

ENERGY EFFICIENCY AND CONSUMPTION IN RESIDENTIAL BUILDINGS.
A CASE STUDY OF IKEJA, LAGOS

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DEDICATION

This project work is dedicated to God our strength, my help in ages past; the lifter of our head, for his kindness to us is immeasurable. We return all glory to him because without him we can do nothing but by him all things are possible.

We also want to dedicate this work to our supervisor for his immense help and mentoring during the course of the research work. May the Lord bestow upon you many blessings and grant you everything you desire.

CERTIFICATION

We certify that this research work was carried out by BABATUNDE ADELEKE NAJEEM, OGINNI KEHINDE MOSES and OLUTANWA PRAISE in the department of Architecture, College of Environmental Sciences and Management, Caleb University Lagos This research work is considered in partial fulfillment of the requirements for the award of Bsc.

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To our God and father, immortal, invincible, the only wise God, and preserver of our soul, we are so much delighted and grateful for all of His wondrous deeds.

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Abstract

Nigeria remains a country with very high potential but an equally high inertia to develop, electricity issue has always and never stopped being a challenge in the country in both the rural and urban areas. The electricity sector's performance in Nigeria has not been one to provide a 100% desired expectations or impact on the growth and development of the economy as a result of the numerous setbacks they face. Research has shown that Electricity consumption in residential buildings have been faced with hike in prices and there is a huge difference between the demand for it and its supply. This study aims to critically examine the effect of electricity consumption in residential areas and its impact on prices and policies placed by the electricity sector and the government enabling policies. Relying on existing data, the question still remains – will a change in prices and policies cause a change electricity consumption in residential buildings in Nigeria? To further explain, electricity consumption is the usage of power supplied from the enabling authority at a specified rate or charge.

From literature review on electricity consumption in residential areas and charges, online questionnaires were created with the use of google forms and distributed to households in Ikeja to be precise. A total of 100 responses were gotten from the respondents on their take on electricity usage, policies, global warming and situational changes on electricity and government policies in regulating them. From the data analysis of responses of respondents, it is deduced that there is a relationship between electricity usage and charges and the demand and supply for electricity. The result of the analysis shows that charges of electricity have an impact on the its consumption in households in Nigeria. It is therefore recommended that households should consider moderate usage of electricity by making use of energy saving bulbs and regulate their usage to control heat generation.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Energy assumes the most imperative part in the monetary development, progress, and advancement, just as neediness destruction and security of any country. Continuous energy supply is a crucial issue for all nations today. Future financial development vitally relies upon the drawn-out accessibility of fuel from sources that are moderate, open, and harmless to the ecosystem. Security, environmental change, and general wellbeing are firmly interrelated with energy (Pode & Diouf, 2011). Energy is a significant factor in every one of the areas of any nation's economy. The way of life of a given nation can be straightforwardly identified with the per capita energy utilization. The new world's energy emergency is because of two reasons: the quick populace development and the increment in the expectation for everyday comforts of entire social orders. The per capita energy utilization is a proportion of the per capita pay just as a proportion of the success of a nation (Pode & Diouf, 2011).

Energy upholds the arrangement of fundamental requirements like prepared food, an open to living temperature, lighting, the utilization of apparatuses, funnelled water or sewerage, fundamental medical care (refrigerated antibodies, crisis, and escalated care), instructive guides, correspondence (radio, TV, electronic mail, the World Wide Web), and transport. Energy additionally fills beneficial exercises including farming, trade, assembling, industry, and mining. Then again, an absence of admittance to energy adds to neediness and hardship and can add to the monetary decrease. Energy and neediness decrease are firmly associated with one another, yet additionally with the financial turn of events, which includes profitability, pay development, schooling, and health (Bala, *et al.*, 2000).

The energy emergency, which has immersed Nigeria for right around twenty years, has been gigantic and has generally added to the frequency of neediness by incapacitating mechanical and

business exercises during this period. The Council for Renewable Energy of Nigeria gauges that blackouts achieved a deficiency of 126 billion naira (US\$ 984.38 million) annually (Council for renewable energy). Aside from the gigantic pay misfortune, it has likewise brought about wellbeing risks because of the openness to fossil fuel by-products brought about by steady utilization of 'patio generators' in various families and business undertakings, joblessness, and significant expense of living prompting a crumbling of everyday environments.

Besides, as per the Central Bank gauge in 1985, Nigeria devoured 8,771,863 tons of oil equivalents (Central Bank of Nigeria Annual Report). This is equivalent to around 180,000 barrels of oil each day. From that point forward, oil utilization in Nigeria has definitely expanded. The impact of this expansion on the economy depending entirely on income from oil is colossal. Likewise, the Department for Petroleum Resources (Department of Petroleum Resource, 2007) detailed a measure of oil of over 78% of the absolute energy utilization in Nigeria. In the current quandary as a country, clearly relying essentially upon non-renewable energy source (petrol) isn't sufficient to meet the energy needs of the country. Since Nigeria is honoured with bountiful sustainable power assets like hydroelectric, sun oriented, wind, flowing, and biomass, there is a need to bridle these assets and outline another energy future for Nigeria. In such manner, the public authority has an obligation to make sustainable power accessible and moderate to all.

Numerous native scientists have investigated the accessibility of environmentally friendly power assets in Nigeria with the end goal of setting up their feasibility in the country. Onyebuchi. assessed the specialized capability of sun powered energy in Nigeria with a 5% gadget change proficiency put at 15.0×10^{14} kJ of helpful energy yearly. This likens to about 258.62 million barrels of oil identical yearly, which compares to the current public yearly non-renewable energy source creation in the country. This will likewise add up to about 4.2×10^5 GW/h of power creation every year, which is around multiple times the new yearly power creation of 16,000

GW/h in the country. In their work, Chineke and Igwiro show that Nigeria gets plentiful sun-oriented energy that can be conveniently saddled with a yearly normal day by day sunlight-based radiation of about 5.25 kW h/m²/day. This differs between 3.5 kW h/m²/day at the waterfront regions and 7 kW h/m²/day at the northern limit. The normal measure of daylight hours everywhere on the nation is assessed to be about 6.5 h. This gives a normal yearly sun powered energy force of 1,934.5 kW h/m²/year; accordingly, throughout the span of a year, a normal of 6,372,613 PJ/year (around 1,770 TW h/year) of sun-oriented energy falls on the whole land space of Nigeria. This is about 120,000times the absolute yearly normal electrical energy produced by the Eko Electricity Distribution Company (IKEDC). With a 10% moderate transformation effectiveness, the accessible sunlight-based energy asset is around multiple times the Energy Commission of Nigeria's (ECN) projection of the complete last energy interest for Nigeria in the year 2030 (Energy Commission of Nigeria (ECN). To upgrade the formative pattern in the country, there is each need to help the current temperamental energy area with a supportable wellspring of force supply through sun-based energy (Ramchandra , 2011).

Additionally, numerous native specialists have likewise investigated the accessibility of wind fuel sources in Nigeria with a perspective on executing them if there is a probability for their use. Adekoya and Adewale examined the breeze speed information of 30 stations in Nigeria, deciding the yearly mean breeze velocities and force transition densities, which differ from 1.5 to 4.1 m/s to 5.7 to 22.5 W/m², separately (Rai, 2004). Fagbenle and Karayiannis completed a 10-year wind information examination from 1979 to 1988, thinking about the surface and upper breezes just as the most extreme blasts, though Ngala et al played out a factual investigation of the breeze energy potential in Maiduguri, Borno State, utilizing the Weibull conveyance and 10-year (1995 to 2004) wind information. Money saving advantage investigation was additionally performed utilizing the breeze energy transformation frameworks for electric influence age and supply in the State. Every one of these reports highlight the way that the country is honoured

with a huge chance for reaping wind for power creation, especially at the centre northern expresses, the uneven pieces of the focal and eastern states, and furthermore the seaward regions, where wind is plentifully accessible consistently. The issue at that point is for the nation to take a gander at methods of saddling assets towards building up wind ranches in different locales and zones that have been distinguished as having capacities for the reaping of wind energy (Nnaji, et al., 2010).

Akinbami revealed that the complete hydroelectric force capability of the nation was assessed to be about 8,824 MW with a yearly power age potential more than 36,000 GW h. This comprises of 8,000 MW of enormous hydropower innovation, while the leftover 824 MW is still limited scale hydropower innovation. By and by, 24% and 4% of both huge and little hydropower possibilities, individually, in the nation have been abused (Onyebuchi, 1989).

Akinbami et al's. assessment demonstrated that the distinguished feedstock substrate for a monetarily doable biogas program in Nigeria incorporates water lettuce, water hyacinth, manure, cassava leaves, metropolitan decline, strong (counting mechanical) squander, horticultural build-ups, and sewage. The creators' perspectives incorporate the accompanying: Nigeria produces around 227,500 tons of new creature squanders day by day. Since 1 kg of new creature squanders produces about 0.03 m³ gas, at that point Nigeria could deliver about 6.8 million m³ of biogas consistently. Notwithstanding all these, 20 kg of metropolitan strong squanders per capital has been assessed to be produced in the nation every year (Chineke and Igwiro 2008).

1.2 Problem Statement

In a study conducted in the U.S., buildings utilize a high percentage of primary energy, both by industrial and residential types as 40%. Half of this amount is consumed majorly by Heating, Ventilation and Air Conditioning (HVAC) systems (United States Department of Energy, 2012). The same study also identified that building owners and developers are in high demand for HVAC systems as a basic component of residential buildings. Consequently, equipment required

to provide these services increased rapidly from \$50 billion to more than \$90 billion over the same period (United States Department of Energy, 2012).

Most domestic activities such as cooking, baking and even washing of the dishes now require energy to be undertaken. Further studies show that devices such as dish washers, micro - waves and electric cookers are prevalent in virtually every home in the United States and Europe as evidenced in a data provided by an internationally recognized environmental conservationist group known as Enerdata (2020). It further surmised that energy consumption in the G20 nations comprising the U.S and Europe as well as China increased by more than 5% in 2010 after a slight decline in 2009. In 2009, world energy consumption decreased for the first time in 30 years by 1.1%, or about 130 million tonnes of oil equivalent (Mtoe), as a result of the financial and economic crisis, which reduced world GDP by 0.6% in 2009 (Ngala, *et al.*, 2007).

The impact of these put together is a sole reason for global warming and the rapid climate change being experienced the world over (Shedadi, 2018). This has led environmental scientists and conservationists to make advocacy towards the use of renewable energy sources rather than the non-renewables.

Nigeria too is not left out of this trend as she is confronted with similar issues bothering other nations on a global scale. Nigerian citizens too rely on energy for their day-to-day activities and their dependence on fossil fuels known for environmental degradation and climate change is unparalleled as opined by Aremu (2014) that the (Nigerian) power sector institution is mainly characterized by unreliability of power supply, low-capacity utilization, deficient maintenance, poor procurement of spare parts and high transmission and distribution losses. As a result of the epileptic nature of power supply coupled with the debilitating effect of poverty, many Nigerians now rely on alternative and relatively cheaper sources of energy such as firewood and coal. This phenomenon has consequently led to deforestation and a further depletion of the environment. According to the World Resource Institute Climate Data Explorer

(WRI CAIT) data, Nigeria's Greenhouse Gas emissions improved by 25% (98.22 MtCO₂e) from 1990 to 2014, with an average annual alteration of total emissions by 1% (climatelink.org, 2019)

In 2014, Nigeria's total Greenhouse Gas emissions (GHG) were 492.44 million metric tons of carbon dioxide equivalent (MtCO₂e), totalling 1.01 percent of global GHG emissions (climatelink.org, 2020). This means that the Greenhouse gas emission per person per year is less than 2 tons compared to the global average of over 6 tons (carbonbrief.org, 2020). These greenhouse gases, mainly carbon dioxide and methane are mostly generated from oil and gas production, land-use change, forestry, agriculture and fugitive emissions (Ritchie and Rosa, 2020). However, data from Potsdam Institute for Climate Impact Research (PIK) shows that the total Greenhouse Gas emissions in 2014 increased to 506 million tonnes of CO₂ equivalent (MtCO₂e) in 2015 in Nigeria (Oliver and Peters, 2020).

Specifically, Greenhouse gas emissions from the production and use of fossil fuel, land use, land-use change and forestry (LULUCF) increased by 16% in 2015, which is roughly equivalent to UK's total 2015 emissions as shown by the International Energy Agency (International Energy Agency, 2016). The impact of this uncontrolled level of energy consumption, scientists, have emphasised is a major reason why global warming climate change have assumed an alarming proportion. Climate change in Nigeria is evident from temperature increase, rainfall variability (increasing rainfall in coastal areas and decline in rainfall in the continental areas), drought, desertification, rising sea levels, erosions, floods, thunderstorms, lightnings, bush fires, landslides, land degradation, and loss of biodiversity (Olaniyi et. al, 2019).

While other nations are seeking for sustainable ways to help in the reductions of energy consumption, Nigeria is still grappling with problems associated with her socio-economic and political sub-sectors. However, recent innovations in the area of reduced energy consumption in Europe and America led to the invention of LED lights which are incandescent by nature. When

installed in ceilings of buildings were found to have led to a reduction in energy consumption by 5.9%. More importantly, architects, the world over, have equally made concerted efforts at evolving sustainable designs that could help minimise the level of energy consumption by building owners. One of such the adoption of green building options such as the Leadership in Energy and Environmental Design (LEED) and the creation of green spaces all serve as viable approaches aimed at mitigating problems associated energy consumption in buildings (Green Building Council, 2015; Rakhshandehroo, Yusof, et al., 2015)

This study is therefore designed to appraise energy consumption in residential buildings in Nigeria with the sole aim of providing effective ways of mitigating the attendant effect of uncontrolled use of energy. It would actualize its objective by carrying out investigations of a case study of a cosmopolitan town in Lagos known as Ikeja which is reputed for its high level of residential development as well as its huge reliance by inhabitants, on various sources of energy for their day-to-day living.

