**EFFECT OF PROVISION OF ROAD INFRASTRUCTURE ON COMMERCIAL PROPERTY RENTAL VALUE IN BAUCHI METROPOLIS**

**BY**

**EBERE CHARITY CHIDINMA**

**16/43928D/4**

**SUBMITTED TO THE DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION, FACULTY OF ENVIRONMENTAL TECHNOLOGY, ABUBAKAR TAFAWA BALEWA UNIVERSITY, BAUCHI IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE AWARD OF BACHELOR OF TECHNOLOGY (B.TECH) DEGREE IN ESTATE MANAGEMENT AND VALUATION**

**SUPERVISED BY:**

**DR. M J GAMBO**

**OCTOBER, 2021**

**DECLARATION**

I hereby declare that this work is the product of my own research effort, undertaken under supervision of DR M J Gambo and has not been presented elsewhere for the award of degree or certificate. All sources have been duly distinguished and appropriately acknowledged.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EBERE CHARITY CHIDINMA**

**16/43928D/4**

**CERTIFICATION**

This is to certify that this project entitled **‘‘EFFECT OF PROVISION OF ROAD INFRASTRUCTURE ON COMMERCIAL PROPERTY RENTAL VALUE IN BAUCHI METROPOLIS’’** meets the regulations governing the award of B. Tech degree in Estate Management and Valuation of Abubakar Tafawa Balewa University, Bauchi, and is approved for its contribution to knowledge and literary presentation.

Dr M J Gambo (AMNIM, ANIVS, RSV) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Project Supervisor) Signature & Date

Mr. Dahiru Adamu \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Project Coordinator) Signature & Date

Dr Ishaq Mohammed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Head of Department) Signature & Date

Dr. Sanda Yakubu Nehemiah \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(External Supervisor) Signature & Date

**ACKNOWLEDGEMENT**

First and foremost, I must start by expressing my gratitude to Almighty God who made it possible for me to start and accomplish this research successfully. My appreciation goes to my supervisor Dr M J Gambo for his patience, cooperation, and encouragement, spending a lot of time reading and making necessary corrections and guidance and concern for my academic success. There are many people who deserve thanks for helping me to reach this stage of my life. I owe a great deal of thanks to everyone who has taught me from the basic state to this level. I will like to express my propound pleasures, appreciation and gratitude to my loving and caring father in person of Elder Obediah Ebere Egege and to my late mother Mrs Ebere Caroline Chimaeze for their hope and courage they have built in me, their prayers and immense contributions both morally and financially to the success of every endeavor of my life.

I am also grateful to my lecturers: Dr Kalu Joseph, Barr. Mrs. Nneoma Ireogonachi, my HOD ESV Dr. Ishaq Mohammed and others for their encouragement and academic contribution at different levels of study. With deepest sense of appreciation to my friends for their support, prayers and endurance like Dorcas Micheal, Dickson Daniel, Goje, Mercy Agbo, Shafiu, Ashafa, Abdul Haruna, Vitalis, Umar, and others.

Lastly, I must thank you all. I could not have done this without you. You are the best! And may the Lord Jesus Christ guide and protect us (Amen).

**DEDICATION**

This research work is dedicated to Almighty God and his Son Jesus Christ for granting me the opportunities and good health to carry out this project.

**TABLE OF CONTENT**

Cover Page

Title Page- - - - - - - - - - - i

Declaration- - - - - - - - - - - ii

Certification- - - - - - - - - - - iii

Acknowledgement- - - - - - - - - - iv

Dedication- - - - - - - - - - - v

Table of Content - - - - - - - - - - vi

List of Table- - - - - - - - - - - vii

Abstract- - - - - - - - - - - viii

**CHAPTER ONE**

**INTRODUCTION**

* 1. Background of Study- - - - - - - - - 1

1.2 Statement of Research Problems - - - - - - - 3

1.3 Research Question- - - - - - - - - 4

1.4 Aim and Objectives- - - - - - - - - 4

* 1. Significance of the Study- - - - - - - - - 5

1.6 Scope of the Study- - - - - - - - - 5

**CHAPTER TWO**

**LITERATURE REVIEW**

2.1 Introduction- - - - - - - - - - 6

2.2 Concept of Road Construction- - - - - - - - 7

2.3 Concept of property- - - - - - - - - 10

2.4 Concept of Commercial properties- - - - - - - 11

2.4.1 Shop Properties - - - - - - - - - 12

2.4.2Office Properties - - - - - - - - - 13

2.5 Concept of Value - - - - - - - - - 13

2.5.1 Rental Value - - - - - - - - - 14

2.6 History of Road Construction - - - - - - - 15

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

3.1 Introduction- - - - - - - - - - 19

3.2 Research Design- - - - - - - - - - 19

### 3.3 Population of the Study Area- - - - - - - - 19

3.4 Sample Frame- - - - - - - - - - 20

3.5 Sample Size- - - - - - - - - - 20

3.6 Sampling Technique- - - - - - - - - 20

3.7 Method of Data Analysis - - - - - - - - 20

**CHAPTER FOUR**

**DATA ANALYSIS AND PRESENTATION**

4.0 Introduction- - - - - - - - - - 21

4.1 Table 1 Analysis of Annual Rental Values- - - - - - 21

4.2 Table 2 Analysis of Average Rental Value- - - - - - 22

4.3 Table 3 Analysis of Paired Sample Statistics- - - - - - 23

4.4 Table 4 Paired Sample Correlation - - - - - - - 23

4.5 Table 5 Paired Sample Test - - - - - - - - 23

**CHAPTER FIVE**

**SUMMARY OF FINDING, CONCLUSION AND RECOMMENDATION**

5.0 Introduction- - - - - - - - - - 25

5 .1 Findings - - - - - - - - - 25

5.2 Conclusion- - - - - - - - - - 27

5.3 Recommendation- - - - - - - - - - 27

REFERENCES- - - - - - - - - - 28

**Abstract**

This study was aimed at determining the effect of road construction on commercial property rental values with a view for more infrastructure and economic development in the study area. Commercial properties are properties that are purposely built for commercial uses and it comprises offices, shopping mall, warehouses to mention but few. Out of all types of property, commercial properties tend to attract more value than other types of property. This is a result of the fact that the demands for such properties are usually greater than the supply. These relate to properties that are basically used for trading (buying & selling), production of income through commerce or business use. Data was gathered by purposive sampling and were analyzed through the use of Statistical Package for Social Sciences (SPSS) using paired sample t-test. The findings from the survey carried out indicated that the increase in rent is not as a result of improvement in roads but may be as a result of inflation, increase in population, fashion and taste, type of society, standard of living or migration, in the study area. It also indicated statistical evidence that there is no significant difference between the road construction before the year 2012-2016 and after the year 2017-2021 and the rental trend of commercial properties in the neighborhood was not affected. The research therefore recommends that property developers should invest in properties along the road as it has increased accessibility and other economic factors are likely to favor rent increase and the Government should develop more roads to increase economic access for commercial properties. Further, the government should provide the right policies that will create an enabling environment for investment in commercial real estate.

