487	0.7886

The results are presented in the table above, and they demonstrate how accurately the model predicted serial correlation, heteroskedasticity, and the normality test compared to a thorough diagnostic test.

Serial Correlation LM-Test: The results of the serial correlation-LM test, which were displayed in the table and revealed non-significant probabilities, suggest that the relevant data do not establish the existence of a serial correlation problem for Nigeria. H0 is rejected if the p-value at the 5% significance threshold is less than 0.05.

Heteroskedasticity: It should be noted that the null hypothesis was rejected for the heteroskedasticity evaluation since the P-value was more significant than the five percent margin of significance criterion at 0.7886.

Jarque-Bera Normality: All of the variables examined in this study have a likelihood that is more than the 0.05 level of significance, according to the

normality evaluation for residual distribution, proving that they are all normally distributed.

4.7 Stability Test

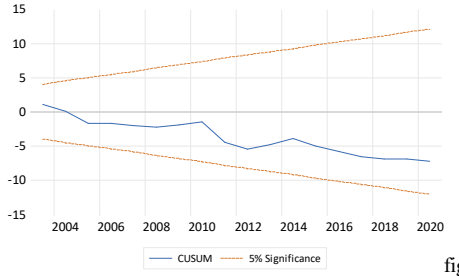


fig 1: CUSUM TEST

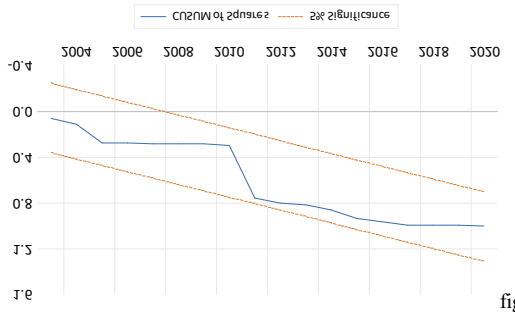


fig 2: CUSUMSQ TEST

The findings of the CUSUM and CUSUMSQ tests used in the study are shown in the tables above. According to the results, the regresses are stable and fall inside the two red lines that denote the stability line. As a result, all of the study's variables are stable at the 5% significance level. The phrase implies that your analysis's regressions are thought to be stable. Plotting the cumulative sums of the regression coefficients and their squared values over time and comparing them to predetermined reference lines allow us to determine how stable the regressions are. The two red lines indicated in the sentence represent the stability lines. These lines should be inside the cumulative and squared cumulative sums, showing that the regression coefficients are stable over time. This indicates that there are constant

and lack of significant fluctuations or volatility in the links between the independent factors (such as government spending on transportation infrastructure) and the dependent variable (economic growth).

The declaration also states that all research variables are stable at a 5% significance level. This suggests that there is statistical significance for the stability of the regression models. In other words, the data supports the notion that the correlations between the variables in your study are stable over time.

Overall, the results of the CUSUM and CUSUMSQ tests give assurance that the regression models utilized in your study are stable. They show that the links between governmental investments in transportation infrastructure and economic growth and other factors included in the research are trustworthy and constant across the period given. This consistency increases the validity of your investigated links and boosts the trustworthiness of your study's conclusions.

CHAPTER V

Conclusion, and Recommendations

5.0 Introduction

The author endeavored to provide a summary of his study in this chapter, detailing it from the introduction in the first chapter through the conceptual and theoretical frameworks in the second chapter, as well as the technique used to obtain the conclusions from the data presentation and analysis. This section presents an explanation of what was found according to the study that was undertaken and the inferences that were drawn. The author's goal in this chapter is to give a thorough overview of their research, encompassing the essential topics covered in earlier chapters. Beginning with a review of the introductory chapter's primary ideas and goals, the summary sets the stage for the debates that follow. The author will also cover the conceptual and theoretical foundations of the second chapter. By doing this, they will highlight the importance and significance of these frameworks to their research, further establishing the study's findings in accepted theories and ideas. An overview of the data presentation and analysis is also included in the summary.