1.3 Aim and Objectives of Study

The aim of this study is to examine the impact of energy consumption in residential buildings as it relates to being a causative agent of climate change in Nigeria with Ikeja as a veritable case study. It would seek to achieve the following objectives to:

- i. To identify energy consumption in Nigeria
- ii. To examine difference in energy consumption and its causes in Nigeria
- iii. To investigate the effects of the difference in global warming
- iv. The situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings

1.4 Research Questions

In order to achieve the aforementioned objectives of this study, the following questions are required to form a basis for investigation:

- i. what is the rate of energy consumption in Nigeria?
- ii. What are the effects of excessive energy consumption and its causes in Nigeria?
- iii. What are the effects of the difference in global warming?
- iv. What is the situational circumstance that has led to the integration of energy consuming equipment and appliances in buildings?

1.5 Scope of Study

This study would focus significantly on the consumption of energy in residential buildings in Nigeria. It would compare, using external data, with other developed nations in order to ascertain the various underlying problems associated with the utilization of energy by building occupants, especially in Nigeria. It would show the impact of the increased level of energy consumption as it relates to its cause as an agent of climate change in Nigeria. The New York Times (2014) put the population of the metropolitan area of the commercial capital of Nigeria, Lagos (where the case study of this research is situated) at 14.8 million which is estimated to be 75% of the habitable area of Lagos according to NASA's Land Change/Land Use Change Program (LULUC, 2020). This would provide knowledge of the impact of uncontrollable energy consumption to the general populace which are prominent in the metropolis of Lagos which is densely populated with residential buildings in comparison with the industrial belts of the state. To this end, this study would thus proffer sustainable and pragmatic recommendations that would involve the evolution of contemporary architectural ideas and models such as LEED and UOGS it that best address the problems identified. This would be carried out through relevant investigative processes which would provide a realistic view of some the many factors this study is attempting to address.

1.6 Justification for the Study

This study would benefit students of architecture and urban planning as regards ensuring the improvement and sustenance of a safe and healthy environment by enlightening them on the impact of uncontrollable energy consumption to the environment. This could be the factor that could foster the spirit of environmental activism and engage stakeholders of the environment in a proactive effort to save the earth from the dangers of excessive energy consumption. Furthermore, it would also be of huge benefit to ecologists and environmentalists by arming them with pragmatic approaches towards mitigating the problems associated with energy consumption through sustainable solutions such as Leadership in Energy and Environmental Design (LEED), creation of Urban Open Green Spaces (UOGS) etc. Public institutions such as the Ministry of Environment could find this study relevant especially as it pertains to providing significant approaches on ensuring a safe environment through the creation of a legal framework for legislation on controlled energy consumption through the provision of alternatives to greenhouse gases and fossil fuels

It would also be beneficial to conservationists and environmentalists as well as other allied professionals in the built sub - sector in providing a reference material for proffering recommendations to governments the world over on ways to control the excessive rates of energy consumption.

1.7 Definition of Terms

Energy: This is the quantitative property that must be transferred to an object in order to perform work on, or to heat.

Consuming: The process of using fuel, energy, or time, especially in large amounts

Residential: A building meant for residency or human habitation

Building: A structure with a roof and walls standing more or less permanently in one place, such as a house or factory.

Climate change: This is the change, also called global warming, refers to the rise in average surface temperatures on Earth.

Sustainability: Sustainability focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focuses on different and existing literary works from different authors and past reports on electricity consumption and its efficiency on economic condition, causes of electricity consumption in buildings, challenges and other factors related to electricity or energy consumption in Nigeria. It also comprises the theoretical and empirical review of literature.

2.1 Energy circumstance in Nigeria

Nigeria is Africa's energy goliath. It is the landmass' most productive oil-delivering nation, which, alongside Libya, represents 66% of Africa's raw petroleum saves. It positions second to Algeria in normal gas (Sambo, 2008). The majority of Africa's bitumen and lignite holds are found in Nigeria. In its blend of traditional energy holds, Nigeria is just unrivalled by some other country on the African landmass. It isn't astonishing subsequently that energy send out is the pillar of the Nigerian economy. Likewise, essential energy assets overwhelm the country's modern crude material gift. A few energy assets are accessible in Nigeria in bountiful extents. The nation has the world's 6th biggest hold of unrefined petroleum. Nigeria has an expected oil hold of 36.2 billion barrels. It is progressively a significant gas territory with demonstrated stores of almost 5,000 billion m³. The oil and gas holds are essentially found and situated along the Niger Delta, Gulf of Guinea, and Bight of Bonny. The majority of the investigation exercises are engaged in profound and super profound seaward zones with arranged exercises in the Chad bowl, in the upper east. Coal and lignite saves are assessed to be 2.7 billion tons, while tar sand holds address 31 billion barrels of oil same. The distinguished hydroelectricity destinations have an expected limit of about 14,250 MW. Nigeria has huge biomass assets to meet both conventional and present-day energy utilizes, including power generation (Ighodar,2010). Table1 shows Nigeria's energy holds/possibilities. There has been a market interest hole because of the deficient turn of events and wasteful administration of the energy area. The stock of power, the nation's most utilized energy asset, has been erratic (Okafor and Joe-Uzuegbu, 2010). The circumstance in the rustic spaces of the nation is that most end clients rely upon fuel wood. Fuel wood is utilized by more than 70% of Nigerians living in the rustic territories. Nigeria devours more than 50 million tons of fuel wood yearly, a rate which surpasses the renewal rate through different afforestation programs. Sourcing fuel wood for homegrown and business utilizes is a significant reason for desertification in the bone-dry zone states and disintegration in

the southern piece of the country. The pace of deforestation is about 350,000 ha/year, which is identical to 3.6% of the current space of timberlands and forests, though reforestation is just at about 10% of the deforestation rate (*Report of the Inter-Ministerial Committee on Combating Deforestation and Desertification, 2000*).

The country territories, which are by and large unavailable because of the shortfall of good street organizations, have little admittance to regular energy like power and oil-based commodities. Oil based commodities, for example, lamp oil and fuel are bought in the country regions at costs 150% in overabundance of their authority siphon costs. The everyday needs of the country people for heat energy are subsequently met as a rule from fuel wood. The offer of fuel wood and charcoal is for the most part uncontrolled in the sloppy private area. The offer of lamp fuel, power and cooking gas is basically affected and constrained by the Federal Government or its organizations - the Nigerian National Petroleum Corporation (NNPC) on account of lamp oil and cooking gas, and the IKEDC on account of power. The arrangement of the Federal Government had been to finance the evaluating of privately burned-through oil-based goods, including power. In a bid to make the oil downstream area more effective and trying to stem oil based good utilization as a strategy centre, the public authority has diminished and taken out endowments on different energy assets in Nigeria. The different arrangement choices have consistently caused cost increments of the products (Famuyide et. Al., 2011).

With the rebuilding of the force area and the impending privatization of the power business, clearly for strategic and financial reasons particularly in the privatized power area, country zones that are distant from the framework as well as have low utilization or low force buy potential won't be alluring to private force financial backers. Such regions may remain unserved into the far-off future (Sambo, 2009). Then, power is needed for such essential formative administrations as line borne water, medical services, broadcast communications, and quality training. The neediness destruction and Universal Basic Education programs require energy for progress. The

shortfall of solid energy supply has left the provincial people socially in reverse, however has likewise left their monetary possibilities undiscovered. Luckily, Nigeria is honored with bountiful environmentally friendly power assets like sun oriented, wind, biomass, and little hydropower possibilities. The sensible arrangement is expanded entrance of renewables into the energy supply mix (Sambo, 2008).

2.2 Energy utilization design in Nigeria

Energy utilization designs on the planet today shows that Nigeria and without a doubt African nation have the most minimal paces of utilization. By and by, Nigeria experiences a lacking inventory of usable energy because of the quickly expanding request, which is run of the mill of a creating economy. Amazingly, the nation is conceivably invested with supportable energy assets. Nigeria is wealthy in ordinary energy assets, which incorporate oil, public gas, lignite, and coal. It is likewise exceptional with sustainable power sources like wood, sunlight based, hydropower, and wind (Okafor and Joe-Uzuegbu, 2010). The examples of energy use in Nigeria's economy can be separated into modern, transport, business, farming, and family sectors (Energy Commission of Nigeria (ECN), 2003). The family area represents the biggest portion of energy use in the nation - about 65%. This is generally because of the low degree of improvement in the wide range of various areas.

The significant energy-devouring exercises in Nigeria's families are cooking, lighting, and utilization of electrical apparatuses. Cooking represents a stunning 91% of family energy utilization, illuminating utilizations to 6%, and the leftover 3% can be ascribed to the utilization of fundamental electrical apparatuses, for example, TVs and squeezing irons (Energy Commission of Nigeria (ECN), 2005). The prevalent energy assets for homegrown and business utilizes in Nigeria are fuel wood, charcoal, lamp oil, cooking gas and electricity (Famuyide et. Al., 2011). The rustic territories have little admittance to traditional energy, for example, power and oil-based commodities because of the shortfall of good street organizations. Oil based goods,

for example, lamp oil and gas are bought in the provincial regions at costs extremely high in overabundance of their authority siphon costs. The country populace, whose necessities are frequently essential, along these lines depends generally on fuel wood as a significant conventional wellspring of fuel. It has been assessed that about 86% of rustic families in Nigeria rely upon fuel wood as their wellspring of energy (Williams, 1998). A fuel wood supply/request unevenness in certain pieces of the nation is currently a genuine danger to the energy security of the rustic communities (Energy Commission of Nigeria (ECN), 2003).

The energy utilization per capita in Nigeria is little - around one-sixth of the energy burned-through in created nations. This is straightforwardly connected to the degree of destitution in the country. (GDP) and per capita pay are files that are utilized to gauge the monetary prosperity of a country and its people (Karekezi, 1997). Gross domestic product is characterized as the complete market worth of every single last great and administrations created inside a given country in a given timeframe (generally a schedule year). The per capita pay alludes to how much every individual gets, in money related terms, of the yearly pay that is created in his/her country through profitable exercises. That is the thing that every resident would get if the yearly pay created by a country from its profitable exercises were isolated similarly between everybody.

2.3 Current electricity situation in Nigeria

The power framework in Nigeria fixates on IKEDC, which represents about 98% of the complete power generation (Central Bank of Nigeria (CBN), 2006). Force age by different organizations, for example, the Nigerian Electricity Supply Company depends on nuclear energy for power age not at all like IKEDC, which depends on both hydro-and nuclear energy. Notwithstanding, power is additionally a customer of fuel and energy, for example, fuel oil, petroleum gas, and diesel oil. The significance of these wellsprings of energy and fuel for producing power has been diminishing as of late. Nonetheless, hydropower that is moderately less expensive than these sources has become more significant than other sources ((Famuyide et.

Al., 2004).). Be that as it may, all the more as of late, the Power Authority has produced power through a blend of both warm and hydro frameworks. All the force, appropriation, and substations are uniquely interlinked by a transmission network prevalently known as the public matrix. The whole power created cross country is pooled into the National Control Centre, Osogbo, from where power is appropriated to all pieces of Nigeria.

The public power framework by and by comprises of 14 producing stations (3 hydro and 11 warm) with an absolute introduced limit of about 8,039 MW as demonstrated in Table2. The transmission network is comprised of 5,000 km of 330-kV lines, 6,000 km of 132-kV lines, 23 of 330/132-kV substations, with a consolidated limit of 6,000 or 4,600 MVA at a usage factor of 80%. Thus, the 91 of 132/33-kV substations have a joined limit of 7,800 or 5,800 MVA at a use factor of 75%. The conveyance area is contained 23,753 km of 33-kV lines, 19,226 km of 11-kV lines, and 679 of 33/11-kV substations. There are additionally 1,790 dissemination transformers and 680 infusion substations (Fagbenle, 2006). As far as the utilization of power, an order into three gatherings has been proposed (modern, private, and streetlamp utilization). In 1970, the absolute power utilization remained at 145.3 MW/h; this expanded to about 536.9 MW/h in 1980. Notwithstanding, in 2005, the absolute power utilization had expanded to 1,873.1 MW/h (CBN, 2007). On the age side, these upsides of 176.6 MW/h in 1970 expanded to 815.1 MW/h in 1980. Before the finish of 2005, the accomplished complete power age was 2,997.3 MW/h (CBN, 2007). Contrasting the per capita power age with that of different nations, Nigeria has the least among the nations, while the USA has the most noteworthy per capita power age.

Disregarding the commitment of power to the absolute GDP, it is obvious that Nigeria is dealing with a few issues. The inadequacy of the power subsector to effectively satisfy the need for power in the nation has been brought about by various issues, which have been unfavourable to financial development. The Central Bank of Nigeria has distinguished nine issues related with the Power Holding Company of Nigeria (NEPA) (presently IKEDC):

- Absence of preventive and routine upkeep of NEPA's offices, bringing about gigantic energy misfortunes.
- Successive significant breakdowns, emerging from the utilization of obsolete and intensely over-burden hardware.
- Absence of coordination between town arranging specialists and IKEDC, bringing about helpless by and large force framework arranging and over-burdening of IKEDC gear.
- Insufficient age because of operational/specialized issues emerging from machine breakdown, low gas pressing factor, and low water levels.
- Helpless subsidizing of the association.
- Insufficient budgetary arrangement and unnecessary deferral in arrival of assets to IKEDC.
- IKEDC's wasteful charging and assortment framework.
- High obligation to IKEDC by both public and private buyers who are hesitant to pay for power devoured when due.
- Vandalizing and stealing of IKEDC hardware.