*.*

**CHAPTER ONE**

**1.0 INTRODUCTION**

**1.1 Background of the Study**

Transportation is an integral aspect of any city, town, neighborhood, or location, whether rural or urban of new roads or expansion of old roads has to be considered as stated by Rodrigue (2020). In Ghana, the railroad was the primary mode of transportation of goods by the colonial authorities from the hinterlands to the coastal zones. Road infrastructure became the first complementary transport mode serving as feeders to the railway system (Jedwab & Moradi, 2018).

Road transportation is still a crucial component of Mexico's economy. It relies on a network of 370,000 km of highways that connects the country from north to south and between its two oceanic beaches, accounting for 57 percent of freight movement in the country. Routes to bigger commercial ports, such as the route connecting Mexico City and the port of Vera, are assisting in the growth of intermodal transportation (Theo, *et al.,* 2017).

Studies have shown that due to availability of land at low cost and nearness to jobs in cities, peri-urban areas have become the destination for infrastructural development (Ravetz, *et al.* (2016). Such infrastructural development has been found to improve mobility enhancing accessibility to jobs, social facilities and services such as schools and hospitals as well as an increased market for agricultural goods and services (Pradhan & Bagchi, 2017; Gibson & Rozelle, 2019).

In Accra, the impact was mainly an increase in access to potable water due to the laying of water pipelines and drilling of about 20 boreholes in and around Accra. This conforms with what is found in other studies on roads as a means of enhancing socio-economic needs of societies by providing access to basic facilities and services (Pradhan & Bagchi, 2017; Gibson & Rozelle, 2019).

It has also been presumed that new roads lead to improved living conditions of those living near such projects through possibilities for social development, economic opportunities and enhancement of the welfare of communities. They were also seen to have the power to promote interactions among residents, especially those who are engaged in commerce (Doan & Oduro, 2018).

Purpose-built commercial properties can be seen throughout the study area which includes Shopping Complex, Office Space, and Converted Office Space. A study was undertaken to examine the trends in rental prices of properties between 2017 and 2019 in order to uncover the property with the highest trend so as to guide investors in making the best option of the sort of property to invest their hard-earned income (Iroham & Oluwunmi, 2018; Adedamola & Simon, 2018).

Pharaoh (2017) found that sites close to stations were more attractive to commercial and mixed-use developments and sought for commercial developments. Those farther from stations are more attractive for residential developments. Nwuba (2019) states that the need to analyze the movement of rents, stems from the fact that it would benefit entrepreneurs in their planning and cash flow estimates; developers in investment decision-making; real estate specialists in appraisals and evaluations of proposed development projects; and researchers with information.

**1.2 Statement of the Problem**

According to Bailey, Mokhtarian and Little (2017) transport route is part of a distinct development pattern or road network and mostly described by regular street patterns as an indispensable factor of human existence, development and civilization.

Mannering, Walter and Scott (2018) states that the route network coupled with increased transport investment result in changed levels of accessibility reflected through cost benefit analysis, saving in travel time and other benefits. These benefits are notable in increased catchment area for services and facilities like shops, schools, office, banks and leisure activities. Road networks are observed in terms of its components of accessibility, connectivity, traffic density, level of service, compactness and density of particular roads.

Access to major roads provides relative advantages consequent upon which commercial users locate to enjoy the advantages. Modern businesses, industries, trades and general activities depend on transport infrastructure with movement of goods from place to place becoming vital and inseparable aspects of global and urban economic survival. Development of various transportation modes have become pivotal to physical and economic developments. Such modes include human porterage. railways, ropeways, inland waterways and roads (Said & Shah, 2019).

Bauchi is a typical example in the history of growth and developments of road infrastructure in Nigeria. The city became the capital of Bauchi in 1976 with improved road networks developed to cater for increase in concentration of pedestrian and vehicular movements. Similarly, commercial activities like banking, retail/wholesale business and professional services congregated to take advantage of the seat of governance and the concentration of activities has attracted consumers and ancillary service providers. This has an effect on commercial property values along retiary roads in the metropolis.

This study therefore, tries to examine the relationship between road construction and the rental value of commercial property in Federal low-cost, Bauchi

**1.3 Research Questions**

The following research question shall serve as a guide towards achieving the aim and objective of the study:

1. What is the rent passing for commercial properties Before the road construction from 2012–2016 at Federal Low-cost, Bauchi Metropolis?
2. What is the rent passing for commercial properties in the study area After the road construction from 2017–2021 at Federal Low-cost, Bauchi Metropolis?
3. What is the effect of Provision of road infrastructure on commercial property rental value in Bauchi Metropolis?

**1.4 Research Aim and Objectives**

The aim of this research is to determine the effect of road construction on commercial property rental values with a view for more infrastructure development for economic development the in the study area and the following objectives would serve as a framework within which this aim is to be achieved;

1. To examine the rent passing for commercial properties before the road construction in the study area.
2. To examine the rent passing for commercial properties after the road construction in the study area.
3. To evaluate the effect of Provision of road infrastructure on commercial property rental value in Bauchi Metropolis?

**1.5 Significance of The Study**

Road infrastructure projects have massive investments since they have been used to achieve economic prosperity through haulage of goods and services from one place to another (Jedwab & Moradi 2018).

In Sub-Sahara Africa, road infrastructure presently remains the means of conveying about 75% of freights and passengers (Beuran, *et al.,* 2017). Considering that about 50% of the roads in the Sub-Sahara region are yet to be constructed implies that road infrastructure development remains on the top list of physical infrastructure developments in such cities, potentially impacting the socio-economic and physical environment of the cities and their urban areas (Gachassin, *et al.,* 2018; Cobbinah, *et al.,* 2019).

This study will hopefully give an insight to public and private developers and the government as well, the need and role that the road will play on commercial activities and sound environmental development. It will point out the problems that may affect its efficiency in enhancing development of properties. New road construction, being a predominant function of the government, will be useful to the state government in the discharge of this important civil responsibility.

**1.6 Scope of Study**

Road network analysis was carried out to determine the levels of accessibility and connectivity of nodal points as well as road and traffic densities in the hope of predicting commercial property rental values along each arterial road. This research work will examine the effect of road construction on commercial property on rental value along Federal Low-cost road, Bauchi state.