The thesis will describe conclusions after examining the data gathered, highlighting significant findings, insights, and trends. This analysis will support the essential claims and findings made throughout the investigation. The author will also comprehensively explain the study results and the conclusions reached. To understand the study's findings thoroughly, the author interprets the findings in light of the theoretical framework and research objectives.

Overall, by summarizing the essential aspects of the other chapters, this chapter acts as the conclusion of the study trip. The author offers a comprehensive summary of their study by going through the introduction, conceptual and theoretical frameworks, data analysis, and research findings.

5.1 Summary

The research examined the potential economic impact of improving Nigeria's transportation system. The thesis employed the ARDL estimating method, with GDP as the dependent variable and government funding as the independent variable. By providing a brief overview of the study's history, Chapter One helped us examine the subject.

Reviewing significant and related material was the main focus of the second section of this research investigation. This mainly entails a discussion of earlier works that have already been released and written on the issue, in addition to other types of writing that have been associated with the research study's topic. The framework of theory, conceptual framework, and actual foundation are made up of its parts. The preceding chapter focused on research procedures, including the study population, data and analysis methods presentation, model development, and model evaluation process. Chapter three included the research method and additional data collection for the research. The two primary secondary data sources were the World Bank database and the CBN statistical bulletin. Chapter four organized the data and data analysis quantitatively for a superficial understanding. The findings were analyzed employing E-Views and the standard least squares method.

The main topics of chapter five were the summary of the conclusions obtained, the recommendations made in light of those inferences, and how they will contribute to potential developments in various sectors pertinent to other scholars and organizations. Annual secondary data for the 31-year time frame from 1990 to 2020 was utilized for this research. Information on GDP expansion and inflation levels might be obtained from the World Bank database. Information on the government's capital spending on transportation, government regular spending on transport, and the growth rates of the transport sector were obtained from the Central Bank of Nigeria's (CBN) statistics data online.

5.2 Findings

The data from the long-run ARDL findings demonstrate an overall relationship between the dependent and independent variables. The findings indicate that, at a 5% level of significance, GRTI and GRET have a significant and positive impact on GDP over the long run; specifically, when GRTI increases by 1%, GDP will rise by 7.8%, and when GRET increases by a percentage change, the economy will grow by 280%. Additionally, the GCET ought to exhibit a negative relationship over time, demonstrating that for every 1% change in capital expenditure, economic growth will decline by 198%. Government capital expenditures are detrimental to economic expansion. The study reveals that more money should be allocated to investing in recurrent expenses in Nigeria because it has a positive long-term impact, like job

creation, subsidized ticketing, and other things. After all, the government's priority in a developing country is to raise the standard of living. These results have significant economic development implications for Nigeria. They stress prioritizing the transportation sector's expansion and development and raising government spending. By enhancing accessibility, permitting the efficient movement of people and commodities, and promoting commerce and investment, a well-developed transportation sector has the potential to support increasing economic activity. Higher government spending on ongoing operations can also help the economy thrive by fostering employment growth, reducing ticket prices, and enhancing public services. These results align with the government's top aim, which is to raise the standard of living and enhance the general welfare of its residents in a growing nation like Nigeria.

In conclusion, the long-run ARDL findings offer a critical new understanding of how government spending and transportation infrastructure development affect Nigeria's economic growth. The correlation between GRTI, GRET, and GDP is positive, indicating that recurrent government spending and investments in the transportation sector can both have a significant beneficial impact on economic growth. However, the inverse link between GCET and GDP emphasizes the importance of carefully assessing capital expenditures to guarantee their efficacy in promoting sustainable economic growth. In order to achieve long-term economic growth and raise the standard of living for the Nigerian populace, authorities should prioritize investments in the transportation sector and distribute resources effectively, according to these results.