Furthermore, the vast majority of the current power plants in Nigeria are underutilized or not working by any means. Various reasons could be located as liable for the underutilization of these plants. Some of which are

- shortage of applicable labour for sufficient support and general customer indiscipline;
- absence of fundamental extra parts for upkeep of the plants;
- shortfall of neighbourhood producing capabilities;
- absence of deliberate investigations of circulation organizations to diminish the uncommon misfortunes that normally go with random framework extension; and
- powerlessness to change over gas flares to a wellspring of electricity.

The failure just as the lacking offices to support power supply additionally have been significant reasons for the expanding hole between the interest and the inventory of power. This could be because of the way that there are just 14 producing stations in Nigeria (3 hydro and 11 warm stations). Out of the approximated 8,039 MW of introduced limit in Nigeria, not more than 4,500 MW is at any point created. This is because of helpless support, vacillation in water levels fuelling the hydro plants, and the deficiency of power in transmission. It could likewise be because of the 80-MW fare of power each to the republic of Niger and Benin. 'Aside from filling in as a mainstay of abundance creation in Nigeria, power is likewise the core of activities and hence the driving force of development for all areas of the economy' (Odularu and Okonkwo, 2009). It has been by implication re-repeated that power utilization is emphatically identified with financial development and that the previous is a causal factor of the last mentioned. This implies that power utilization differently affects a scope of financial exercises and significantly the expectations for everyday comforts of Nigerians.

Despite the above entanglements that had delivered public power supply in Nigeria untrustworthy and wasteful, the pattern of its use has developed fundamentally ludicrous years. Power use by the residential area has been genuinely static in view of the untrustworthy idea of the public power supply framework in the country. Hence, numerous organizations have made plans to give their own force creating sets as wellsprings of power, prompting colossal exchange costs on their items and administrations. Studies and encounters have shown that power age in the nation has been bleak and incapable to contrast and what has been gotten in more modest African nations. Makers Association of Nigeria (MAN) gave the accompanying presentation pointers for Nigeria's power area contrasted and those of some other countries (Fagbenle et. al., 2006). The information for some Southern Africa Development Community (SADC) nations, for example, Botswana and South Africa are tantamount to those of the USA and France. The exhibition of the Nigerian force area on the International Best Practices near rating is offensive.

Maybe, no other area feels it as much as the assembling mechanical area wherein some eminent worldwide organizations and associations are on self-produced power 24 h/day for the 365 days of every year, as affirmed by the United Nations Industrial Development Organization in 2009. By and large, producers created about 72% of the absolute force needed to run their processing plants.

2.4 The Nigerian energy challenges

Nigeria's energy need is on the increment, and its expanding populace isn't satisfactorily viewed as in the energy improvement program. The present metropolitan focused energy strategy is unfortunate, as instances of provincial and sub-rustic energy interest and supply don't arrive at the middle phase of the country's energy improvement strategy. Individuals in rustic zones rely upon consuming wood and conventional biomass for their energy needs, causing extraordinary deforestation, emanating ozone depleting substances, and dirtying the climate, in this way making a dangerous atmospheric deviation and ecological concerns. The principal task has been to supply energy to the urban areas and different spots of industrialization, accordingly making an energy irregularity inside the nation's financial and political scenes. Looking at the present and truly expanding populace with the absolute limit of the accessible force stations uncovers that Nigeria can't meet the energy needs of individuals. The country inhabitants actually need electric power (Ajayi and Ajanaku, 2007).

The idea of Nigeria's energy emergencies can be described by two key variables. The primary concerns the intermittent serious deficiencies of the oil-based commodity market of which lamp fuel and diesel are the most unmistakable. Nigeria has five homegrown treatment facilities possessed by the public authority with an ability to handle 450,000 barrels of oil each day, yet imports establish over 75% of oil based good prerequisites. The state-possessed processing plants have barely worked over a 40% limit usage rate for any all-encompassing timeframe in the previous twenty years. The fuel market is vastly improved provided than lamp oil and diesel

on account of its higher political profile. This factor clarifies why the public authority has left on enormous import volumes to cure homegrown deficiencies of the item. As indicated by the Minister for Energy, the endowment to help the imports of fuel alone will be in the scope of 700 to 800 billion naira in 2008[38]. The more vulnerable political pressing factors applied by the purchasers of lamp oil (poor people and low working class) and diesel (mechanical area) on the public authority and the requirements on open financing of enormous scope imports of these items, as on account of gas, to a great extent clarify their more extreme and diligent market shortages (Ibitoye and Adenikinju, 2007).

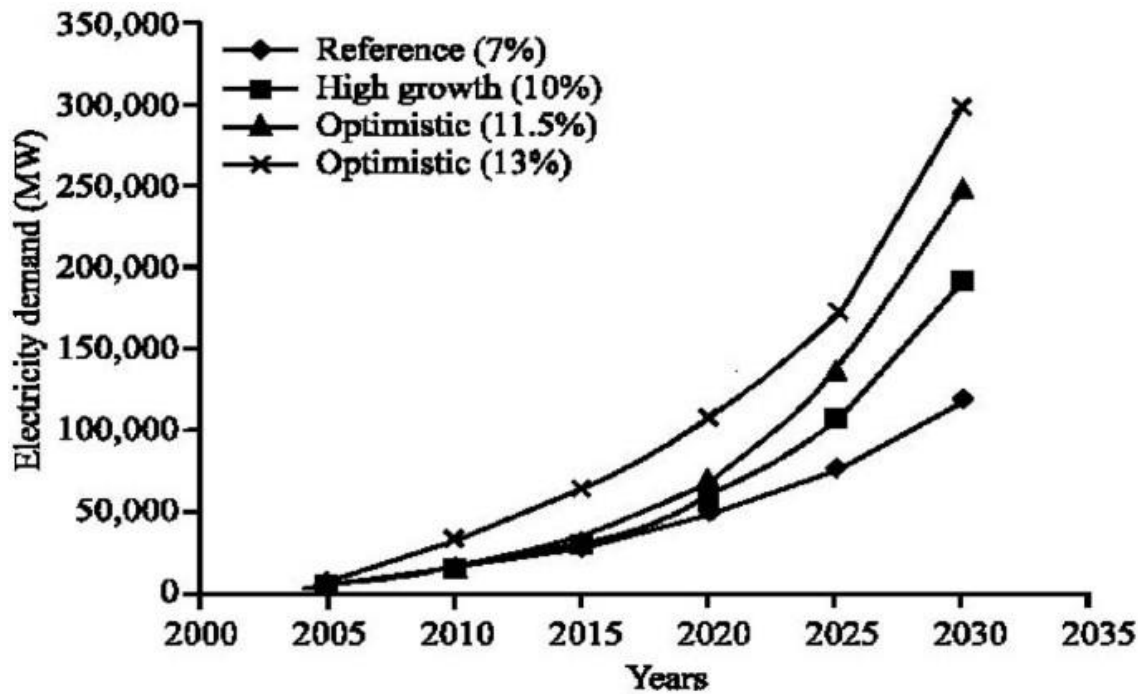
The second element of Nigeria's energy emergencies is exemplified by such pointers as power outages, brownouts, and inescapable dependence on self-created power. This advancement has happened regardless of plentiful energy assets in Nigeria. The power market, ruled on the inventory side by the state-possessed IKEDC, earlier called NEPA, has been unequipped for giving least adequate worldwide principles of power administration dependability, openness, and accessibility for as far back as three decades (Adenikinju, 2005). The idea of this helpless record in power supply is obvious in the pattern in transmission and dissemination misfortunes appeared. The twofold digit transmission and circulation misfortunes are very enormous by worldwide guidelines and are among the most noteworthy on the planet. The framework misfortunes are five to multiple times higher than those in all around run influence frameworks. The undeniable degree of force misfortunes and the huge illicit admittance to the public influence supply are demonstrative of the emergency in the business.

Despite the fact that the pinnacle power request has been not exactly 50% of the introduced limit in the previous decade, load shedding happens consistently. Blackouts in the assembling area give another measurement to the emergency. In 2004, the significant assembling firms experienced 316 blackouts. This expanded by 26% in 2005, trailed by a hazardous 43% expansion somewhere in the range of 2006 and 2007. In spite of the fact that no distributed

information exists, the close to implode of the creating framework to far underneath 2,000 MW for delayed timeframes proposes a justification the quantity of blackouts in 2008 to be high. This helpless assistance conveyance has delivered public inventory a backup source as numerous purchasers who can't manage the cost of sporadic and low-quality assistance substitute more costly hostage supply choices to limit the unfortunate results of force supply interferences on their creation exercises and productivity. An expected 20% of the interest into mechanical activities is distributed to elective wellsprings of power supply.

In synopsis, the causal components in Nigeria's energy emergency incorporate the following:

1. Commonness of a system of value control.
2. Powerless worry for cost recuperation and absence of satisfactory monetary motivators to prompt the state-claimed organizations (NNPC and IKEDC) to take part in effective creation and venture conduct. This appears to be clear in the presence of enormous information and yield endowments.
3. Assortment of monetary and noneconomic goals without appropriate distinguishing proof of the compromises among these various destinations. This is verifiable in its evaluating strategies in both power and oil-based commodities markets.
4. Institutional and administration disappointments which actuated gross twists and shortcoming underway, speculation decisions and significant expenses of activity, low profit from venture, and costly deferrals alongside cost overwhelms in the state energy endeavours.



Graph showing the projected electricity demand between 2005 and 2030.

2.5 Relationship between Electricity Consumption and Economic Growth

The positive connection among power and monetary development has been supported by certain Authors as being predictable. Numerous business analysts concur that there is a solid relationship between power use and financial turn of events. Morimoto R and Hope C (2001) have found, utilizing Pearson relationship coefficient, that financial development and energy utilization in Sri Lanka are profoundly related. Paul Breshin (2004) said that power is fundamental for driving development in the energy, assembling and social area. He went further to say that an equal (positive) development pattern existed between power interest and GDP (Gross domestic product). As per Simpson E. S (1969), "it is power instead of Steam motor, which is driving the creating enterprises in present day Africa". By suggestion, He re-underlines the way that power drives financial development. Ageel, An and Mohammad, S.B (2001) ran a cointegration on energy and its relationship with financial development in Pakistan, an agricultural country like Nigeria what's more, discovered that increment in power utilization

prompts monetary development. Sanchis, M.T (2007) expressed that "power as an industry is liable for a lot of yield". She proceeded to say that power had impacts not just on elements of creation yet additionally on the effect it had on capital amassing.

Alam M.S (2006) concurs that there is a take-off from neoclassical financial aspects which incorporate just capital, work and innovation as components of creation to one which currently incorporates energy as a factor of creation. He went further to say that energy drives the work that changes over crude materials into completed items in the fabricating measure. Sanchis, M.T (2007) added that increment in the power creation will keep away from the paralysation of the modern creation. Expanded mechanical creation will at last expand yield. Subsequently, this infers that power creation should turn into a financial approach high-need objective which ought to be direly reacted to. Energy productivity is likewise called 'effective energy use'. It isn't just about decreasing service bills of energy. It additionally includes boosting income through more prominent efficiency. Energy effectiveness is a basic segment of any push to improve power profitability. Eventually, energy productivity adds to abundance. Oviemuno An O (2006). Energy productivity gives another choice to meeting air quality objectives in that burning volumes are diminished proportionately with petroleum derivative utilization. Energy Efficiency alludes to the improvement of items and practices that bring about a decrease in the measure of energy important to give energy administrations like lighting, cooking, warming, cooling, transportation and assembling (kinika Amaewhule, 2000).

Traditional market analysts didn't perceive energy as a factor of creation in the creation measure and neither did the Neoclassicals. Today, business analysts like Alam, M.S (2006) discovered in his work on 'Monetary Growth with Energy' that in addition to the fact that energy serves as a factor of creation; it likewise goes about as a supporter to development of a country. Family Energy Consumption Pattern The large-scale monetary strategies of government which was the possibility of IMF that the public authority carried out shows that cost increment of homegrown

energy use is felt by low and medium pay bunch more, this is inspected by considering the dynamic of household energy utilization design among 2000 and 2012.

2.6 Consumption Pattern in 2000 and 2003

Previously and during this period, lamp oil has been the significant wellspring of energy for families utilized in both low and medium pay families in view of its accessibility and reasonableness. The expense of lamp fuel at that point was between N17.00 and N24.00, 84. % of the family studied in the low pay bunch utilizes lamp fuel while 60% of the centre pay likewise utilizes lamp fuel. This is on the grounds that lamp oil needn't bother with much tending. Likewise, the number of family in this class utilizes lamp oil a boundless. There was inclination for lamp oil since houses fabricated these days have no kitchens. "Every one of the landowner's interests is that the rooms are finished, and those that will live in such houses have visualized issues with the utilization of kindling to be as well much smoke" (Adelekan and Jerome 2006). Centre pay bunch in this period additionally lean towards the utilization of LPG (25%) of the families studied; not many families burns-through kindling, charcoal, power for cooking: however, kindling is the second most significant in low pay territory (10.0%), the utilization of different wellsprings of energy are not significant during this period.

2.7 Consumption Pattern in 2004 and 2008

With the expansion in the cost of lamp oil and LPG, family in this pay bunch moved definitely to different wellsprings of energy utilization separated from the lamp fuel and LPG. This period likewise shows high contribution of agents in the exchange of lamp oil which makes the item scant and not accessible at the siphon cost. The cost of lamp fuel bounced from N24 to N50 per litre and mediators that typically have the item currently sell it at the pace of N150 per litre which is triple the siphon cost by the public authority. The examination shows that the extent of family utilizing lamp oil and LPG dropped definitely to 35.0% in low pay bunch and 30.0% in

medium pay bunch. The ramifications are that there are more families that use kindling and charcoal as wellspring of homegrown energy use. There has being tumbling down of trees in huge amounts and no substitution. The level of the families utilizing kindling as wellspring of homegrown energy rose from 10% in 2000 to 45% in 2008 in low pay gatherings and from 4% in 2000 to 25% in 2008 in medium pay bunch. The utilization of LPG has additionally changed adversely as more families are not thinking about it as a method for energy use.