**CHAPTER TWO**

**2.0 LITERATURE REVIEW**

**2.1 INTRODUCTION**

The evolution of the road industry and the tremendous surge in the number of vehicles on roads has been a rationale that has promoted exploiting all viable available resources to build better roads of prolonged service life. Incorporating unconventional construction material in the road construction commenced in the 80’s where conventional raw materials such as bitumen, crushed aggregates, and unbound aggregates mixtures began to scarce (Tuncan & Cetin, 2017).

The process of producing aggregated materials has been causing extreme disruption to the environment (Akbulut, 2017) and to the economy owing to the severe depletion of natural resources (Athanasopoulou & Kollaros, 2018). Furthermore, the alarming rate of increased waste production is what underpin the efforts to investigate the potential incorporation of various by-products in road construction (Paranavithana & Mohajerani, 2018).

The most dominant recycling materials that are in practice at present include plastic wastes, scrap tires, foundry sand, bottom and fly ashes, oil sand, marble dust, recycled concrete aggregates, reclaimed asphalt pavement, steel slag. Much research has been conducted in this direction. Aside from benefits and promising research recommendations and practical results obtained from using waste material as substitutions to natural raw materials, several barriers have road blocked the employment of recycled material by virtue of environmental concerns and the lack of real field experience with such materials (Jegel, 2018). Certain recycled material and waste by-products possess considerable salient properties over others and great benefits would be acquired when characterized properly and incorporated with some other construction materials (Lee & Fishman, 2020).

A breadth of research revealed that road infrastructure development was positively associated with economic growth (Canning, *et al.,* 2017). Generally, road infrastructure plays a crucial role by providing mobility for the efficient movements of people, goods and services as well as providing accessibility to land and a wide variety of commercial and social activities (Meyer & Miller, 2018).

According to Motamed, *et al.,* (2020), the provision of road infrastructure not only lowers the physical barrier by stimulating the movements of people, goods and services but also improves access to markets, social services and employment by reducing the overall transportation times and costs. The development or provision of high mobility road infrastructure such as expressway can increase the speed and improve the efficiency of domestic and international trades by reducing the transportation times and costs; whilst the development or provision of high accessibility road infrastructure such as local road allow easy land access and promote commercial and social activities at local level (Saunders & Mislivets, 2020).

**2.2 Concept of Road Construction**

The construction sector is one of the largest industries in the world, with an annual global turn-over of around 13% of the global Gross Development Product (GDP) (McKinsey *et al.,* 2017). Construction activities include buildings, roads, railways, power and communication infrastructure, water and sewage, and a broad range of specialized activities, the construction industry also has significant environmental impact, and it has been estimated that as much as 5-10% of the total greenhouse gas emissions in the transport sector stem from road construction (The World Bank, 2018).

Many other industries, such as manufacturing, have worked systematically with improving their efficiency using automation, standardization of material and processes, process flow optimizations, etc. This has led to annual improvements in productivity in the order of 3.6% over the last 5 years (McCluskey *et al* 2018).

Stevenson (2020) carried out a study in Canada and identified the social impact of major roads and its significant potential positive and negative changes in peoples' cultural traditions and lifestyles, their physical and psychological health, their families, their institutions and their community. The Social Impact Assessment (SIA) process can be streamlined by focusing socio-economic data collection on the public issues and possible local impacts. This approach was based on the principle of interaction with the public throughout the assessment, integration of the local community issues and data with the technical project studies, and iteration in the identification and resolution of the potential impacts. This brought an understanding that the impacts of road projects on people and their communities are important and are increasingly having greater influence on the route alignment decisions and roadway design.

South Korea’s Hyunwoo, Du-Heon, JaiDong, Hee-Sung and Ju-Goang (2019) analyzed the direct-employment creation effect of South Korea’s expressway construction investments with the use of actual data. To determine the direct-employment creation effects of expressway construction investments, multiple regression analysis of data regarding 68 expressway sections were conducted. The creation of direct employment means the employment of manpower input directly to the works regarding the construction and maintenance of an expressway, so the employment can be determined clearly through the construction of an expressway.

Commercial buildings are seen as those designed, built and operated for any use other than residential, manufacturing, etc. These buildings can be dedicated to a single, homogeneous use such as corporate headquarters or they can be a complex combination of room for public interaction and space for commercial activity. The commercial property remains the most capitalized in terms of unit value and achieving a meaningful depth (Wyatt, 2018).

Oyelani (2020) examined that the improvement of the road adds a positive effect on the rental value of commercial properties, because there were increased rental values.

Alimi, Ayedun and Oni (2018) in Lagos, Nigeria analyzed the concept of road construction in selected parts of Lagos. The data were collected through questionnaires distributed among the residents (both landlord and tenants) of the selected area. The data were then analyzed using simple descriptive and analytical statistics. It was deduced that the majority of the respondents living in the study areas agreed that road improvements do lead to an increase in rental/capital values. Accessibility is a major factor that determines how much people are willing to pay for a particular location. The study recommended that the three tiers of government (i.e. Federal, State and Local) should take the construction, maintenance and rehabilitation of roads as a matter of great importance because landed property is an indicator of the wealth of a nation and their values can be enhanced through the provision of good roads as these are dependent on the value of the property.

Aigbe, Ogundele and Aliu (2020) study examined road facility availability such as traffic light, street light and culvert; and the conditions of the roads in terms of smoothness, presence of potholes, and cleanliness. Data was generated from five roads selected in Bauchi State. Simple descriptive statistics and the Road Maintenance and Quality Index (RMQI) were employed in the analysis of data generated The findings of the study are imperatives for the strengthening and refocusing of existing road maintenance strategies that will deliver smooth, time saving, and comfortable roads. This conclusively stressed the need for timely and efficient maintenance of roads for improved road service delivery to upgrade the present negative effects of commuting and ensure smooth, easy, and comfortable ride on Bauchi metropolitan roads.

Onijogun (2019) examined that the construction of the road brought about development of more properties from 2017-2020 and also said that the rate of property development increased rapidly after the road was constructed, due to rapid development of property in the area.

To this end, the aforementioned research works indicate that road construction increases the value of property to which this project affirms.

**2.3 Concept of Property**

Property, as applied to natural resources, is a primary social institution both because of its own importance and because several important "secondary" institutions, including taxation, credit and tenancy, are derived from it.' "Property" refers to a bundle of rights in the use and transfer (through selling, leasing, inheritance, etc.) of natural resources. Different rights (strands of the bundle) may be distributed in various combinations among natural and legal persons, groups, and several publics, including the many units of government (Ciriacy-Wantrup, *et al.,* 2018).