The results in the short run show that government capital expenditure on transportation (GCET) and economic growth have a negative association in the near run. Economic development will have a negative immediate effect when the government increases capital investment in transportation infrastructure. Economic growth is expected to decline by 129% for every 1 unit adjustment or rise in GCET. Using capital expenditures for transportation may not effectively translate into significant economic development in the short run. This unfavorable association may be caused by several variables, including delays in the execution of infrastructure projects, inefficiencies in project management, and other concurrent factors affecting economic growth. The economy grows by 182% when recurring government

expenses rise because of a positive association between GRET (government recurrent expenditure on transportation) and economic growth.

On the other hand, the results show a favorable correlation between economic growth and government recurrent expenditure on transportation (GRET). This suggests that a rise in recurring government spending on transportation has a beneficial effect on economic growth. More specifically, the forecasted economic growth is anticipated to increase by 182% for every 1 unit adjustment or increase in GRET. This shows that ongoing resource allocation and financial support for transportation infrastructure support short-term economic growth. It suggests that ongoing spending on transportation infrastructure maintenance, operations, and upkeep is essential for promoting economic activity, connection, and overall economic growth. Results for the GRTI (growth rate in the transportation industry) indicated statistically significant negative results, with a probability of 0.0075, or less than the 5% threshold of significance. Economic growth increases by 2.1% units for every unit rise in GRTI.

The study's results on the growth rate of the transportation sector (GRTI) show statistically significant contrarian conclusions. This suggests that, in the near run, there is a powerful inverse link between the growth rate of the transportation sector and economic growth. This association is statistically significant and unlikely to have arisen by chance, according to the probability value of 0.0075. The expected economic growth improves by 2.1% units for every unit increase in GRTI. This implies that a faster overall economic growth rate is linked to a faster growth rate in the transportation sector. The 2.1% increase in economic growth for each unit increase in GRTI shows that, despite the negative association, the impact's size is relatively moderate.

In conclusion, the results indicate that government recurrent spending on transportation (GRET) and the growth rate of the transportation sector (GRTI) positively affect economic growth. In contrast, government capital expenditure on transportation (GCET) negatively influences the short run. However, it is vital to consider the study's context and potential limitations, such as the precise period examined, the methodology used, and the different variables that may affect the link between expenditure on transportation infrastructure and economic development.

5.3 Discussion of Results and Link to Research Hypothesis

Hypothesis 1

H0: There is no link between government transportation spending and Economic growth in Nigeria.

No, the results of the findings showed that government expenditures on capital and recurrent had significant links with the economic growth in Nigeria. Hence, the null hypothesis would be rejected immediately. The statement indicates that the study's findings demonstrated significant links between government expenditures on capital and recurrent and economic growth in Nigeria. This implies that government spending on transportation infrastructure, in terms of capital investment and recurrent expenses, has a meaningful impact on the country's economic growth.

Government expenditures on capital refer to investments in constructing, maintaining, and improving transportation infrastructure, such as building new roads, bridges, railways, airports, and ports. The significant link between capital expenditure and economic growth suggests that when the government allocates funds towards developing and expanding transportation infrastructure, it positively influences economic growth. Improved infrastructure enhances connectivity, reduces transportation costs, and facilitates the movement of goods, services, and people, promoting economic development. Similarly, recurring costs for administration, maintenance, and transportation infrastructure repairs are referred to as "government expenditures on recurrent." Given the strong correlation between ongoing expenses and economic growth, funding for the maintenance and efficient transportation infrastructure operation will likely have a similar effect. The best use of existing infrastructure is ensured through adequate maintenance and effective operation, promoting economic activity and production.

Overall, the null hypothesis was rejected, indicating empirical support for the idea that government transportation investment in capital and recurrent expenditure plays a critical role in fostering economic growth in Nigeria. These findings highlight the importance of funding transportation infrastructure to promote economic growth.

H1: There is a link between government transportation spending and economic growth in Nigeria.