The investigation in the table 3 demonstrated that the example of energy use by the low and medium pay bunch change during this period as more families' made plans to the utilization of kindling for their home grown energy use. The utilization of different sources, for example, Electricity is on the decay. The utilization of hot plate for cooking by enormous number of family isn't noticeable in view of the measure of energy it devours and furthermore there has been expansion in the tax of power after some time in Nigeria. Table 3 demonstrates the rate charged by the power organization in Nigeria. Besides, there has being the issue of vacillation in the voltage supply to the families and likewise abnormality in the stockpile, while a few spaces of the low pay areas like Kpagunku, Bakin-Sale barely gloat of 6hours power supply each day, and conflicting in the hour of supply has additionally posada genuine to be issue to the utilization of the power. It is just in scarcely any centre pay neighbourhoods that the utilization of power is as yet polished, however power will give less expensive structures to cooking yet the specialist electric stun, epileptic in supply has not energized its employments.

2.8 Consumption Pattern in 2009 and 2012

By 2012 when the overview was directed the cost of lamp fuel, LPG has risen cosmically which in this way jeopardized its employments. The quantity of families that utilization these sources as their principal energy utilization for cooking reduces with the value change. The examination shows that the utilization of kindling and charcoal has been on the increment and there is no

indication of it been diminished due to the expense of these ordinary energy. The level of families utilizing kindling rose from 10% in 2000 to 45% in 2008 and about 65% in 2012. This suggests that more families think that it's hard to utilize different sources and the destitution level of the nation has been with the end goal that families living underneath destitution line are on the expansion. (The report of the National agency of insights showed that the public neediness file is as of now at 62.5% however there is the polarity between the northern and southern Nigeria.) This suggests that families in Minna that fall beneath the neediness line are on the increment and thusly the monetary assets accessible for use by family for home grown energy are decreasing which be that as it may supports the utilization of kindling. The utilization of regular energy has not been helpful and the cost have soar to the degree that a litre of fuel presently costs somewhere in the range of N150 and N200, which isn't sufficient for family energy use each day the extent of family that utilizes kindling in both pay bunches ascended higher and the utilization of lamp oil diminished definitely. The utilization of Kerosene in low pay family diminished from 84% in 2000 to about 5% in 2012 and in medium pay bunch it decreased from 60% in 2000 to about 15% in 2012. In the low pay neighbourhood, the utilization of power has gotten non-existent. The extent of family energy inclinations is appeared in the figure 1 somewhere in the range of 2000 and 2012.

2.9 Household Expenditure on Energy for Cooking

Households have been going through cash to give essential energy to cooking consistently and as a result of destitution and diminishing economy the penchant of the families to burn through additional on homegrown effort has brought about changing from ordinary to non-traditional technique in order to lessen the expense of energy arrangement by the families. the expanding cost of lamp oil has shown that somewhere in the range of 2000 and 2012 the expense rose cosmically, from N17 per litre to N50 a litre in the open market, but since of non – accessibility and the exercises of centre men has expanded the cost to as much as N160 per litre at the bootleg

market. This suggests that the upward audit of oil based good has expanded the everyday consumption on acquisition of this item. The review shows that families are spending more than N500/every day on the arrangement of lamp fuel for cooking. This has prompted the aimless utilization of kindling and charcoal which appears to be less expensive and promptly accessible. The quantities of individuals occupied with creation and utilization of biomass has expanded enormously.

2.10 Electricity Consumption and Standard of Living in Nigeria

The reasoning for power utilization no uncertainty is various, yet first among others absolutely are the decrease in natural clamour and contaminations and improvement in medical care coming about because of clean energy utilization, for example, power. Further, upgrade of efficiency, decrease of neediness and improvement in instruction is focused on as reasons for power use/utilization. The achievement of these reasonings in Nigeria are problematic as utilization of elective fuel sources like generator and bio-fuel are still high creating natural uneasiness coming about to chronic frailty. Profitability prompting family pay, destitution decrease, what's more, quality schooling of the families is as yet in question. Going from factual proof, out of the three significant areas that burn-through power, that is, the mechanical, business and streetlamp and private (households) areas, the private area seems to burn-through a greater amount of the accessible power. This didn't substantiate with the objection in family with respect to power utilization. This is an issue of incredible concern in light of the fact that a normal family power buyer in Nigeria unequivocally accepts that power devoured at the family level is poor. It is asserted that power utilization which is intended to decrease destitution, improve pay by means of efficiency improvement and upgrade instruction through data and correspondence innovation have not sufficiently played that job. Other issue of stress is additionally the circumstance of power accessibility. In the event that power is accessible during off-top period, it will consider genuinely family utilization, while as a general rule, shoppers

might not have used power appropriately as far as profitability which will support their pay level, improve neediness and upgrade instructive execution. At last, following changes additional time, from PHCN to IKEDC and later unbundled into age, transmission and circulation organizations, Nigeria has prevailing in just changing the terminology what's more, usual way of doing things in the meantime the nature of administrations continued as before. Proof with this impact is the clamour of the household power purchasers that power utilization is poor and it is accepted to have influenced their way of life as far as helpless pay level, low training execution, expanding destitution rate and poor medical care. In any case, measurable proof mirrors that family power utilization is high, an issue that requires research examination. Akande (2016) detailed that on the individual level, instruction achieves financial freedoms and improves singular way of life and on the total level, instruction improves work abilities prompting expansion in efficiency and generally way of life. Diacon and Maha (2015) states that there is a more grounded connection between power utilization, pay and way of life especially in the low and big-time salary nations. Helpless way of life as per Chimobi (2010) is dictated by the neediness level individuals, which is a reality that portrays an absence of food, garments, schooling and other fundamental conveniences, for example, chronic frailty as is reflected in Nigeria's baby mortality and miscreant anticipation.

Giving the objection of family power shoppers and trying to improve way of life in Nigeria, government has taken a few measures (by the privatization of the force area, which right now was unbundled into age, transmission and appropriation organizations) in the force area since power utilization is one of the essential factors that improve way of life. Furthermore, budgetary allotment to control area has been expanding throughout the long term, somewhere in the range of 1999 and 2015, about N2.7 trillion has been spent on the force area in Nigeria. Uzochukwu and Uche (2012) likewise announced in certification that the budgetary allotments to the force area inside the time frame have been expanding. In 1999, N315.22b was assigned to the area,

which expanded to N851.75b in 2001, N918.30b in 2004, N2,226.39b in 2007, N4,608.62b in 2010 and N4,749.10b in 2012. In show disdain toward of the actions, enormous budgetary designation to the force area and other non-force strategies, the exhibition of the force area to improve way of life has been in question. The issue of improved way of life and power utilization in Nigeria has pulled in strategies and measures as well as. For occurrence observational writing that analysed the effect of energy utilization and monetary development submitted various discoveries like Omotor (2008) and Chindo (2014) discovered bidirectional causality, Olatunji (2009) and Muhammad, Naqvi and Muhammad (2012), discovered unidirectional causality, Babatope, Taiwo and Patrick (2012) furthermore, Sama and Tah (2016) discovered critical relationship among the factors. Writing that analysed power utilization and financial development include: Masduzzaman (2012) and Mehrara and Musai (2012) who individually discovered unidirectional causality while Hossain and Saeki (2012), Melike (2013) and Rafal (2014) found bidirectional causality among power and monetary development. From the explored writing it is seen that zero in has been on energy utilization and monetary development, and power utilization (total) and monetary development dismissing family power utilization and way of life. Nonetheless, an examination that caught family power utilization and way of life has been directed by Joyeux and Ripple (2007) in India, however in Nigeria, an investigation of such has not been directed to the best of the analyst's information. That in any case, hypothetically, energy/power is perceived as the drivers of financial development and social government assistance (way of life) however academic articles or investigates in Nigeria are cantered more around the relationship between energy/power utilization and monetary development ignoring the effect of family power utilization on way of life.

2.11 Displaying energy utilization

Energy displaying includes understanding the energy world or cycle in a less difficult manner. The fundamental purpose of displaying is to help clarify or foresee a portion of the occasions in

the energy world. In spite of the fact that there are various ways to deal with displaying energy interest, numerous investigations have utilized the econometric demonstrating approach as this is suspected to have a critical benefit regarding recognizing value responsiveness of energy interest and anticipating (Dilaver, 2012). Metropolitan et al. (2007) in their work on creating Asian nations found that the models utilized for assessing energy in industrialized nations discover almost no application in agricultural countries. They prompted the requirement for energy frameworks and economies of non-industrial nations to be demonstrated assessing such factors as supply deficiencies, the lacklustre showing of the force area, charge also, the developing pattern in urbanization.

The fundamental demonstrating strategies looked into in this paper incorporates: a) Regression-whereby the connection between a reliant variable and various free factors is decided; b) Auto Regressive Distributed Lag-where the reliant variable is thought to be reliant upon its past esteem and the current and past upsides of some other factors. ARDL is utilized to catch the powerful cycle of change inside the factors which may not be adaptable to conform to another harmony in the short run; c) Error Correction model/Vector Error rectification Model-Error Correction Models (ECMs) distinguish a since a long time ago run connection between factors, while considering short-run deviations from this relationship. At the end of the day, ECMs gauge how rapidly a subordinate variable re-visitation of harmony after there has been a change to a free variable. ECM is helpful in assessing both long haul and momentary impacts of the autonomous variable on the reliant variable and is a viable method of portraying the unique multivariate cooperation of financial information. The utilization of ECM is to decide in the event that there is a since quite a while ago run connection between factors. Our investigation showed that among research on displaying energy, diverse relapse approaches have been utilized; for instance: Liu et al. (1993) for Singapore; Rajan and Jain (1999) for India, Harlvosen and Larsen (2001) for Norway; Mohammed and Bodger (2005) for New Zealand; Tien and Pao

(2005) for Taiwan, Louw et al., (2008) for South Africa; Egelioglu, (2001) for Northern Cyprus; Bianco, (2009) for Italy and Kankal et al. (2011) for Turkey. While some pre-owned relapse exclusively for example Rajan and Jain (1999), Egelioglu (2001), Louw et al. (2008), others like Liu et al. (1993), Tso and Yau (2007) what's more, Kankal et al. (2011) contrasted relapse with Artificial Neural Networks. In guaging the power utilization in Italy, Vincenzo et al. (2009) utilized different relapse on yearly information from 1970 to 2007. They included GDP, cost of power, Gross domestic product per capita and populace as free factors on power utilization. They discovered that value flexibility was restricted and accordingly evaluating strategy couldn't be utilized to advance the effective utilization of power in Italy. Then again, changes to GDP and Gross domestic product per capita affected power utilization. Narayan and Smyth (2005) broke down the private interest for power in Australia. They completed this utilizing the ARDL limits testing cointegration approach. They included yearly information for a long time from 1969 to 2000 for money, temperature, cost of power and cost of gaseous petrol in the displaying and discovered pay and cost of power the main factors over the long haul. Temperature was discovered to be important to a little degree however gas cost was not huge over the long haul. Amusa et al. (2009) likewise applied ARDL approach on information for the time frame somewhere in the range of 1960 and 2007 in their work on South Africa and found that the cost of power had an irrelevant impact on total power interest however changes in pay had an effect. They anyway educated regarding the requirement for valuing approaches that guarantee power costs are cost intelligent and that such approaches ought to likewise improve proficiency of power supply and use.

While trying to comprehend the power utilization in Taiwan, Holtedahl and Joutz, (2004) utilized ECM and included cost of power as a determinant of its utilization, urbanization (as an intermediary variable to catch financial advancement qualities and power utilizing capital stocks that are not clarified by pay), populace, pay, cost of oil and climate. They found that there was

an expansion in the utilization of power as families in towns and urban communities were bound to be associated with the network than those in the provincial zones and the outcome proposed that short-and long-haul impacts are isolated using a mistake remedy model. Babatunde and Shaibu (2009), in analysing the private power interest in Nigeria, utilized yearly information from 1970 to 2006 for money, cost of power, cost of substitute and populace. As on account of Narayan and Smyth (2005), pay was discovered to be extremely huge over the long haul. The cost of substitute and populace were additionally exceptionally huge in the assurance of the interest for power, yet Babatunde and Shaibu (2009) tracked down that, in spite of Narayan what's more, Smyth's discoveries, the cost of power was unimportant. Exploring the examinations above showed consistency and affirmed pay similar to a very significant determinant of utilization of energy yet the cost of energy may not fundamentally significantly affect the total interest for energy. This caused Ziramba (2008) in his investigation of private power interest in South Africa to close that cost increment alone won't debilitate expansions in private power utilization. It should be noted however that the various ways to deal with energy use and displaying, are all underlined by at least one unique speculation. They incorporate sociological hypothesis, mental hypothesis, instructive hypothesis and financial hypothesis.