According to Oyebanji, (2017) property may be regarded as simply one's own thing and it is the relationship between individuals and the objects, which is seen as being the holders’ “own” to dispense with as they see fit. The social scientists conceive property as a bundle of rights and obligations. They stressed further that property is not a relationship between people and things but a relationship between people with regard to things, and it is often conceptualized as the rights of ownership defined in law, and may be private or public property. The latter belongs to an individual while the former belongs to a community collectively or a State. Property may be classified into real estate, immovable property, estate in land, real property, tangible and intangible, personal property, interests in land and improvements. Personal property may be tangible such as cars, clothing, animals, and intangible or abstract (e.g. financial instruments such as stocks and bonds), which includes intellectual property (patents, copyrights, trademarks).

Omoogun (2018), stressed that real property in common law systems refers to land or any permanent feature or structure above or below its surface. Immovable property is any immovable object or item of property that cannot be moved and includes premises and property, houses, land and associated goods and chattels. In common law systems, personal property may be called chattels, and distinguished from real property or real estate, while in civil law systems personal property is called movable property. Movables indicating any property that can be moved from one location or another. In distinction with immovable property, such as land and buildings, property may be classified in a variety of ways, such as goods, money, negotiable instruments, securities, and intangible assets.

According to Stratton (2019), there is further distinction between personal and private property. Personal property refers to things that an individual has an exclusive right to use but only while they are in use or used regularly. It differs from private property, which refers to things owned by an individual regardless of whether he is using them and has a right to prevent others from using what he does not use or has no intention of using. Real estate or immovable property is a legal term that encompasses land together with anything permanently affixed to it.

**2.4 Concept of Commercial Properties**

Commercial properties are properties that are purposely built for commercial uses and it comprises offices, shopping complexes, shopping mall, warehouses to mention but few. Out of all types of property, commercial properties tend to attract more value than other types of property. This is a result of the fact that the demands for such properties are usually greater than the supply. These relate to properties that are basically used for trading (buying & selling), production of income through commerce or business use (Alonso, 2017).

According to Wing Leramo (2019), commercial properties are properties built for commercial purposes, they are real properties of any kind that shelter those who are engaged in any trade or profession with the expectation of profits and it is the profit that determines how much a tenant will pay as rent.

**2.4.1 Shops Properties**

The shop market in Nigeria spreads to a very wide extent from the one room in a residential tenement house (invariably sign-posted as ‘‘Super Market’’) to the purpose-built departmental shops which are mostly owner developed and occupied. The income generated from the shops generally forms a very sound type of investment, attractive both to private investors and to corporate bodies (i.e. institutions, pension fund and insurance companies).

The rents for shops are commonly expressed on a super basis that is per square meter of floor space. The ground floor is naturally valued at the maximum figures per square meter and basement and upper floors may be taken at lower rates. In selecting the appropriate figures per metre square of floor space, the valuer will be guided by analysis of rents paid for other large shops in the area and also be relative portions of the shop and consideration. For big shops with large floor spaces, the ground floor is frequently “zoned” or “stepped”. The first zone is that part of the shop adjoining the street and considered the most valuable part and so is taken the maximum rate per square meter. Zoning should not be automatic for big shop property but should only apply of market evidence of such rental practice so indicates (Hurd, 2018).

**2.4.2 Office Properties**

Office properties generally apply to premises, which are used for professional or trade purposes. The work carried on therein is of a clerical nature and does not include the displaying or selling of goods (Ifediora, 2017). These are also buildings where tertiary sectors of economics activities are carried out such activity includes the services rendered by banks, insurance companies and professionals such as Estate Surveyors and Valuers, lawyers and accountants. They engage in gathering, processing and analysis of information and ideas for purely advisory roles (Roberts, 2019).

In simplistic terms, offices are service industries consisting of those experts whose role is essentially advisory as opposed to being directly productive in the industrial sense. Some offices are located at Bank road and constitutional road. According to Ratcliffe (2019), this sector is exclusively office oriented. It involves the gathering of information, and ideal, processing and analysis of the merits of such service oriented. Their evolution (offices) has become a marked characteristic of advanced economics and a major index of modern urban growth and development. Office premises range from the converted space within a predominantly residential block to the purpose designed block with its elaborate services and organization. Between the two extremes are a host of other types of office premises varying in size and character depending on the business potentials of the town or locality. Varying terms of letting are thus common with office property. The tenancies may be monthly, quantity from year to year, or for a term of years.

**2.5 Concept of Value**

The word value does not have a specific and restricted meaning as it means different things to different people (Kuye, 2019). Value is a word of many meanings. In consequence the problem of valuation is first to secure a definition acceptable for the purpose of the particular enquiry. The second is to determine the method by which quantum may estimate ‘Value” as the “Worth of Something in terms of money or other goods for which it can be exchanged or quality of being useful or important”. Rental value: Value expresses the words/importance or usefulness of an item. Rental value is the established competitive price of an item (Properties) determined by the market forces of demand and supply. In determination of Rental Value, estimating the capital value of a property from an investment point of view, the valuer must first determine the rental value. In doing this, he will have regard to the trend of values in the locality and to those general factors affecting rent. In determining rental value of a property, the valuer is largely influenced by the evidence he can find on the rent actually paid not only for a property being valued but for the comparable in some district*.*  The factors most likely to influence the determination of rental value are: (a) The rent at which the property is let (b) The rent paid for similar properties (c) By considering rent as a proportion of turnover or profit. (d) By relating the rent to cost (Oyebanji, 2020).

**2.5.1 Rental Value**

Rent is an annual or periodic payment made by a Lessee to a Lessor in consideration for the use of the owner’s property for a specified period of time. Rent may be defined as the annual or periodic payment for the use of land or buildings. Rent as a major condition of a lease or tenancy agreement is paid annually, quarterly monthly or even weekly. Economists consider rent to be the difference between the prices obtained for the produce of a given area of land and the total cost of production. It is the compensation paid for the use of land and / or improvement on land and capital goods (Cervero, & Duncan, 2020).

Types of Rent as reported by Bello *et al.,* (2018) are as follows: (a) Profit Rent: This rent describes the difference between the full rental value and the rent passing or rent reserve under a lease. It serves as a gain to the tenant and a loss to the landlord (b) Economic Rent: Defined by Richards as the surplus income earned by a factor of production over the minimum necessary to bring it into production (c) Ground Rent: This is the rent that is being paid in respect of bare land over a long period of time (d) Rack Rent: This can be defined as the greatest amount in which a property can command under favorable condition in the open market. It is also known as market rent or full rental value. (e) Virtual Rent: It is defined as the true annual cost of land or building to a lessee. It is thus the rent reserved in the lease and also the annual equivalent of any capital sums the lessee pays as premium or has expended on the premises from time to time (f) Contract Rent: This refers to the actual payment which the owners receive from their tenants for the occupation or use of their properties. Generally, contract rent includes an element of interest of return on capital and value is economically concerned with this. (g) Inclusive Rent: This is the amount paid by the tenant to the landlord in whom the landlord is responsible for the outgoings like repairs, management fees and insurance premiums. It is also called Gross Rent. Rental value is the fair market value of property while rented out on a lease. More generally, it may be the consideration paid under the lease for the right to occupy or the royalties or return received by a lessor (landlord) under a license to real property. Rental value is the worth of a property on a periodic basis. When this sum is equivalent to what any similar property would attract, such rent is called Open Market Rent.