Yes, the Alternative hypothesis stating that there is a relationship and a link between expenditure on the transportation system in Nigeria will be accepted because our

analysis results showed a link between them; hence, we accept the alternative hypothesis. Government spending on transportation is the allocation of money by the government towards the construction and upkeep of Nigeria's transportation infrastructure. This covers highway systems, railroads, ports, airports, and other transportation infrastructure expenditures. These infrastructure initiatives seek to boost internal trade in products, services, and people while lowering costs associated with transportation.

Economic growth is an increase in the total output or production of goods and services in an economy over a given period. Indicators like Gross Domestic Product (GDP), employment rates, and investment levels are frequently used to measure it. As it results in higher living standards, better employment possibilities, and more economic activity, economic development is a crucial objective for nations.

Hypothesis 2

H0: Government capital expenditure has no significant effect on economic growth in Nigeria.

No, the results show that in the long run, there is a significant effect on government capital spending on transportation in the country. Government capital expenditures are the monies allotted by the government for the construction and upkeep of physical infrastructure, such as roads, trains, airports, and ports used for transportation. This expense is viewed as an investment in the nation's economic growth. The term "long run" refers to a time frame during which changes in governmental capital spending on transportation have had ample opportunity to materialize and stabilize. It implies that such expenditure has a delayed rather than immediate effect on economic growth. According to the data showing a considerable effect, increasing government capital expenditures on transportation infrastructure is likely to have a long-term positive impact on economic growth in Nigeria.

This result supports the idea that a well-designed transportation infrastructure improves connectivity, lowers transportation expenses, and boosts economic activity. An efficient flow of people, commodities, and services is made possible by improved infrastructure, which may increase investment, ease commerce, and promote overall economic growth.

This discovery is significant because of its potential advantages for the Nigerian economy. The government may create a favorable climate for companies to flourish,

increase productivity, and promote economic diversity by committing money to transportation infrastructure. It may result in greater commerce, the development of jobs, and general improvements in the standard of living in Nigeria.

H1: Government capital expenditure significantly affects economic growth in Nigeria.

In the short run, the result shows that government spending affects the country's economic growth. The statement suggests that government capital expenditure substantially impacts economic growth in Nigeria, both in the short and long run. Let us break down the explanation into two paragraphs to discuss the short-run and long-run effects separately. Government capital expenditures are short-term investments the government makes in constructing infrastructure, particularly transportation projects. These investments immediately and directly contribute to boosting economic growth. In order to build, maintain, and develop infrastructure like roads, trains, airports, and ports, the government provides resources when it boosts capital investment. As a result, there are more job openings in the construction industry, increasing worker pay and encouraging consumer spending.

Additionally, better infrastructure makes it easier to transfer products and services, lowers the cost of transportation, and boosts overall production. This eventually boosts economic growth in the near term by encouraging economic activity, company growth, and job creation. Long-term government capital spending continues to impact Nigeria's economic development substantially. There are several ways to track the long-term effects. First, spending on transportation infrastructure improves connections across the nation by building new roadways or enlarging existing networks. This enhances regional integration, eases commerce, and increases market accessibility, all supporting economic growth. Second, a well-developed transportation infrastructure draws domestic and international private investment because companies gain from enhanced logistics, decreased transportation costs, and greater market access. Over time, this infusion of investment encourages more economic activity and growth. Last but not least, ongoing government investment in capital projects fosters economic diversity by fostering the expansion of numerous segments beyond traditional industries. This diversification strengthens the overall

resilience and sustainability of the economy, leading to sustained long-term economic growth.

Hypothesis 3

H0: There is no link between government recurrent expenditure and economic growth in Nigeria.

No, the result shows that in the short-run and long-run there is an effect of government recurrent spending on economic growth in Nigeria. The analysis of the data revealed that there is indeed a significant effect of government recurrent expenditure on economic growth in Nigeria, both in the short run and the long run. This finding contradicts the null hypothesis, which suggests no link between government recurrent expenditure and economic growth.