2.12 Factors in Electricity usage

Some energy models have discovered various factors like cost and Gross Domestic Item huge in deciding the interest for power (Atakhanova, 2007; Narayan et al., 2007). Others have included populace (Liu et al., 1993; Mohamed and Bodger, 2005) and homegrown fares and populace (Fung and Tummala, 1995) while yet different investigations have included climatic factors (Yan 1998, Rajan and Jain; 1999, Haris what's more, Liu; 1993). Different factors that have likewise been utilized in demonstrating power utilization incorporate pay, cost of substitute, and length of framework association, apparatuses and size of family (Louw et al., 2008). Studies by Holtedahl and Joutz (2004) for Taiwan included urbanization as an intermediary for power

utilizing hardware and Azam (2015) in his examination on factors that influence energy utilization for ASEAN nations included urbanization, unfamiliar direct speculation, human improvement list and genuine development rate. Heltberg (2004) included schooling, size and organization of family, pay, distance to providers and accessibility of regular assets as elements that impact the selection of fills for families. Prasad (2006) then again incorporated the expense and accessibility of reasonable apparatuses while Adom et al. (2012) considered genuine per capita Gross domestic product, industry proficiency, level of urbanization and underlying changes in the economy as other significant variables that impact choices on the utilization of energy). By and large, the factors that have been utilized in energy demonstrating can be assembled into two principal classes endogenous and exogenous

2.13 Outline of Energy Resources interest in Nigeria

Nigeria with a populace of more than 140 million individuals is invested with colossal energy assets, for example, oil, flammable gas, coal, atomic, tar sand. Others incorporate sunlight based, wind, biomass and hydro. However, improvement and misuse of such energy sources have been slanted for the hydro, oil and regular gas. At autonomy in 1960, farming was the predominant area of the economy contributing about 70%. This pattern changed with the discovery of oil in 1970. The misuse of the Nigerian energy assets started with coal in 1916. There are almost three billion tons of demonstrated stores in seventeen distinguished coalfields and over 600 million tons of demonstrated stores in Nigeria (Anaekwe, 2010). Following the Nigerian common conflict, many coal mineshafts were deserted and coal creation never totally recuperated. This is obvious by coal creation levels getting whimsical as both the revival and support of imported mining gear demonstrated inconvenient (Godwin, 1980). Accordingly, coal creation dropped unimportantly from half in 1960 to under 1% in 1990. This decrease in coal creation was rushed by the disclosure of raw petroleum in business amounts in Otuabagi/Otuogadi, Oloibiri region in Bayelsa state by Shell Darcy on 15 January, 1956. Somewhere in the range of 1970 and 1980,

oil-based commodities were modest and promptly accessible as superior engine soul (PMS) also called petroleum expected the part of fundamental wellspring of energy in Nigeria. Therefore, any remaining fuel sources were dismissed (Oji, Idusuyi, and Kareem, 2012). With demonstrated oil saves surpassing 9 billion tons, Nigeria is one of the biggest hydrocarbon feedstock makers in Africa, and positions twelfth spot worldwide. The country depends intensely on its petrol industry for financial development, the area represents about 80% of government incomes and gives 95% of unfamiliar trade (Iwu, 2008). Nigeria is an individual from the Organization of Petroleum Exporting Countries (OPEC). Additionally, the country natural gas saves represent 5.2 trillion cubic meters, making it the world's seventh greatest gaseous petrol reserve. Although, flammable gas happens in related structure with unrefined oil, Nigeria's gas saves are multiple times more prominent than its oil saves. The public authority is focused on expanding gas creation for homegrown inventory just as for trade obvious by The Trans-Saharan Gas Pipeline right now being developed. This will empower Nigeria to supply the landmass of Europe with gas. The nation gives 10% of the world's LNG (Corporate Nigeria, 2012). In spite of this potential, gas erupting has proceeded with unabated throughout the long term (Eboh, 1998).

Right now, the Nigerian energy emergency has obstructed the financial exercises of the country which has welcomed untold difficulty on individuals of the country. At the moment, the power supply in the nation doesn't fulfil public need. While the assessed day by day power age was about 3,700MW as at December 2009, the pinnacle load estimate for the same period was 5,103MW. This depends on the current associations with the lattice which does not take into account the stifled demand. Also, the projected power request has been converted into interest for network power and pinnacle interest on the bases of presumptions made for transmission and circulation misfortunes, helper utilization, load factor and declining non-lattice age (Energy Information Administration, 2012). The interest is projected to ascend from 5,746 MW in 2005 to 297,900MW in the year 2030 which means development of 11,686MW consistently to fulfil

this need (Sambo, 2008). While the government claimed syndication organization (Power Holding Company of Nigeria) has been unbundled, in its stead, three hydro and seven warm producing, a spiral transmission matrix (330kV and 132kV); and eleven dispersion organizations (33kV and beneath) that embrace the wires, deals, charging, assortment and client care capacities inside their space of geological imposing business model have been set up. Aside from the transmission work, the others have been privatized. The epileptic idea of power has prompted shortage of petroleum and lamp fuel in light of the fact that the residents have come about to utilizing generators and lamp oil fuelled gear to give energy for use at homes. Additionally, import substance of our homegrown fuel use has become over the a long time to about 75% (International Energy Agency, 2012). This has brought about the utilization and overdependence on fuel-wood which has prompted deforestation and specialist corruption of the climate and demolishing desertification (Babanyara and Saleh, 2010). They report an normal yearly deforestation pace of 2.38% somewhere in the range of 1990 and 2000 in Nigeria due partially to the change to the utilization of wood fuel because of climbs in costs of lamp oil and cooking gas. Other elective fuel sources including sunlight based, wind, wave is generally immature in the country. Besides, because of homegrown fuel costs which have gone up a few times with specialist upsurge in transport charge and costs of labour and products. Bamikole (2012) reports that mechanical limit usage has dove from 78.7% in 1977 to 30.1% in 1987 preceding resurgence to 53.3% in 2007 and 53% in 2010. In the following segment, an audit of the writing is introduced.

4.0 Empirical Studies

Studies on energy utilization and financial development in Nigeria have been generally inspected including that of power utilization and financial development. Aside from crafted by Joyeux and Ripple (2007) who considered the family energy utilization versus pays and relative way of life: a board approach on East Indian Sea nations" none has been never really best of the analyst's information, on the connection between household power utilization and way of life in Nigeria. Since way of life has a direct relationship with financial development and because of the sparse idea of the experimental writing, we hence receive the prior examinations on energy/power utilization and monetary development which additionally incorporate the investigations of Kraft and Kraft (1978), Yu and Choi (1985), Erol and Yu (1987), Abosedra and Baghestani (1989), Masih and Masih (1996), Soytaş and Sari (2003), and Wolde-Rufail (2005), among others. This examination in any case, audits the new studies in such manner. Melike (2013) researched the connection between power utilization and financial development by utilizing Autoregressive Distributed Lag (ARDL) limits testing approach and vector mistake rectification models (VECM) in Cameroon, Cote D'Ivoire, Congo, Ethiopia, Gabon, Ghana, Guatemala, Kenya, Senegal, Togo and Zambia for period 1970-2010. He found from the ARDL results that there is cointegration connection between power utilization and financial development in ten of the eleven nations. The outcomes likewise uncovered that pay flexibility of power utilization, power utilization is extravagance useful for Gabon and Guetemela, need great or Engel's useful for Senegal and mediocre useful for Zambia. The causality investigation reports that development theory exists in Cameron, Congo Rep., Ethiopia, Kenya and Mozambique and the protection theory in Senegal and Zambia. For Gabon, Ghana and Guatemala, there exists the bidirectional causality between financial development and power utilization, while Masduzzaman (2012) tracked down a unidirectional causality running from power utilization to financial development. Rafał (2014) examined the connection between

power utilization and financial development in Poland for the period 2000 to 2012 utilizing Granger Causality and OLS techniques. The got results show that there is the causal connection between power utilization and monetary development in Poland and the relationship is bidirectional. He likewise found the bi-directional causality among capital and financial development. Based on the causality results he assessed a one-area total creation work, where the power utilization was one of the information factors. The assessed development model showed that power utilization is a supportive of development variable, so the outcomes demonstrate that monetary development of Poland is power subordinate. This infers that power is certainly not a restricting variable to monetary development of Poland. This infers that the two factors, that is power utilization and financial development impacts one another.

Sama and Tah (2016) contemplated the impact of energy utilization on monetary development in Cameroon, from the time frame of 1980 to 2014. The fuel sources used to test for this relationship were petrol and power. The examination made utilized of auxiliary time-arrangement information. Utilizing the Generalized Method of Moments strategy, the outcomes gotten shows that Gross Domestic Product (GDP), populace development rate and oil costs, have a positive relationship with petrol utilization. Likewise, there was a set up certain connection between Gross Homegrown Product (GDP), populace development rate, power costs and power utilization. Once more, the examination tracked down a positive and critical connection between petrol utilization, power utilization, Gross homegrown venture (GDI) and populace development rate and financial development. Moreover, the exact outcome uncovered that the pace of expansion and financial development are emphatically related. Sama and Tah asserted further that there exists a positive connection between power utilization and financial development. It is normal by suggestion that power utilization will improve financial development and monetary development to improve power utilization also. This could likewise be credited to way of life, given that great norm of living decides monetary development. In any

case, the examination couldn't show explicitly whether family power has any relationship with the expectation for everyday comforts of individuals concerning what it means for the destitution level, per capita pay and the degree of instruction which gives this specialist another stimulus for dynamic examination around here. Al-Abdulrazag (2016) examined the short-run and since a long time ago run causal connections between power utilization and financial development in Jordan somewhere in the range of 1976 and 2013, using the Autoregressive Distributed Lag (ARDL) model. Evaluations uncovered the presence of a since quite a while ago run harmony connection between the said factors.

The VECM model outcomes demonstrated a since a long time ago run, bidirectional causality between the two factors as seen from the negative and critical mistake remedy terms. The aftereffects of Granger-Causality test inside VECM unveiled a bidirectional frail and solid short-run causality between power utilizations per capita and financial development. The assessment results offer a solid help for the input speculation in Jordan. Crafted by Rafal (2014) and Al-Abdulrazag (2016) similarly assert that bidirectional relationship exists between electricity utilization and financial development in Poland and Jordan. This specialist would need to analyse and furthermore assert the truth of this causal relationship in Nigeria as to way of life. Okwanya and Abah (2018) examined the effect of energy utilization on destitution decrease in a board of 12 African nations over a time of 1981-2014. Utilizing the Fully Modified Ordinary Least Square (FMOLS) strategy, the investigation shows that a since quite a while ago run negative relationship exists between energy utilization and destitution level, which highlights the significance of energy in neediness decrease in the chose African nations. The outcome moreover shows that different factors, for example, capital stock and political security have critical impact on neediness suggesting that these variables assume basic part in lessening neediness. Besides, the granger causality test shows that a short run unidirectional causality runs from energy utilization to destitution. The discoveries obviously recommend that expanding

energy utilization prompts a decrease in destitution level. Among every one of the worldwide confirmations explored, crafted by Okwanya and Abah (2018) has all the earmarks of being more explicit and firmly identified with this exploration. The investigation shows that energy utilization diminishes destitution level among the 12 African nations noticed yet couldn't explicitly show the effect of family power utilization on way of life as far as instruction, neediness and other significant markers of way of life. This examination hence, looks to overcome that issue utilizing Nigerian economy.

Studies on energy/power utilization and monetary development straightforwardly on Nigerian economy were additionally checked on. Abalaba and Dada (2013) in their examination tracked down a dubious proof of since a long time ago run connection between energy utilization and genuine yield and received standard Granger causality test utilizing the initial three slacks. The outcomes given no causal proof one way or two routes between energy utilization and monetary development in Nigeria since the theory of no causality was maintained in the two ways. Adebemi, Adebemi and Olalekan (2013), set up immediate and positive connection between the all-out energy utilization, petrol utilization, gas utilization, power utilization, and coal utilization and the development of Nigeria's economy. Essentially, expanded energy utilization is a solid determinant of financial development in Nigeria and ought to along these lines be given more significance by abusing the chances in the area to increment financial development. Energy utilization in term of homegrown fuel utilization with accentuation on petroleum, lamp oil and diesel and financial growth in Nigeria is inspected additionally by (Nwosa, 2013). He embraced an Error Correction Model (ECM) approach. Johansen's multivariate co-mix test showed that the factors are co-incorporated and the since a long time ago run gauge showed that the utilization of the three homegrown fills unimportantly affected monetary development. Notwithstanding, the short run gauge uncovered that the general effect of petroleum utilization was positive and critical while the general effect of diesel utilization was negative and huge. The

general effect of lamp fuel utilization was negative and irrelevant. This paper infers that petroleum utilization is critical for development in Nigeria and energy strategy on petroleum utilization would hamper financial development. These three exact works from various creators showed repudiating aftereffects of the effect of energy utilization on financial development. This infers that the real relationship or effect of the energy utilization on financial development in Nigeria is yet uncertain. Given this reality, this examination basically inspected the particular effect of family power utilization on the way of life in Nigeria. Ogwumike, Ozughalu and Abiona (2014) analysed family energy use and its determinants in Nigeria based on the 2004 Nigeria Living Standard Survey information got from the National Bureau of Statistics. The investigation used enlightening measurements and multinomial logit models and tracked down that most families in Nigeria use kindling as cooking fuel and lamp oil for lighting. This shows that most Nigerian families don't have satisfactory access to harmless to the ecosystem current fuel sources. Energy use in Nigeria upholds fuel stacking as opposed to energy stepping stool speculation. Among the components that essentially impact family energy use for cooking are instructive degrees of father and mother, per capita consumption and family size. This suggests that the living standard individuals similarly decides the degree of family energy use, which further recommends that the utilization of power by the family may fundamentally affect the way of life in Nigeria. The expansion in the utilization of kindling and lamp oil as shown in this examination shows that there is deficient stock of naturally amicable present day fuel sources like power. Akomolafe and Danladi (2014) set up unidirectional causality from power utilization to genuine gross homegrown item. The since a long time ago run gauges notwithstanding, upholds the Granger causality tests by uncovering that power utilization is decidedly related with genuine GDP over the long haul. Examination further shows that there is unidirectional causality from capital development to genuine total national output. This infers that Nigeria - being a country exceptionally reliant upon energy - will have capital development's commitment

to the economy generally dictated by sufficient power. Opposite, utilizing ARDL Bound test for Nigeria is crafted by Sebil (2014), he uncovered the presence of since a long time ago run balance between the factors when genuine GDP was treated as the ward variable and power utilization as its since quite a while ago run compelling variable. The VECM Granger causality test results show no proof of short run causality. Nonetheless, the outcomes propose the presence of a since quite a while ago run bidirectional causal connection between power utilization and genuine GDP. This further shows the uncertain idea of the connection between power utilization and financial development in Nigeria. Adeyemi, Opeyemi and Oluwatomisin (2016) examined the connection between power utilization and monetary improvement utilizing an all-encompassing neoclassical model for the time frame 1970-2011. The investigation joins the uniqueness of the Nigeria economy by controlling for the job of establishments, innovation, emanations, and financial design in the power utilization improvement contention. The examination received a cointegration examination dependent on the Johansen and Juselius (1988) Maximum Likelihood approach and a vector blunder adjustment model. To guarantee heartiness, the investigation received the Wald Block Endogeneity causality test to learn the heading of causal connection between power utilization and monetary turn of events. The observational investigation of the examination discovered a presence of a since a long time ago run cointegration relationship among our factors. The examination likewise found that power utilization impacts a huge converse connection on monetary turn of events. They further expressed that the reason for this converse relationship probably won't be detached with profoundly whimsical nature of power in Nigeria which prompted the relocation of enterprises to adjoining nations because of significant expense of creating power secretly.