**2.6 History of Road Construction**

With respect to road travel, it is important to evaluate the extent and quality of the road network. In terms of the extent of the road network, the Federal government has done much in the last fifteen years to improve the coverage of Nigeria’s road system. One outstanding example is the work of the Directorate of Food, Roads, and Rural Infrastructure (DIFFRI), which in the 2000‘s embarked on a campaign to construct approximately 60,000 kilometers of new rural roads. As can be seen from a tour of rural areas, many roads that have been constructed are in a terrible state of disrepair (Walker, 2017). As with so many things in post-oil-boom Nigeria, many rural (and urban) roads have not received adequate maintenance. Poorly maintained roads are particularly problematic in the rainy season (approximately March to October). In fact, some rural areas are only accessible by car in the dry season. July field trips on Nigeria’s Jos Plateau proved these points well enough. Many rural roads in the Plateau region cannot be safely traveled at speeds exceeding 25 to 30 miles per hour (Gumel, 2018).

Although urban roads are in better condition than most rural roads, maintenance of roads is also a problem in the cities. Since the collapse of oil prices in the early 2000‘s and implementation of a Structural Adjustment Program, state budgets have been extremely tight. Fiscal austerity has also been exacerbated by corrupt military regimes that have fuelled state revenues into non-productive projects (often contracted to firms owned by military leaders) or foreign bank accounts. Although almost all urban roads are paved (Nigerians often say "tarred"), many have large pot holes or large sections where pavement has been eroded (Drummond-Thompson, 2019).

The evolution of the road industry and the tremendous surge in the number of vehicles on roads has been a rationale that has promoted exploiting all viable available resources to build better roads of prolonged service life. Incorporating unconventional construction material in the road construction commenced in the 20’s where conventional raw materials such as bitumen, crushed aggregates, and unbound aggregates mixtures began to scarce (Tuncan *et al.,* 2018).

The pivotal thrust of utilizing waste materials into road construction field is diminishing the detrimental repercussions of processing natural materials on the environment, to alleviate the burden on authorities in both developing and developed countries in providing landfills and setting provisions for such wastes, and to reaffirm the commitment of the industry towards better road services and riding quality. Besides, the scarcity of the natural resources is also an intuitive rationale that underpins utilizations. Several experimental and research studies have been dedicated to investigating potential incorporation of waste materials in the road construction field. Many pieces of research have proven a success in reusing and recycling of some compositions of these waste materials in pavement structures and others are still undergoing comprehensive research studies to further shed the light on what can be gained from their recycling into pavement constructions. Due to some stringent knowledge and shortage of funding for in-depth analysis of utilizing the same waste materials in the utmost beneficial way, the waste material is a core problematic issue to governmental institutions and transportation legislation authorities in several parts of the world. International cooperation is a key factor in protecting the environment through diminishing the greenhouse gasses emission and preserving natural resource via exploiting viable recycled materials into the construction field and giving focus on assessing approaches in employing such materials (Bassani, Santagata, Baglieri, Ferraris, Salvo & Ventrell, 2019).

Economic theory shows that economic impulse based on expansion of the domestic market is bound to be exhausted quickly. However, the economy driven by the export market promotes a positive long run effect on economic growth (Balassa & Bernard, 2018). This is because the export market has no growth restriction on the demand for goods and export expansion could increase the total factor productivity. Inevitably, development in road infrastructure would facilitate export growth and consequently enhance economic growth (Helpman & Krugman, 2019).

The British claimed Nigeria in the late 19th century, and the pattern of British infrastructure development clearly revealed their intentions. The British immediately sought out to build a transportation network that would make ruling over the area as well as resource extraction easier. Road construction, and later railroad construction became primary goals of the colonial government. The unification of the Protectorate of Sokoto and the southern regions into one political entity intensified these goals. A vast majority of the roads and railroads in Nigeria lead south-north, from the coast to the inland and back again. Eastwest transportation routes weren't necessary because the flow of goods—such as ground nuts, cocoa, and cotton—was from the inland to the coast where it could be shipped to Britain for processing. The designers of the British road networks attempted to use existing footpaths to connect cities in Nigeria, but found that the nature of these footpaths made them difficult, if not impossible, to expand into wide roads suitable for automobiles (Oshin, 2020).

Nigerians took advantage of the introduction of automobiles by developing taxi and goods transportation services. Nigerian methods of transportation were often more efficient than their British counterparts. They were more flexible, made use of more appropriate technology, and could charge lower rates. The biggest introduction into the transportation market in independent Nigeria is aircraft. Aircraft transport is ideally suited to Nigeria because of its high speed and independence from roads, rails, and rivers that are subject to forces of nature (Walker, 2019).

Alonso (2017) and Muth (2019) developed the land theory forming the theoretical underpinnings of property inclined value uplifts resulting from improved accessibility. In essence, land rents are higher with improved accessibility because it provides greater accessibility opportunities to land holders in terms of destination.

**CHAPTER THREE**

**3.0 RESEARCH METHODOLOGY**

**3.1 INTRODUCTION**

This chapter describes the methodological framework used in attaining the stated aim and objectives of the study. The research design, type and sources of data will be examined critically in order to accomplish the study objectives. This chapter will focus on the study populations/sample frame and its characteristics, sampling technique chosen, and description of the choice of data collection instruments, analysis and presentation and questionnaire administration.

**3.2 Research Design**

Research design is an outline of research study which indicates what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data. A research design is the arrangement of conditions for data collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in research procedure (Shammi & Jannatul, 2018). Research design constitutes a decision regarding what, why, where, when and how concerning an inquiry or a research study (Pouyat, 2017). According to Onwumere (2018), a research design is a kind of blueprint that guides the researcher in his or her investigation and analyses. The research design to be used in this research is a survey design because the research is qualitative in nature.

**3.3 Population of the Study**

Population refers to the total number of subjects or the total environment of the intended research. The population of this study is the rent passing on commercial properties at Federal Low-cost road which includes shops and stores at the study area.

**3.4 Sample Frame**

The sampling frame is the frame of entities from which sampling units are selected for a survey (Singh, 2018). The Rent passes on commercial properties in shops and stores along the Federal Low-cost neighborhood.

* 1. **Sampling Size**

In determining the sample size that is adequate for this study, a representative number of estate surveyor and valuer firms managing commercial properties in the study area were purposely sampled and their records were reviewed on rent passing before and after the road construction.