Government recurrent expenditure refers to the funds allocated by the government for ongoing expenses and operational costs, such as salaries, maintenance, and day-to-day administration. In transportation infrastructure, recurrent expenditure could include maintaining and operating existing roads, railways, airports, and other transportation facilities. The positive relationship between government recurrent expenditure and economic growth implies that increased spending in this area stimulates the economy. When the government invests more in maintaining and operating transportation infrastructure, it enhances the transportation system's efficiency, reliability, and safety. This, in turn, facilitates the movement of goods, services, and people, leading to increased economic activity and overall economic growth.

In the short run, the effect of government recurrent expenditure on economic growth may be more immediate. For example, when the government allocates more resources to repair and maintain existing roads, it improves their condition and reduces disruptions, such as traffic congestion and delays. This can positively affect businesses by reducing transportation costs and improving the timeliness of deliveries, leading to increased productivity and economic growth.

H1: There is a link between government recurrent expenditure and economic growth in Nigeria.

Yes, there is a link between government recurrent expenditure and economic growth in the long run, as shown in the long-run ARDL results. Now, in the context of the long-run ARDL (Autoregressive et al.) results, if the analysis shows a positive link between government recurrent expenditure and economic growth, it suggests that sustained and increased recurrent spending by the government can have a favorable impact on the overall economic performance of Nigeria over an extended period. However, it is essential to note that the specific magnitude, significance, and nature of the relationship between government recurrent expenditure and economic growth can be influenced by various factors such as the efficiency of public spending, quality of governance, fiscal sustainability, and the overall macroeconomic environment.

In summary, the findings suggesting a link between government recurrent expenditure and economic growth in Nigeria in the long run highlight the importance of sustained investment in critical sectors and public services. It implies that prudent and strategic allocation of resources towards recurrent expenditure can contribute positively to Nigeria's economic development by fostering human capital, improving infrastructure, boosting aggregate demand, and enhancing stability and public confidence.

5.4 Comparison Findings to Other Related Research Results

According to the report of Kamar et al. (2014), Nigeria's government needs to invest more money in infrastructure to support rural growth. It implicitly supports the notion that infrastructure investment is essential for economic development, even if it does not precisely address the connection between government transportation spending and economic growth. While their study does not explicitly focus on the relationship between government spending on transportation infrastructure and economic growth, their findings highlight the importance of increased government spending on infrastructure for rural development in Nigeria. The positive coefficient for lnGCET (government capital expenditure) in your analysis supports the idea that higher government spending on capital projects, including transportation infrastructure, can contribute to economic growth.

Also, according to Siyan and Adegoriola (2017), their study investigates the nexus between infrastructure development and Nigerian economic growth. Although it does not explicitly focus on transportation infrastructure, your analysis shows a positive coefficient for lnGRTI (growth rate in the transportation industry), indicating that an

increase in the growth rate of the transportation industry is associated with higher economic growth. This finding aligns with the broader understanding that infrastructure development, including the transportation sector, can contribute to economic growth. The expansion of infrastructure, notably the transportation industry, is acknowledged as one of the leading forces behind economic progress in many nations. The study by Siyan and Adegoriola (2017) investigates the connection between infrastructure improvement and economic expansion in Nigeria. Your research shows a positive coefficient for lnGRTI, which measures the growth rate of the transportation industry, even though their study does not primarily focus on transportation infrastructure. According to this positive coefficient, faster growth in the transportation sector may be linked to faster economic expansion in Nigeria.

The transportation sector greatly aids the nation's movement of goods, services, and people. Accessibility, connection, and trade prospects are improved when the transportation industry develops and becomes more efficient, which boosts economic activity. Various causes may contribute to this expansion, including improved infrastructure, technological breakthroughs, and more investment in the transportation sector.

The other economic sectors are positively impacted as the transportation sector expands. A robust transportation system lowers transportation costs, enables prompt delivery of goods, and boosts the overall effectiveness of the supply chain. As a result, productivity rises, competitiveness rises, and company development is encouraged, contributing to better economic growth.

Additionally, the positive coefficient for lnGRTI shows that investments and regulations supporting the transportation sector's growth and expansion may benefit Nigeria's economy. Infrastructure development, such as the building and upkeep of roads, railroads, ports, and airports, as well as investments in technical developments and improved operational effectiveness within the transportation industry, may be included in these investments.