Okwanya, Ogbu and Alhassan (2015) broke down the connection between complete energy utilization and destitution rate in Nigeria and tracks down that the degree of complete energy devoured essentially influence destitution rate in Nigeria since expanding absolute energy

utilization by 1% diminishes destitution by 0.33 percent. The investigation additionally shows that expansion in GDP and grown-up education doesn't decrease destitution in Nigeria. They clarified further that this might be expected to significant degree of joblessness winning in the country. They additionally show that bi-directional causality runs from complete energy utilization to neediness rate in Nigeria. This implies energy utilization assumes a basic part in engaging individuals towards accomplishing monetary autonomy that will pool them out of the shackles of neediness. This investigation will additionally take a gander at the particular effect of family power other than all out energy has on the way of life given the neediness rate in Nigeria. Akande (2016) explored the connection among training and way of life in Nigeria. He utilized the Johanson Cointegrated test and Vector Error Correction Model (VECM) and the factors utilized incorporate per capita genuine GDP, government use on training and wellbeing. The outcome proposes a since a long time ago run relationship between the factors, suggesting a fast change towards harmony. The exploration further expresses that schooling achieves mindfulness and expands openings for development and improvement. On the individual level training achieves monetary freedoms and improves work abilities prompting way of life. Akande (2016) could not analyse the effect of power utilization by the family on the instructive presentation which is expected by his examination to improve work abilities. In any case, this examination plans to overcome that issue by analysing the effect of family power utilization on way of life utilizing factors as destitution, training and pay as measures for way of life. Akinola, Oginni, Rominiyi and Eiche (2017) completed an investigation on the similar investigation of private family energy utilization in Ekiti State-Nigeria utilizing essential examination. Essential information was gathered through a well-organized survey controlled on families. Immediate and individual perceptions were utilized to confirm same data got from the surveys used to introduce more precise data in the paper. Information gotten were dissected utilizing both autonomous and combined t-tests led at 5 and 10% degrees of importance in the yearly energy

utilization between the low and major league salary workers in the visited territories separately. The result uncovered that, the thickly populated region stays the bigger buyer of energy substance of 827,411.20 MJ (63%) against the scantily populated territories with 486,267.60 MJ (37%), while based on families' pay level; the energy devoured by the low pay workers (790,719.30 MJ) is essentially higher than the big-league salary workers (522,959.49 MJ). The investigation set up that, fuel wood was the helpless man's fuel source (6.5%) also as charcoal (11.2%) significantly utilized in meagrely populated zones with appeal. Lamp fuel utilization (29.6%) was decidedly and fundamentally impacted by pay and populace in the two areas while, LPG (44.9%) and power (7.8%) were utilized predominantly in the thickly populated regions. Nonetheless, the outcomes suggested that, there is a positive connection among pay and decision of energy utilization by families that showed the low pay workers burned-through more energy than the big-time salary workers because of their cooking recurrence and unit energy buy record. In any case, this examination focuses more on the family power utilization as it sways on the degree of training, neediness and pay as disaggregated measure for way of life in Nigeria.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter is designed to appraise the various means and methods employed in the acquisition of data towards ascertaining energy consumption in residential buildings. In order to achieve the purpose of this chapter, the following would be examined and this includes; the population of the study area, the research design, sampling technique, sample size of the study area, research instrument, method of data collection, plans for data analysis and finally an appraisal of the fieldwork carried out by the investigator

3.1 Study Population

According to the 2006 Population Census, the study area Ikeja has a total of 313,196 persons, making it one of the most populated local government areas in Lagos State. This could be attributed to the high level of commercial, economic and industrial activity therein. Estimated population figures from 2006 to 2021 using the progression formula $P = p_0 (1+rn)$ is believed to be double the initial figure as stated by the National Population Commission (2006).

3.3 Research Design

The study is designed to appraise the energy consumption level in residential buildings. This would be achieved with the use of questionnaires which would be designed in such a way to allow for simple and concise questions to be asked to ensure the purpose of the research is achieved. The questionnaire is designed to obtain information from building owners and occupants towards understanding the level of energy consumption for a number of residential

developments. Survey research design was adopted for this study. This research design is justified on the ground of its capacity for collecting large data and because it could make use of questionnaire focusing on very large population.

3.4 Sampling Technique

For the purpose of this research, some variables which influenced the sampling method would be considered. They include population size, socio-economic characteristics of building occupants and owners, housing type, type of occupancy, occupancy ratio as well as determining dependence on natural or artificial forms of energy utilisation. The method adopted for this study is the simple random sampling which entails selecting a sample from a population so that an appreciable number of the population have equal opportunities of being selected.

3.5 Sample Size

After considering the likely projected population growth rate of about 2.5%, the estimated population of Ikeja from ~~between 2006 to 2021~~ is believed to be in the region of about 430,645 persons. However due to the high population figures, administration, collation and analysis could be cumbersome to undertake hence the number of residential buildings would be used to form a basis for the administration of questionnaires. Using an occupancy ratio of twelve, one house would be sampled out of every 50 houses in the study area. The houses would be selected at random to give an equal opportunity to be represented.

3.6 Research Instrument

Two categories of research instrument were adopted in the acquisition of data. These are the oral interview method and the questionnaire. While, the oral interview was designed to obtain information from professionals and experts on the issue of energy consumption in residential buildings, the questionnaire was designed with a series of simple and concise questions meant to enable both the literate and illiterate alike provide answers to the questions therein.

For the purpose of this study, questionnaire was chosen. A well-structured questionnaire was developed with validity and reliability tests. Items that measure electricity consumption and its impacts on buildings and living condition. A 5-point summated rating scale (Likert-type scale) will be for all sections, except section A on respondents' demographic data, with calibration of SA - Strongly Agree, A -Agree, N – Neutral, SD - Strongly Disagree, D - Disagree. Values of 5, 4, 3, 2 and 1 respectively were assigned in a descending order to each calibration in measuring the responses. Likert-type scale was used so as to enable the researcher easily compare responses among individual respondents.

The questionnaire will be divided into two sections. Section A measures the respondents' demographic data; gender, age range, academic and professional qualifications and length of business ownership. Section B will be sub divided into four different sections that measures each of the constructs in electricity consumption and its impact on buildings in Nigeria.

3.7 Data Collection

Two major methods of data collection were adopted in relation to the study. They include

Primary Data - This method of data collection encompasses every form of information derived directly from the field. This includes information and data obtained through field surveys, observations, interviews with respondents etc.

Secondary Data - This includes data sourced from published material such as newspapers, journals, books, unpublished materials as well as the internet.

3.8 Field Work

Information and data would be sourced from Individual respondents with the aid of questionnaires. Trained personnel would assist in the administration of questionnaires. A total of one hundred and fifty questionnaires would be administered 30,000 houses in which one out of fifty would be selected at random.

3.9 Method of Data Analysis

The data gathered from these companies will be categorized into precise observed trends and relationships were recognized and subjected to interpretation. Descriptive statistics will be used in analysing the data gathered with the aid of Statistical Package for Social Sciences (SPSS) version 21. Simple linear regression will be used to analyse the data from the study because they are very reliable in the study of relationship and influence of moderating variables on the relationship between variables. It also helps to understand how the typical value of the dependent variable changes when any one of the independent variables is varied while other independents variables are held constant.

CHAPTER FOUR

DATA ANALYSIS

4.0 Introduction

This chapter presents the results and discussion of the study findings. The chapter begins with a presentation of the response rate. Descriptive analysis was done on each of the study variables followed by the findings from the descriptive statistics. Inferential statistics of regression analysis was then done. The chapter ends with the discussion of the study findings. The Statistical Package for Social Sciences (SPSS) version 21 was used to process the data to get inferential results while excel was used to present descriptive results. Tables were used to present the summarized findings

4.1 Descriptive Findings

Table 4.1: Demographic profile of the respondents (In percentage)

Demographic antecedents	Frequency	Percentage of responses
Age Group:		
20-30	42	42%
31-40	23	23.0%
41-50	28	28.0%
51 and above	7	7.0%
Highest Level of Education:		

PHD	13	13%
Masters	26	26%
HND/B.sc	43	43%
ND	14	14%
O'level	4	4%
Gender:		
Female	51	51.0%
Male	49	49.0%
Work Experience:		
1-5 years	46	46.0%
6-10 years	34	34.0%
11-15 years	17	17.0%
16 years and above	3	3.0%

Table 4.1 shows the demographic information of respondents in summary. Looking at the age-group of the respondents, 42 persons were between 20-30 years of age making up 42% of the total sample size, age group 31-40 years received 23 respondents while 28 respondents were 41-50 years of age and 51 and above were 7 respondents. The total number of respondents on age group is summed up to 100. From the same table, the level of education of respondents was shown from the highest level of education to the lowest level of education. 13 respondents were PHD holders making up 13% of the total sample size, 26 respondents were Master's Degree holder while the highest number of respondents in this demographic is HND/B.sc holders which makes up 43% of the total sample size. 14 respondents were National Diploma holders and 4 respondents were O'level holders. The table also shows the gender frequency of respondents and out of 100 total sample size, 51 respondents were female and 49 respondents were male. Lastly, the table shows the number of years respondents have worked in their respective positions. The highest frequency shows that 46 respondents have 1-5 years' work experience and 34 respondents have 6-10 years of work experience. 11-15 years of work experience was selected by 17 respondents while 3 respondents show that they have over 16 years of work experience.

Table 4.2

S/N	CHARACTERISTICS		URBAN (%)	PERI- URBAN (%)	RURAL (%)
1	Type of Housing Unit	Detached	26.9	24.2	21.5
		Traditional	13.9	12.2	36.5
		Blocks of Flat	18.5	3	0
		Tenement	40.7	60.6	42

		Total	100	100	100
	Tenure Status				
		Owned	39.8	42.4	52
		Rented	52.8	54.5	40
		Others	7.5	3.1	8
		Total	100	100	100
	Number of rooms				
		1	34.3	42.4	32
		2-4	39.8	27.3	52
		More than 5	25.9	30.3	16
		Total	100	100	100
	Occupation of Household Head				
		Trading	25	60.6	28
		Artisan	9.3	6.1	8
		Civil Servant	24.1	6	4
		Private Corporation	27.8	4.1	4
		NGOs	-	21.2	52
		Others	13.8	2	4
		Total	100	100	100
	Household Size	1-2	16.7	36.4	28
		3-4	25.8	30.3	8
		5-6	29.7	12.1	56
		More than 7	27.8	21.2	8

		Total	100	100	100
	Estimated Household Monthly Income				
		Below N15,000	29.7	54.5	52
		N15,000– N50,000	22.2	24.2	32
		N51,000– N100,000	18.5	9.2	8
		Above N100,000	29.6	12.1	8
		Total	100	100	100

A more prominent extent of families earns beneath N15,000 each month as pay across the three zones in Ikeja. This mirrors the power of low pay bunch in the examination territory. Be that as it may, this low-income category is higher in the peri-metropolitan and rustic regions representing 54.5% and 52% separately. What can be viewed as medium pay class comprise about 40% in both the metropolitan and rustic territories while that of the peri-metropolitan region is about 35%. The high-income group is just about as high as 29.6% in the metropolitan zone while that of the peri-metropolitan and country territories represent just 12.1% and 8% individually. This pays structure follows the example and level of economic exercises in each zone. Optional, tertiary and quaternary financial exercises which offer higher wages are gathered in the metropolitan territory while essential exercises which offer generally lower compensation prevail in the country territories. This is reflected in the way that about 92% of rustic families is either in low or medium pay bunch. In the peri-metropolitan territory, there seems, by all accounts, to be a mix, this is a result of the moderately modest house lease and land accessible

because of the distance to the city which fills in as an appreciation for prospecting occupants and house heads that cuts across all pay classes.

4.2 Descriptive Analysis of Data

The researcher presents the descriptive analysis of variables to answer the research questions. In the descriptive analysis, dependent and independent variable was analysed. For interpretation, Strongly Disagree was represented by SD, Disagree by D, Neutral by N, Agree by A, Strongly Agree by SA. The detailed results of the analyses are arranged in tables as follows.