Purposive sampling is a form of judgmental, selective or subjective sampling in which researchers rely on their own judgment when choosing members of the population to participate in their survey. It is used when they want to assess a particular subset of a people (sample).

**3.6 Sampling Technique**

This has to do with technique adopted in selecting the sample size of the research. There are several types of sampling techniques depending on the nature of the research, but for the purpose of this research, a purposive sampling technique will be used.

**3.7 Method of Data Analysis**

Purposive sampling will be employed in the analysis for Research Question One (1) which is to examine the rent passing for commercial properties before the road construction in Federal Low-cost Area, Bauchi Metropolis. Purposive sampling will also be employed in the analysis for Research Question Two (2) which is to examine the rent passing for commercial properties in the study area after the road construction; while Research Question Three (3) to evaluate the effect of new road construction on property rental value which will be analyzed using Paired Sample t-test table.

**CHAPTER FOUR**

**DATA PRESENTATION AND ANALYSIS**

**4.0 INTRODUCTION**

This chapter is devoted to the presentation, analysis and interpretation of data collected and it is shown in detail. Reviewing historic data from practicing estate firms with commercial properties at the study area and using a Paired Sample t-test was used in analyzing the data.

The Paired Sample T-test, sometimes called the dependent sample test, is a statistical procedure used to determine whether the mean difference between two sets of observation is zero. In a Paired Sample T- test, each subject or entity is measured twice, resulting in the pairs of observations. It measures the performance of a sample of before and after completing a procedure, and analyze the differences (*Dictionary of statistical analysis)*

**4.1 Table 1:** Annual Rental Values of Commercial Properties Federal Low-cost Road 2012-2016

| **BEFORE ROAD CONSTRUCTION** | | | **AFTER ROAD CONSTRUCTION** | | |
| --- | --- | --- | --- | --- | --- |
| **Year/ property Type** | **Shop** | **Store** | **Year** | **Shop** | **Store** |
| 2012 | 40,000 | 23,000 | 2017 | 70,000 | 30,000 |
| 2013 | 50,000 | 25,000 | 2018 | 70,000 | 30,000 |
| 2014 | 50,000 | 25.000 | 2019 | 80,000 | 40,000 |
| 2015 | 60.000 | 28,000 | 2020 | 80,000 | 40,000 |
| 2016 | 60.000 | 28,000 | 2021 | 90,000 | 50,000 |

**Source:** Field Survey September, 2021

The Annual rental value for commercial properties before the road construction from the year 2012–2016 had a progressive increase with a difference of ~~N~~10, 000 for shops and for the store with a difference of ~~N~~3,000. So also a ~~N~~ 10,000 difference from shop rent of 2017 – 2021 and for stores of the same year.

**4.2 Table 2: The Average Rental Value of Commercial Properties Within the Study Area.**

|  | N | Range | Minimum | Maximum | Sum | Mean | Std. Deviation |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic |
| Shop Rent Before | 5 | 20000.00 | 65000.00 | 85000.00 | 365000.00 | 73000.0000 | 8366.60027 |
| Shop Rent after | 5 | 65000.00 | 85000.00 | 150000.00 | 585000.00 | 117000.0000 | 30740.85230 |
| Store Rent before | 5 | 10000.00 | 25000.00 | 35000.00 | 145000.00 | 29000.0000 | 4183.30013 |
| Store Rent after | 5 | 15000.00 | 35000.00 | 50000.00 | 215000.00 | 43000.0000 | 6708.20393 |
|  |  |  |  |  |  |  |  |

**Table 3: Paired Samples Statistics**

|  | | Mean | N | Std. Deviation | Std. Error Mean |
| --- | --- | --- | --- | --- | --- |
| Pair 1 | Shop Rent Before | 73000.0000 | 5 | 8366.60027 | 3741.65739 |
| Shop Rent After | 117000.0000 | 5 | 30740.85230 | 13747.72708 |
| Pair 2 | Store Rent Before | 29000.0000 | 5 | 4183.30013 | 1870.82869 |
| Store Rent After | 43000.0000 | 5 | 6708.20393 | 3000.00000 |

From the result it is seen that Pair 1 on Table 3 shows that there is an average increase in the rental value at 73,000 from 2012- 2016 which is before the road construction and the sum of 117,000 after the road construction.

Pair 2 on Table 3 shows that there was an average decrease in the rental value at 29,000 from 2012- 2016 which is before the road construction and the sum of 43,000 which is after the road construction.

**4.3 Table 4:** **Paired Samples Correlations**

|  | | N | Correlation | Sig. |
| --- | --- | --- | --- | --- |
| Pair 1 | Shop rent before & shop rent after | 5 | .797 | .106 |
| Pair 2 | Store rent before & store rent after | 5 | .802 | .103 |

From the results, it could be seen that rental values before and after road infrastructure improvement (Pair 1) were weakly and positively correlated (r= 0.797, p<0.001) and pair 2 (r= 0.802, p<0.001) which implies that there is no significant difference between the road construction before the year 2012 -2016 and after the year 2017 -2021 and the rental trend of commercial properties in the neighborhood was not affected.

**4.4 Table 5: Paired Samples Test**

|  | | Paired Differences | | | | | t | Df | Sig. (2-tailed) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | |  |
| Lower | Upper |
| Pair 1 | Shop rent before – shop rent after | -44000.00 | 24596.74775 | 11000.00 | -74540.896 | -13459.10 | -4.000 | 4 | .016 |
| Pair 2 | Store rent before – store rent after | -14000.00 | 4183.30013 | 1870.84 | -19194.253 | -8805.75 | -7.483 | 4 | .002 |

However, there was no significant average difference on the rental values before and after road infrastructure improvement on Pair 1 (t4 = -4.000, p<0.001). On the average of Pair 1, rental values before the road construction were ~~N~~ - 44000 lower than rental values after the road construction (95% CI [ ~~N~~ -74540.9616, ~~N~~ -13459.10384]). On Pair 2, there was no significant average difference on the rental values before and after the road construction. On Pair 2 (t4 = -7.483, p<0.001). The rental values before the road construction were ~~N~~ -14000 lower than rental values after the road construction (95% CI [ ~~N~~ -19194.25317, ~~N~~ - 8805.74683])

This shows that the increase in rent is not as a result of improvement in road but may be as a result of inflation, increase in population, fashion and taste, type of society, standard of living, etc. It is also possible that the roads under study are already existing roads hence, the effect of their improvement on rental values was not significant.

**CHAPTER FIVE   
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

**5.0 INTRODUCTION**

This study attempts to answer three research questions, questions one to examine rent passing for commercial properties before the road construction of the study area. Research Question Two (2) rent passes for commercial properties after the road construction while Research Question Three (3) evaluates the effect of Provision of road infrastructure on commercial property rental value in Bauchi Metropolis.