The general assumption that infrastructure improvement, especially the transportation sector, may contribute to economic growth is supported by your research's positive coefficient for lnGRTI. A developing transportation sector in Nigeria can stimulate economic growth, generate jobs, and advance general economic development by promoting increased accessibility, connection, and trade possibilities.

In a nutshell, even if the coefficients and statistical significance of the variables in your study might not precisely match the conclusions of the cited research, some parallels can be drawn nonetheless. The assumption that the expansion of the transportation sector may have a favorable influence on economic growth is supported by the positive coefficient for lnGRTI (growth rate of the transportation industry). However, it is essential to note the contradiction between the favorable results from past research that stressed the positive association between government capital expenditure and economic development and the negative coefficient for lnGCET (government capital expenditure) in your analysis. More research and consideration of other aspects may be required to resolve these discrepancies.

It is vital to recognize that more research may be necessary to resolve the difference between your analysis's negative coefficient for lnGCET (government capital expenditure) and the positive results from past studies on the relationship between government capital expenditure and economic growth. A more thorough understanding of the relationship between government capital expenditure on transportation infrastructure and economic growth in Nigeria could help resolve these discrepancies by considering additional factors like infrastructure spending quality and efficiency, implementation tactics, and potential time lags.

5.5 Policy recommendation

Densely populated countries like Nigeria are recommended to expand their transportation choices beyond the standard road network. The peaceful rivers that make up the country's rivers flow into the Atlantic, and implementing my development initiatives in the maritime sector would help reduce the congestion and road obstructions brought about by overcrowding and a large population of car owners. The transportation sector's diversification will promote economic expansion and job creation in other sectors, which will help lower the unemployment rate. In order to boost Nigeria's economic growth through infrastructure, the following factors must be taken into account:

The government should initially make additional capital investments in initiatives relating to transportation. According to the study, capital spending on transportation is linked to economic expansion. Therefore, the economy will gain from more excellent transportation capital investment. The responsibility for maintaining the country's transportation infrastructure falls to the federal government. The

government should expand regular investments in the transportation industry since it and its services are crucial for economic growth. Transportation industries like aircraft, shipping, and road travel may get ongoing government assistance.

Secondly, creating the organizations mentioned above is essential to developing infrastructure because it will make the execution of transportation strategies easier while establishing the regulatory and legal framework for private-public partnership (PPP) participation in the industry as other means for roadway generation and funding.

Finally, the federal government should assist FERMA in acquiring modern technology, such as GIS, that can track road damage all through the nation's road networks in order for it to successfully carry out its legal responsibilities about maintaining roads through direct labor instead of using the contract awarding method

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Appendices

Appendix A

DESCRIPTIVE STATISTICS

	GDP	LGCET	LGRET	GRTI
Mean	4.814972	11.91396	10.86409	25.55806
Median	4.631193	12.09933	11.49054	8.900000
Maximum	15.32916	14.29726	13.71049	156.5000
Minimum	0.072665	7.772795	7.522481	5.100000
Std. Dev.	3.490452	2.137318	1.905706	34.79761
Skewness	0.944456	-0.465178	-0.420770	2.540285
Kurtosis	4.001800	1.812964	1.805220	8.998231
Jarque-Bera	5.904976	2.938044	2.758597	79.81334
Probability	0.052210	0.230150	0.251755	0.000000
Sum	149.2641	369.3328	336.7869	792.3000
Sum Sq. Dev.	365.4976	137.0438	108.9514	36326.21
Observations	31	31	31	31

UNIT ROOT

ADF

Null Hypothesis: GDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.777530	0.0077
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

Null Hypothesis: D(LGCET) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.690842	0.0001
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

Null Hypothesis: D(LGRET) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.147493	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

Null Hypothesis: GRTI has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.654859	0.0937
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