4.2. Restatement of Objective and Research One

Research Objective One: To identify energy consumption in Nigeria in the last 10 years.

Research Question One: what is the rate of energy consumption in Nigeria in the last 10 years?

Keywords: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA)

	Strongly disagree (SD)%	Disagree (D)%	Neutral (N)%	Agree (A)%	Strongly agree (SA)%	Mean	Std. Deviation
I give a lot to save energy in my home	2 1.9%	3 2.8%	20 18.9%	35 33.0%	40 37.7%	4.08	0.950
I turn off all electrical appliances and sockets before going to bed	1 0.9%	4 3.8%	20 18.9%	40 37.7%	35 33.0%	4.04	0.898
Energy prices in the future might be on the rise and	1	4	24	35	36	4.01	0.927

affect buildings	0.9%	3.8%	22.6%	33.0%	34.0%		
Energy prices are on the high side which affects the rate is usage	2	2	18	35	43	4.15	0.925
	1.9%	1.9%	17.0%	33.0%	40.6%		

Table 4.2.1: Respondents perceptions on energy consumption in households

Data in Table 4.2.1 gives detailed analysis of energy consumption and usage in households. The table indicates that by combining responses under agree and strongly agree most (75 i.e. 70.7%) of the respondents agreed that energy consumption in Nigeria has been effectively managed while 20 that is, 18.9% remained neutral to the statement and 5 respondents disagreed and strongly disagreed making up 4.7%. 75 (70.7%) of the respondents concur that energy should be effectively and efficiently used but not minimised. That means energy consumption in Nigeria is based on income and electrical capacitance used in the household. 20 respondents (18.9%) remain neutral to this statement and 5 (4.7%) respondents disagree and strongly disagree with the statement while 71 (67%) respondents agreed and strongly agreed that energy prices in the future may rise due to the unprecedented nature of the power sector 24 (22.6%) respondents remaining neutral to the statement and 5 (4.7%) respondents disagree and strongly disagree to the statement and 78 (73.6%) respondents strongly agreed and agreed that energy prices are on the high side and it places restriction on the way individuals make use of it in their households 18 (17.0%) respondents remaining neutral to the statement and 4 (3.8%) respondents strongly disagree and disagree to the statement. Table 4.2.1 shows that the mean scores of the respondents' perception energy consumption variable range from 4.01 to 4.15 with standard deviation ranging from 0.950 to 0.898. The results indicate that there is a wide agreement among the respondents on energy consumption and the price associated based on the five-point Likert-type scale in the questionnaire. The results reaffirm NNPC's take where they stated that the country has a reduced access to electricity because of the shortfall of good street organizations,

have little admittance to regular energy like power and oil-based commodities. Oil based commodities, for example, lamp oil and fuel are bought in the country regions at costs 150% in overabundance of their authority siphon costs. The everyday needs of the country people for heat energy are subsequently met as a rule from fuel wood. The offer of fuel wood and charcoal is for the most part uncontrolled in the sloppy private area. The offer of lamp fuel, power and cooking gas is basically affected and constrained by the Federal Government or its organizations - the Nigerian National Petroleum Corporation (NNPC) on account of lamp oil and cooking gas, and the IKEDC on account of power.

4.2.2 Restatement of Objective and Research Question Two

Research Objective two: To examine difference in energy consumption and its causes in Nigeria.

Research Question two: What are the effects of excessive energy consumption and its causes in Nigeria?

Keywords: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA).

	Strongly Disagree (SD)%	Disagree (D)%	Neutral (N)%	Agree (A)%	Strongly Agree (SA)%	Mean	Std. Dev.
Consumption of energy in the households is not enough compared to what is being charged	0 0%	2 1.9%	27 25.5%	22 20.8%	49 46.2%	4.18	0.903
I use more of gas than energy in my household	1	6	17	37	39	4.07	0.946

	0.9%	5.7%	16.0%	34.9%	36.8%		
Electricity companies are not considerate with fees and services offered to households	0 0%	6 5.7%	21 19.8%	41 38.7%	32 30.2%	3.99	0.882
Energy saving bulbs save more energy than they consume for households	0 0%	5 4.7%	16 15.1%	48 45.3%	31 29.2%	4.05	0.821

Table 4.2.2: Respondents perceptions on difference in Energy consumption

Data in Table 4.2.2 gives detailed analysis of difference in Energy consumption. The table indicates that under strongly agree, 49 (46.2%) of the respondents agreed that energy consumption and the charges are not the same. 22 (20.8%) agree to the statement while 27 (25.5%) maintained neutrality with the statement and 2 (1.9%) disagreed with the statement. 76 (71.7%) respondents also strongly agree and agree to using more of artificial electricity supply in their households like gas and all while 17 (16.0%) respondents remained neutral, 7 (6.6%) disagreed with the statement. And 73 (68.9%) respondents agree to the opinion that energy providers are not considerate with the supply and charges on electricity and 21 (19.8%) respondents remained neutral to the statement while 79 (74.5%) respondents strongly agree and agree that energy saving bulbs save more energy in households and reduce heat and 5 (4.7%) respondents disagreed with the statement while 16 (15.1%) respondents remained neutral.

This Table also shows that the mean scores of the perception about difference in energy consumption variables were ranging from 3.99 to 4.18 with standard deviation ranges from 0.946 to 0.821. Consequently, Table 4.2.2 reveals that the most agreed opinion on energy consumption is that electricity charges have positive impact on the electricity usage with the highest mean of 4.18 and low standard deviation of 0.908, while there is a huge difference and

gap between usage and charges on electricity with lowest mean of 3.99 and standard deviation of 0.882.

4.2.3 Restatement of Objective and Research Question three

Research Objective three: To investigate the effects of the difference in global warming.

Research Question three: what are the effects of the difference in global warming?

Keywords: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA).

	Strongly Disagree (SD)%	Disagree (D)%	Neutral (N)%	Agree (A)%	Strongly Agree (SA)%	Mean	Std. Dev.
Electricity supply in my area is regulated and helps to reduce heat	0 0%	5 4.7%	21 19.8%	33 31.1%	41 38.7%	4.10	0.905
All electrical appliances in my household are fit for power supplied by the electricity company	1 0.9%	2 1.9%	24 22.6%	39 36.8%	33 31.1%	4.02	0.869
Energy sector lacks implementation of energy efficiency policy	1 0.9%	3 2.8%	22 20.8%	43 40.6%	31 29.2%	4.00	0.865
High energy consumption affects environment in the long run	0	2	22	26	30	4.04	0.777

	0%	1.9%	20.8%	43.4%	28.3%		
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Table 4.2.3: Respondents perceptions on electricity and global warming

Table 4.2.3 shows results of the descriptive statistics of opinions of respondents on electricity usage and its impact on global warming in Nigeria and the world as a whole. The analysis in the table reveals that 71 (69.8%) of the respondents agreed that electricity supply in their area is regulated and controls heat generated in the area while 21 (19.8%) remained neutral to the statement and 5 (4.7%) respondents disagreed. 72 (67.9%) agreed that electrical appliances in their households are fit for power supplied by the electricity company. 74 (69.8%) respondents indicated that Energy sector lacks implementation of energy efficiency policy and 22 (20.8%) remained neutral to the statement. 56 (71.7%) respondents strongly agreed and agreed that High energy consumption affects environment in the long run.

Table 4.3.2 also shows that the average mean of respondents' perception for electricity supply and its impact on global warming are correlated with items were ranging from 4.00 to 4.10 with standard deviation range from 0.905 to 0.865. The high value indicates a strong agreement among respondents on electricity usage, heat generation and environmental effects.

4.2.4 Restatement of Objective and Research Question four

Research Objective four: situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings

Research Question four: What is the situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings?

Keywords: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA).

	Strongly	Disagree	Neutral	Agree	Strongly	Mean	Std.
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	Disagree (SD)%	(D)%	(N)%	(A)%	Agree (SA)%		Dev.
Energy supply and demand is a necessity	0 0%	5 4.7%	30 28.3%	51 48.1%	14 13.2%	3.74	0.760
Households lack environmental concern and knowledge about energy efficiency	1 0.9%	4 3.8%	20 18.9%	40 37.7%	35 33.0%	4.04	0.898
Level of education determines energy saving attitude in households	2 1.9%	2 1.9%	18 17.0%	35 33.0%	43 40.6%	4.15	0.925
Energy efficiency awareness should be made and raised	0 0%	2 1.9%	27 25.5%	22 20.8%	49 46.2%	4.18	0.903

Table 4.2.4: Respondents perceptions on situational circumstances on electricity supply.

Table 4.2.4 shows the descriptive analysis of perceptions placed by respondents on situational circumstances on electricity supply variable items. The analysis in the table reveals that 51 (48.1%) of the respondents agreed that Energy supply and demand is a necessity for both the receiver and the giver and 14 (13.2%) respondents strongly agreed to the statement. 26 (52.0%) strongly agreed that Households lack environmental concern and knowledge about energy efficiency while 75 (70.7%) strongly agreed and agreed that energy sufficiency is one of the reasons for high price and charges 20 (18.9%) respondents remained neutral and 4 (3.8%)

disagreed to the statement. Also, 43 (40.6%) respondents strongly agree that Level of education determines energy saving attitude in households and 35 (33.0%) respondents agreed to the statement. 49 (46.2%) respondents strongly agree that Energy efficiency awareness should be made and raised. The results prove that people need to be in the know about their surrounding and how their level of energy consumption is rated in order to control heat generation and create energy saving policies.

Table 4.2.4 shows that the average mean of respondents' perception for situational circumstances on electricity supply variable items were ranging from 4.18 to 3.74, with standard deviations ranges from 0.925 to 0.760. The high value indicates a strong agreement among respondents on government policies on electricity supply and charges variable items.

4.3 Restatement of hypothesis

4.4.1 Restatement of Hypothesis one: There is no significant relationship between the rate of energy consumption in Nigeria.

To test the hypothesis, the simple linear regression analysis was used. The results are presented in Table 4.4.1

Table 4.4.1: Moderated Simple Regression Model Summary for Method of Financing

Model	R	R square	Sig
1	.007	.000	0.01

ANOVA

Model	Sum of	Df	Mean square	F	Sig.

	square				
Regression	0.006	1	0.006	0.004	0.01
Residual	122.154	98	1.246		
Total	122.160	99			

a. Dependent Variable: totalRO

b. Predictors: (constant), totalMF

Coefficients

Model	Unstandardized coefficient		Standardized coefficient	t	Sig.
	B	std.error	Beta		
(constant)	6.238	0.638		9.771	0.000
totalMF	0.003	0.039	0.007	0.067	0.01

From Table 4.4.1 it is indicated that there is a significant effect between method of energy consumption and prices ($r = 0.007$). The effect is statistically significant (Sig. = 0.01) at 0.05 level of significance. This implies that electricity consumptions have impact on the charges placed on them by the electricity company. This further implies that electricity consumption is significantly and positively related to electricity charges from Ikeja electricity company in Lagos, Nigeria, at the five percent level of significance. The null hypothesis H01 which states that “there is no significant relationship between the rate of energy consumption in Nigeria” was rejected.

4.4.2 Restatement of Hypothesis two: There is no significant the effects of excessive energy consumption and its causes in Nigeria.

To test the hypothesis, the simple linear regression analysis was used. The results are presented in Table 4.4.2

Table 4.4.2: Moderated Simple Regression Model Summary for retained earnings

Model	R	R square	Sig.
1	0.021	0.000	0.001

ANOVA

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	0.052	1	0.052	0.042	0.001
Residual	122.108	98	1.246		
Total	122.160	99			

a. Dependent variable: totalRO

b. Predictors: (constant) totalRE

Coefficient

Model	Unstandardized coefficient		Standardized coefficient	t	Sig.
	B	std. error	Beta		
(constant)	6.156	0.614		10.024	0.000
totalRE	0.008	0.037	0.021	0.205	0.001

a. Dependent Variable: totalRE

From Table 4.4.2 it is indicated that there is a significant the effects of excessive energy consumption and its causes in Nigeria ($r = 0.021$). The effect is statistically significant (Sig. = 0.01) at 0.05 level of significance. This implies that the level of excessive energy usage which helps to determine the level of usage and charges placed on energy consumption. This further

implies that electricity usage is significantly and positively related to consequences encountered like hike in prices of electricity charged in Nigeria, at the five percent level of significance. The null hypothesis H01 which states that “there is no significant effects of excessive energy consumption and its causes in Nigeria” was rejected.

4.4.3 Restatement of Hypothesis three: There is no significant effects of the difference in global warming.

To test the hypothesis, the simple linear regression analysis was used. The results are presented in Table 4.4.3

Table 4.4.3: Moderated Simple Regression Model Summary for profitability

Model	R	R square	Sig.
1	0.017	0.000	0.000

ANOVA

Model	Sum of squares	Df	Mean of squares	F	Sig
Regression	0.036	1	0.036	0.029	0.000
Residual	122.045	97	1.258		
Total	122.081	98			

a. Dependent variable: totalRO

b. Predictors: (constant), totalPT

Coefficients

Model	Unstandardized coefficient		Standardized coefficient	t	Sig.
	B	std. error	Beta		
(constant)	6.394	0.666		9.606	0.000
totalEL	0.007	0.041	-.017	-1.69	0.000

a. Dependent variable: totalPT

From Table 4.4.3 it is indicated that there is a significant effect of the difference in global warming ($r = 0.017$). The effect is statistically significant (Sig. = 0.00) at 0.05 level of significance. This implies that the level of electricity usage helps to regulate heat transference whether at a reduced or high rate. This further implies that electricity usage is significantly and positively related to heat generation, at the five percent level of significance. The null hypothesis H_0 which states that “there is no significant effects of the difference in global warming” was rejected.