**5.1 FINDINGS**

The findings were discussed based on the order of the research question as follows:

**Research question 1:** What is the rent passing for commercial properties Before the road construction at Federal Low-cost Area, Bauchi Metropolis?

The Annual rental value for commercial properties before the road construction from the year 2012–2016 had a progressive increase with a difference of ~~N~~ 10, 000 for shop and for the store with a difference of ~~N~~ 3,000 which gives an Annual rental value of ~~N~~ 8, 366.60. This implies that the rate of commercial activities was steady and slow not having a speed of increase in the rent paid.

**Research question 2:** Rent passing for commercial properties in the study area after road construction.

The Annual rental value for commercial properties after the road construction for shops from the year 2017 – 2021 and for stores of the same year had no significant increase in rent as expected. It only had a ~~N~~ 10, 000 increase from a two years rent review having the sum of ~~N~~ 30740.85. This implies that the rate of commercial activities was seen to be slower in the neighborhood with an average rental value of ~~N~~30, 740.85.

**Research question 3:** The effect of Provision of road infrastructure on commercial property rental value in the Federal Low-cost Area, Bauchi Metropolis?

From the results, it could be seen that rental values before and after road infrastructure improvement (Pair 1) were weakly and positively correlated (r= 0.797, p<0.001) and pair 2 (r= 0.802, p<0.001) which implies that there is no significant difference between the road construction before the year 2012 -2016 and after the year 2017 -2021 and the rental trend of commercial properties in the neighborhood was not affected.

However, there was no significant average difference on the rental values before and after road infrastructure improvement on Pair 1 (t4 = -4.000, p<0.001). On the average of Pair 1, rental values before the road construction were ~~N~~ - 44000 lower than rental values after the road construction (95% CI [ ~~N~~ -74540.90, ~~N~~ -13459.10]). On Pair 2, there was no significant average difference on the rental values before and after the road construction. On Pair 2 (t4 = -7.483, p<0.001). The rental values before the road construction were ~~N~~ -14000 lower than rental values after the road construction (95% CI [ ~~N~~ -19194.25, ~~N~~ - 8805.75])

This shows that the increase in rent is not as a result of the construction of the new road but may be as a result of inflation, increase in population, fashion and taste, type of society and standard of living. It is also glaring that the effect of the construction on rental values was not significant.

**5.2 CONCLUSION**

The aim of this research is to determine the effect of road construction on commercial property rental values with a view for more infrastructure development for economic development in the study area. From the foregoing, it is evident that road reconstruction had no tremendous impact on rent passing in the study area. The effect of road construction had positive and negative contributions to the area, positive in terms of increase in population, fashion, taste and standard of living and negative in terms of poor increase of rent.

**5.3 RECOMMENDATIONS**

It is therefore recommended that Property developers such as the private investors should invest in properties along the road as it has increased accessibility and other economic factors are likely to favor rent increase. They should also provide the right facilities in their commercial properties as this will serve as an incentive to tenants most especially on their willingness to pay the highest rent.

Government should develop more roads to increase economic access for commercial properties and as well provide the right policies that will create an enabling environment for investment in commercial real estate.

**REFERENCES**

Aigbe, G.O, Ogundele, F.O and Aliu, I.R (2020). Road Facility and Maintenance in Lagos State Nigeria*. British Journal of Arts and Social Sciences, 4*(2).

Ajayi, C.A (2009). International valuation standards as they apply in the use of investment and in mortgage valuation. *A paper presented at a national CPD, Lagos*.

Akbulut H. & Gürer, C. (2017). Use of aggregates produced from marble quarry waste in asphalt pavements. *Building and Environment, 42*(5).

Alimi R.K, Ayedun C.A and Oni A.S (2018). An Appraisal of the Relationship between Road Improvements and Immediate Neighborhood Residential Properties Values in Metropolitan Lagos. *American International Journal of Contemporary Research, 4*(6); 215-222.

Aljoufie M, Brussel M, Zuidgeest M and van Maarseveen M (2013). Urban growth and transport infrastructure interaction in Jeddah between 2008 and 2010 *International Journal of Applied Earth Observation and Geoinformation 21,* 493-50*.*

Alonso, W. (2017). *Location and land use: Toward a general theory of land rent*. Cambridge, Harvard Univ. Press.

Asomani-Boateng, Raymond, Russell J. Fricano, and Frank Adarkwa. (2019). "Assessing the socio-economic impacts of rural road improvements in Ghana: *A case study of transport sector program support (II)."* *Case Studies on Transport Policy 3*(4): 355-366.

Athanasopoulou A & G. Kollaros *(*2018)*.* Fly ash exploited in pavement layers in environmentally friendly ways. *Toxicological & Environmental Chemistry, 97*(1), 43-50.

Bassani, M, Santagata E, Baglieri O, Ferraris M, Salvo M, & Ventrella A (2019). Use of vitrified bottom ashes of municipal solid waste incinerators in bituminous mixtures in substitution of natural sands. *Advances in Applied Ceramics, 108*(1), 33-43.

Bello, I. K and Olajide S. E (2018).Handbook of Estate Management*,* *Campus Publications Limited Abeokuta.*

Benkard, C. L. (2019). A dynamic analysis of the market for wide-bodied commercial aircraft. *The Review of Economic Studies, 71*(3), 581-611.

Canning D and Bennathan E (2018). *The social rate of return on infrastructure investments*. Development Research Group, Public Economics and Private Sector Development and Infrastructure Group, World Bank.

Cervero, R. and Duncan, M. (2020). *Transit’s Value-added: Effects of Light and Commuter Rail Services on Commercial Land Values*.Transportation Research Board, 81st Annual Meeting presentation, January 2020.

Chen, C F (2018). Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intention for air passengers: *Evidence from Taiwan Transportation Research Part A: Policy and Practice,42*(4),709-717.

Choocharukul, K., Van, H. T., & Fuji, S. (2008). Psychological effects of travel behavior on preference of residential location choice. *Transportation Research Part A: Policy and Practice, 42*(1), 116-124.

Ciriacy-Wantrup (2018). Resource Conservation: Economics and Policies (3rd ed.). Natural Resources in Economic Growth. *Am. J. Ag. Econ. 51.*

Doan O. (2018). Transport development, regional concentration and economic growth. *Urban Studies 50*(2), 312-28.

Drummond-Thompson, P. (2019). The Rise of Entrepreneurs in Nigerian Motor Transport*.* *The Journal of Transport History,* 46-63.

Easterly W R (2018). Free market and economic growth International Symposium on Poverty Reduction and Beyond Development Strategies for Low Income Countries.

Esfahani HS (2018). *Exports, imports, and economic growth in semi-industrialized countries Journal of Development Economics* 35, 93-116.