PP

Null Hypothesis: GDP has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.928480	0.0053
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

Null Hypothesis: D(LGCET) has a unit root
Exogenous: Constant
Bandwidth: 18 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.344718	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

Null Hypothesis: GRTI has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.654859	0.0937
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

ARDL BOUND TEST and ARDL SHORT-RUN

ARDL Error Correction Regression
Dependent Variable: D(GDP)
Selected Model: ARDL(1, 0, 0, 4)
Case 2: Restricted Constant and No Trend
Date: 02/03/23 Time: 08:31
Sample: 1990 2020
Included observations: 27

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GRTI)	0.021770	0.013220	1.646692	0.1170
D(GRTI(-1))	-0.048868	0.013457	-3.631331	0.0019
D(GRTI(-2))	-0.049047	0.013227	-3.707995	0.0016
D(GRTI(-3))	-0.059543	0.013544	-4.396300	0.0003
CointEq(-1)*	-0.652071	0.117444	-5.552188	0.0000

R-squared	0.634282	Mean dependent var	-0.008921
Adjusted R-squared	0.567788	S.D. dependent var	3.058824
S.E. of regression	2.010958	Akaike info criterion	4.400676
Sum squared resid	88.96695	Schwarz criterion	4.640645
Log likelihood	-54.40912	Hannan-Quinn criter.	4.472031
Durbin-Watson stat	2.461111		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.044384	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

ARDL LONG_RUN TEST

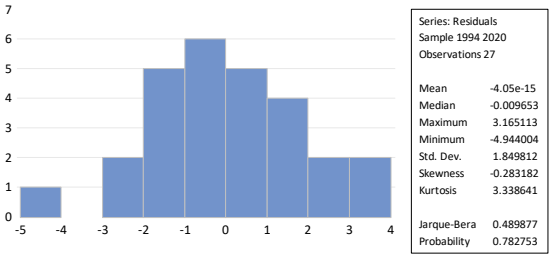
Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGCET	-1.987359	0.920090	-2.159961	0.0445
LGRET	2.801359	1.291064	2.169805	0.0437
GRTI	0.078127	0.028001	2.790104	0.0121
C	-4.377929	5.602183	-0.781468	0.4447

EC = GDP - (-1.9874*LGCET + 2.8014*LGRET + 0.0781*GRTI - 4.3779)

RESISDUAL DIAGNOSTIC TEST

NORMALITY TEST



SERIAL CORRELATION LM-TEST

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.014550	Prob. F(2,16)	0.3847
Obs*R-squared	3.038738	Prob. Chi-Square(2)	0.2188

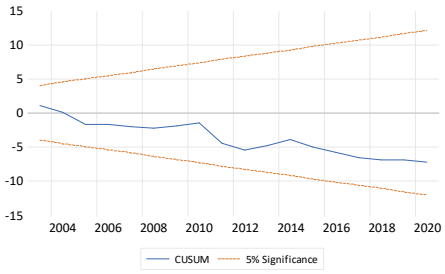
HETEROSKEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

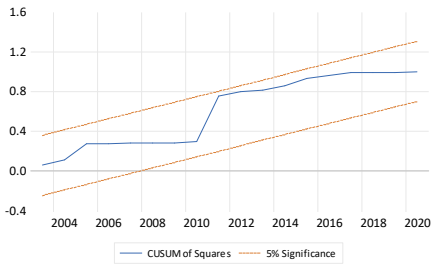
F-statistic	1.322377	Prob. F(8,18)	0.2943
Obs*R-squared	9.994516	Prob. Chi-Square(8)	0.2654

STABILITY TEST

CUSUM TEST



CUSUM-SQ TEST



Appendix X

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03.11.2022

Dear Emonena Morris Ejiro

Your application titled **"Investigating The Impact of Transportation Infrastructural Development on Nigeria's Economic Growth (1990-2020)"** with the application number NEU/SS/2022/1357 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Prof. Dr. Aşkın KİRAZ

The Coordinator of the Scientific Research Ethics Committee