4.4.4 Restatement of Hypothesis four: There is no significant effect on situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings.

To test the hypothesis, the simple linear regression analysis was used. The results are presented in Table 4.4.4

Table 4.4.4: Moderated Simple Regression Model Summary for Return on Investment

Model	R	R square	Sig.
1	0.025	0.001	0.001

ANOVA

Model	Sum of squares	Df	Mean of squares	F	Sig
Regression	0.079	1	0.079	0.064	0.001
Residual	122.081	98	1.246		
Total	122.160	99			

c. Dependent variable: totalRO

d. Predictors: (constant), totalROI

Coefficients

Model	Unstandardized coefficient		Standardized coefficient Beta	t	Sig.
	B	std. error			
(constant)	6.095	0.740		8.235	0.000
totalEL	0.011	0.045	0.025	0.252	0.001

b. Dependent variable: totalROI

From Table 4.4.4 it is indicated that there is a significant effect on situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings ($r = 0.025$). The effect is statistically significant (Sig. = 0.01) at 0.05 level of significance. This implies that energy consumption equipment determines the increase in energy usage and consumption. This further implies that the type of energy consumption equipment is significantly and positively related to energy consumption rate, at the five percent level of significance. The null hypothesis H01 which states that “there is no significant effect on situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings” was rejected.

4.5 Summary of Research Hypothesis and Test Results

Table 5.2: Summary of Research Findings

Research Objectives	Research Hypothesis	Decision Results
<p>Objective 1:</p> <p>To identify energy consumption in Nigeria.</p>	<p>Hypothesis 1:</p> <p>there is no significant relationship between the rate of energy consumption in Nigeria.</p>	<p>Null Hypothesis</p> <p>Rejected</p>
<p>Objective 2:</p> <p>To examine difference in energy consumption and its causes in Nigeria.</p>	<p>Hypothesis 2:</p> <p>there is no significant effects of excessive energy consumption and its causes in Nigeria.</p>	<p>Null Hypothesis</p> <p>Rejected</p>
<p>Objective 3:</p> <p>To investigate the effects of the difference in global warming.</p>	<p>Hypothesis 3:</p> <p>there is no significant effects of the difference in global warming`.</p>	<p>Null Hypothesis</p> <p>Rejected</p>
<p>Objective 4:</p> <p>situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings.</p>	<p>Hypothesis 4:</p> <p>there is no significant effect on situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings.</p>	<p>Null Hypothesis</p> <p>Rejected</p>

CHAPTER FIVE

5.1 Introduction

This chapter summarizes the previous sections of the study summarized to drive home the research objectives, methodology and findings. Emphasis was made on linking results to theory/literature and identifying any similarities/differences in the research. A general recap of the result of analysis was done in this chapter.

5.2 Summary

The onset of this study started with the explanation of energy consumption in buildings and its situation in the Nigerian context. The chapter one of the research project started with an introduction to the topic while analysing each variable as explained by the Department for Petroleum Resources (Department of Petroleum Resource, 2007) detailed a measure of oil of over 78% of the absolute energy utilization in Nigeria. In the current quandary as a country, clearly relying essentially upon non-renewable energy source (petrol) isn't sufficient to meet the energy needs of the country. Since Nigeria is honoured with bountiful sustainable power assets like hydroelectric, sun oriented, wind, flowing, and biomass, there is a need to bridle these assets and outline another energy future for Nigeria. In such manner, the public authority has an obligation to make sustainable power accessible and moderate to all.

The research aims and objectives were explained and they mostly focused on energy consumption, situational causes of energy consumption, global warming and high energy usage with prices in Nigeria. The research significance stated that the research will enlighten other researchers on the subject matter and also be a secondary source of data for further research work. Research structure was listed and a concluding part for the chapter was not left out.

In chapter two, the research work delved further into relevant literatures that are not exhaustive.

In chapter three, the researcher described the methodology used in attaining the study objectives, how the research hypotheses were empirically determined and the research design adopted, research philosophy, the study population and sample frame and its characteristics. Types and sources of data were also identified and procedure in testing these hypotheses and accomplishing the study objectives were defined. The research instrument, questionnaire design, methods of data collection and analysis, and presentation of data were shown.

Chapter four presents the results and discussion of the study findings. The chapter begins with descriptive findings of response rate. Descriptive analysis was done on each of the study variables followed by the findings from the descriptive statistics. Inferential statistics including regression analysis was then done. The chapter ends with the discussion of the study findings. The Statistical Package for Social Sciences (SPSS) version 21 was used to process the data to get inferential results. Tables were also used to present the summarized findings.

Chapter five summarizes all chapters of the study, while chapter six contains the conclusion from findings and recommendations were also summarized to drive home the research objectives, methodology, findings, recommendations, contributions to knowledge, limitation of the study, implication of finding and suggestions for further studies.

5.3 Conclusion

The dissertation had four research objectives of which each of them shall be analysed in order to form a basis for conclusion for the project. from the data analysis and findings, the following conclusions can be made empirically on each of the objectives;

The results indicate that there is a wide agreement among the respondents on energy consumption approach based on the five-point Likert-type scale in the questionnaire. The findings also revealed that the most agreed that energy consumption in Nigeria has been

effectively managed while 20 that is, 18.9% remained neutral to the statement and 5 respondents disagreed and strongly disagreed making up 4.7%. 75 (70.7%) of the respondents concur that energy should be effectively and efficiently used but not minimised. That means energy consumption in Nigeria is based on income and electrical capacitance used in the household. 20 respondents (18.9%) remain neutral to this statement and 5 (4.7%) respondents disagree and strongly disagree with the statement while 71 (67%) respondents agreed and strongly agreed that energy prices in the future may rise due to the unprecedented nature of the power sector 24 (22.6%) respondents remaining neutral to the statement and 5 (4.7%) respondents disagree and strongly disagree to the statement and 78 (73.6%) respondents strongly agreed and agreed that energy prices are on the high side and it places restriction on the way individuals make use of it in their households 18 (17.0%) respondents remaining neutral to the statement and 4 (3.8%) respondents strongly disagree and disagree to the statement. This further implies that there is a significant effect between method of energy consumption and prices ($r = 0.007$). The effect is statistically significant (Sig. = 0.01) at 0.05 level of significance. This implies that electricity consumptions have impact on the charges placed on them by the electricity company. This further implies that electricity consumption is significantly and positively related to electricity charges from Ikeja electricity company in Lagos, Nigeria, at the five percent level of significance. The null hypothesis H01 which states that “there is no significant relationship between the rate of energy consumption in Nigeria” was rejected.

The most agreed opinion on differences in energy consumption is that energy consumption and the charges are not the same. 22 (20.8%) agree to the statement while 27 (25.5%) maintained neutrality with the statement and 2 (1.9%) disagreed with the statement. 76 (71.7%) respondents also strongly agree and agree to using more of artificial electricity supply in their households like gas and all while 17 (16.0%) respondents remained neutral, 7 (6.6%) disagreed with the statement. And 73 (68.9%) respondents agree to the opinion that energy providers are not

considerate with the supply and charges on electricity and 21 (19.8%) respondents remained neutral to the statement while 79 (74.5%) respondents strongly agree and agree that energy saving bulbs save more energy in households and reduce heat and 5 (4.7%) respondents disagreed with the statement while 16 (15.1%) respondents remained neutral.

The high value indicates a strong agreement among respondents on electricity and global warming variable items. The result also indicated that agreed that electricity supply in their area is regulated and controls heat generated in the area while 21 (19.8%) remained neutral to the statement and 5 (4.7%) respondents disagreed. 72 (67.9%) agreed that electrical appliances in their households are fit for power supplied by the electricity company. 74 (69.8%) respondents indicated that Energy sector lacks implementation of energy efficiency policy and 22 (20.8%) remained neutral to the statement. 56 (71.7%) respondents strongly agreed and agreed that High energy consumption affects environment in the long run. The effect is statistically significant (Sig. = 0.00) at 0.05 level of significance. This implies that the level of electricity usage helps to regulate heat transference whether at a reduced or high rate. This further implies that electricity usage is significantly and positively related to heat generation, at the five percent level of significance. The null hypothesis H01 which states that “there is no significant effects of the difference in global warming” was rejected.

The high value indicates a strong agreement among respondents that Energy supply and demand is a necessity for both the receiver and the giver and 14 (13.2%) respondents strongly agreed to the statement. 26 (52.0%) strongly agreed that Households lack environmental concern and knowledge about energy efficiency while 75 (70.7%) strongly agreed and agreed that energy sufficiency is one of the reasons for high price and charges 20 (18.9%) respondents remained neutral and 4 (3.8%) disagreed to the statement. Also, 43 (40.6%) respondents strongly agree that Level of education determines energy saving attitude in households and 35 (33.0%)

respondents agreed to the statement. 49 (46.2%) respondents strongly agree that Energy efficiency awareness should be made and raised. The results prove that people need to be in the know about their surrounding and how their level of energy consumption is rated in order to control heat generation and create energy saving policies.

The effect is statistically significant (Sig. = 0.01) at 0.05 level of significance. This implies that energy consumption equipment determines the increase in energy usage and consumption. This further implies that the type of energy consumption equipment is significantly and positively related to energy consumption rate, at the five percent level of significance. The null hypothesis H01 which states that “there is no significant effect on situational circumstance that have led to the integration of energy consuming equipment and appliances in buildings” was rejected

5.4 Recommendations

Having conducted a careful examination of data gotten and concluding, the following suggestions are hereby given based on review of literary texts, empirical analysis and analysis of data;

- Taking a good look at rate of electricity consumption, individuals need to learn and be educated on electricity consumption in order to control heat generation.
- There should be constant and continuous regulation of electricity policies that will guide both supply and demand for electricity in the country.
- Energy saving bulbs should be encouraged in order to save electricity usage in buildings.
- Electricity sectors need to regulate electricity price as this is the concerns of most Nigerians
- There should be monthly allocation of electricity to households in order to control their usage

- The government and electricity sectors need to come together and ensure implementation of energy efficiency policy
- Energy efficiency awareness should be made and raised in all areas of the country in order to contribute to the control of global warming
- Electricity prices should be regulated such that it doesn't become a bottleneck for users

5.5 Research limitation and further research

No matter how great the research turned out, there were certain obstacles that slightly could have caused hinderance but the agenda of the research must come to play. Having to get a sample profile was difficult as there are different households in almost every part of Lagos state with respect to Ikeja as the case used was Ikeja Electricity company and the participants need to be specific, same as the sample size, initially the plan was to go along with 50 respondents but in order to get a significance in the study, the respondents' population was raised to 100. Collecting data from respondents was a bit tardy as a result of the COVID 19 pandemic, it was impossible to conduct interviews or face to face data collection hence the use of questionnaires. The questionnaires were administered via google forms and it took a lot of persuasion to make people open the links to fill out the forms. Time constraint was also a factor to be considered in the dissertation period having to successfully putting together a comprehensive research in such time and economic condition.

5.6 Areas for Further Research

Future researchers should also conduct similar study in other sectors, such as artificial electricity providers, communications sectors and fintech companies who can make payment seamless. Future researchers should explore the use of secondary data as against primary data for similar

study. This will further assist to assess the influence of electricity usage on environmental policies and effects, control of electricity usage to control heat generation, growth and sustainability of electricity sector as a whole. Similar studies will also be of value to the electricity sectors in the country as the sectors needs to improve and be of high standard in terms of serviceability and charges.

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APPENDIX

Dear Respondent,

Kindly answer to the best of your knowledge.

Section A

Age group – 20-30 () 31-40 () 41-50 () 51 and above ()

Highest Level of Education – PHD () Masters () B.sc / HND () ND () O level ()

Gender – Female () Male ()

Work experience – 1-5 years () 6-10 years () 11-15 years () 16 year sand above ().

S/N	CHARACTERISTICS		URBAN	PERI- URBAN	RURAL
1	Type of Housing Unit	Detached			
		Traditional			
		Blocks of Flat			

		Tenement			
	Tenure Status				
		Owned			
		Rented			
		Others			
	Number of rooms				
		1			
		2-4			
		More than 5			
	Occupation of Household Head				
		Trading			
		Artisan			
		Civil Servant			
		Private Corporation			
		NGOs			
		Others			
	Household Size	1-2			
		3-4			
		5-6			
		More than 7			
	Estimated Household Monthly Income				
		Below N15,000			

		N15,000– N50,000			
		N51,000– N100,000			
		Above N100,000			

Section B

Using the scale below, please answer the statement below by ticking the options that best satisfy your response to the following statements as it relates with your experiences and practices towards electricity consumption in households. The scaling is SA - Strongly Agree, A - Agree, N – Neutral, D - Disagree SD - Strongly Disagree. The scaling is in ordinal form where 5 points implies highest score and 1 point implies lowest score.

S/N	Attributes	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I give a lot to save energy in my home					
2	I turn off all electrical appliances and sockets before going to bed					
3	Energy prices in the future might be on the rise and affect buildings					
4	Energy prices are on the high side					

	which affects the rate is usage					
5	Consumption of energy in the households is not enough compared to what is being charged					
6	I use more of gas than energy in my household					
7	Electricity companies are not considerate with fees and services offered to households					
8	Energy saving bulbs save more energy than they consume for households					
9	Electricity supply in my area is regulated and helps to reduce heat					
10	All electrical appliances in my household are fit for power supplied by the electricity company					
11	Energy sector lacks implementation of energy					

	efficiency policy					
12	High energy consumption affects environment in the long run					
13	Energy supply and demand is a necessity					
13	Households lack environmental concern and knowledge about energy efficiency					
14	Level of education determines energy saving attitude in households					
15	Energy efficiency awareness should be made and raised					
16	Government should carefully monitor all electricity policies for improvement					

Thank you.