Fan S and Chan-Kang C (2018). Regional road development, rural and urban poverty: Evidence 10th Malaysian Road Conference & Exhibition IOP Conf. Series: Materials Science and Engineering 512

Fujita, M. & Thisse, J F (2017). Economics of agglomeration: cities, industrial location, and globalization. Cambridge University Press.

Gumel, H.A., (2018) Maintenance: A yet to be Defined Agenda in Nigeria*. Nigerian Society of Engineers October Lecture,* National Engineering Centre, Lagos.

Gibbons, S & Rozelle (2019), Gone with the Wind: *Valuing the visual impacts of wind turbines*

*through house prices,* Journal of Environmental Economics and Management (72) 177–196

Hyunwoo, K., Du-Heon, L., Jai-Dong, K., Hee\_sung, P. and Ju-Goang, L. (2019). The Direct Employment Impact Analysis of Highway Construction Investments. *Journal of Civil Engineering, 1-9.*

Hyunwoo, K., Du-Heon, L., Jai-Dong, K., Hee\_sung, P. and Ju-Goang, L. (2019). The Direct Employment Impact Analysis of Highway Construction Investments. *Journal of Civil Engineering*, 1-9.

Iroham, C.O., Oloyede, S. A. and Oluwunmi, A. O. (2018). An Analysis of the Location of WorshipCenters on Residential Property Values in Ota, Nigeria, *Journal of Sustainable Development in* *Africa 13*(1) 14-22

Jacob A., Joakim F, and Peter E (2018). “Reinventing Construction: A Route to Higher Productivity.” *13th Annual Conference on system of systems Engineering (SoSE), 576-582,2018 McKinsey & Co*.

Jean-Paul, R. (2020). [The Geography of Transport Systems](https://www.routledge.com/The-Geography-of-Transport-Systems/Rodrigue/p/book/9780367364632) New York: Routledge ISBN 978-0-367-36463-2.

Jedwab R, Moradi A (2018). Review of Economics and Statistics 98 (2), 268- 284.

Jiwattanakulpaisarn P, Noland R B, Graham D J and Polak J W (2009). Highway infrastructure and state-level employment: *a causal spatial analysis Papers in Regional Science 88*(1) 13360.

Kotarim. (2019). Development of a housing performance evaluation model for multi-family commercial buildings in Korea. *Building and environment,40*(8), 1103-1116.

Kuye, S. (2019). *The Principle and Practices of Property Valuation*. Climax Publications, Lagos.

Meyer M D and Miller E J (2018). Urban transportation planning 2nd edn. New York: McGraw Hill.

McCluskey, W.J Deddis, W.G Lamont & Borst R.A. (2018). “The Application of Surface Generated Interpolation Models for the Prediction of Residential Property Values. Journal *of Property Investment & Finance* 18 (2) 162-176.

Mueller, G. R. (1999). Real Estate RentalMuth, R., (2019). *Cities and Housing*. University of Chicago Press, Chicago, USA.

Noring, L (n.d). *A new vehicle for urban regeneration and infrastructure.* Public asset corporation. Wharf Group Plc., London.

Nwuba, C. C. (2018). Analysis of Office Rent Movement in Abuja. *Nigerian Journal of Education 7*(1), 1-11.

Omoogun, C B (2018). The Centripetal Effects of Location on Rental Values Commercial Property in Metropolitan Lagos. *Conference Proceedings on the Built Environment: Innovation Policy and Sustainable Development.* Department of Architecture, Covenant University, Ota, Nigeria, 328–334.

Oshin S. (2020). Transport Studies in Nigeria: A Review. In Odu: *A Journal of West African Studies, pp. 219-225.*

Oyebanji, A. O. (2020). *Principles of Land Use Economics*. Lagos*:* *CEPDM*.

Paranavithana & Mohajerani, A. (2018). Effects of recycled concrete aggregates on properties of asphalt concrete. *Resources, Conservation and Recycling,* *48*(1), 1-12.

Paranavithana S. & Mohajerani, A. (2018). Effects of recycled concrete aggregates on properties of asphalt concrete. *Resources, Conservation and Recycling,* *48*(1), 1-12.

Pradhan R P and Bagchi T P (2019). Effect of transportation infrastructure on economic growth in India: *the VECM approach Research in Transportation Economics* (38) 139-48

Pharaoh (2017). *Jubilee Line Extension Impact Study Unit*. University of Westminster, London.

Pouyat, R. V. (2017). Urban ecological systems: Scientific foundations and a decade of progress. *Journal of Environmental Management*, *92*(3), 331-362.

Reid, J. M. (2019). The use of alternative materials in road construction.In *International Symposium on Unbound Aggregates in Roads–UNBAR, 5*.

Ravetz J, Silvio Funtowicz, Martin O’ Connor (2016). *International Journal of sustainable Development 1* (1)99 -107

Remi J & Alexander M (2018). Review of Economics and statistics 98 (2), 268-284.

S. W. Lee & K. L. Fishman (2020). Waste products as highway materials in a flexible pavement system. *Journal of transportation engineering, 119*(3), 433-449.

Saunders S C, Mislivets M R, Chen J Q and Cleland D T (2020). Effects of roads on landscape structure within nested ecological units of the Northern Great Lakes Region, *USA Biological Conservation 103*(2), 209-25.

Shammi, S and Jannatul, F. (2018). Study on The Factors Influencing Commercial Location.

Siliverstovs B and Herzer D (2018). Manufacturing exports, mining exports, and growth: *cointegration and causality analysis for Chile, Applied Economics 39,* 153*.*

Stevenson M. (2020). Social Impact Assessment of Major Roads. Canada: *20th World Road Congress.*

Stratton, A. (2019). Making an Investment Decision with Commercial Property Analysis in. making an investment decision with commercial property analysis. The World Bank. *“Introduction to Greenhouse Gas Emissions in Road Construction and Rehabilitation”.*

Tuncan, M., Tuncan, A. & Cetin, A. (2018). The use of waste materials in asphalt concrete mixtures. *Waste Management & Research, 21*(2), 83-92.

Theo Goldberg & Catalina C (2017). Journal of Economics structures 6 (1) 1-26 Goldberg, M. A. (1970). Transportation, Urban Land Values, and Rents: *A Synthesis* *Land Economics*, 46 (2) 153-162.

Walker, G J (2019). *Traffic and Transport in Nigeria: The Example of an Underdeveloped Tropical Territory.* Her Majesty’s Stationery Office, London.

Wyatt, P. (2018). The Development of a GIS-Based Property Information for Real

Estate Valuation. *International Journal of Information Science* ***11(5)****, 435 –450.*

Wing, L. (2019). *Transportation and Urban Land*. Washington D.C: A.C Hall.