Effect of Power Supply on the Socio-Economic Development of South East, Nigeria

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Abstract

*The study examined the effect of power supply on the socio-economic development of South East, Nigeria. The research design utilized was descriptive research approach. The population of the study was 10,950,771**.** Data collected for the study were presented using descriptive statistics, The study revealed that Power supply does have a significant negative effect on cost of production in South East, Nigeria, (this is where the t-value is -796.442, and P-value is 0.00), that Power supply had a significant negative effect on job creation in South East, Nigeria (this is where t-value is -128.604, and P-value is 0.00) and that Power supply has a significant negative effect on job creation in South East, Nigeria (based on the t-value of -295.988, and P-value of 0.00). Major findings revealed that power supply significantly influences the economic development of South East Nigeria, several key implications arise. Reliable electricity is foundational for industrial productivity, influencing cost efficiencies and competitive market pricing. Conversely, frequent outages and reliance on costly alternatives like generators inflate operational expenses, hampering business growth and investment attractivenes. It is recommended among others to mitigate the impact of power supply on production costs in South East Nigeria, policymakers should prioritize infrastructure development. This includes enhancing grid reliability, promoting renewable energy sources, and subsidizing energy-efficient technologies.*

Journal of Policy and Development Studies (JPDS)

Vol. 16 Issue 2 (2024)
ISSN(p) 1597-9385
ISSN (e) 2814-1091
Home page
htttps://www.ajol.info/index.php/jpds

ARTICLE INFO:
Keyword*:*
Power Supply, Socio-economic development, cost of production, healthcare services

Article History
Received:
25th July 2024
Accepted:
30th September 2024
DOI:
https://dx.doi.org/10.4314/jpds.v16i2.2

1. Introduction

Power supply plays a crucial role in the socio-economic development of a nation, acting as a cornerstone for industrial growth, technological advancement, and overall economic progress. Adequate and reliable access to electricity is a fundamental requirement for various sectors, including manufacturing, agriculture, healthcare, education, and communication. As stated by the International Energy Agency (IEA), "Access to affordable, reliable, sustainable, and modern energy is the cornerstone of economic development." (IEA, 2020). In the manufacturing sector, uninterrupted power supply is essential for operating machinery, enhancing productivity, and fostering innovation. Furthermore, electricity is indispensable for powering irrigation systems in agriculture, leading to increased crop yields and food security. Additionally, in the healthcare sector, electricity is vital for running medical equipment, refrigeration for vaccines and medicines, and providing adequate lighting for surgeries and patient care. Furthermore, reliable electricity access is crucial for expanding educational opportunities through e-learning platforms and improving communication networks, thereby facilitating information exchange and connectivity. According to the World Bank, "Electricity access is essential for achieving development goals related to poverty reduction, education, and healthcare." (World Bank, 2019). Hence, the availability of consistent and affordable power supply is not just a matter of convenience but a prerequisite for socio-economic development, impacting on various facets of a nation's economy and society.

The current state of power sector supply in Nigeria has profound implications for socio-economic development, acting as a significant bottleneck to the growth and competitiveness of the industrial sector. The persistent challenges of inadequate and unreliable electricity supply have hindered the optimal functioning of industries, impacting on their productivity and global competitiveness. According to the International Energy Agency (IEA), Nigeria faces severe electricity shortages, with many industries experiencing frequent power outages that disrupt operations and hinder production processes (IEA, 2021). These disruptions not only lead to increased operational costs but also discourage potential investors from establishing or expanding industrial facilities in the country. The unreliability of power supply is a major constraint on the overall development of the industrial sector in Nigeria (World Bank, 2019). The current power sector supply situation in Nigeria underscores the urgent need for comprehensive reforms to address infrastructure deficiencies, improve efficiency, and attract private investment. The World Bank emphasizes that sustained efforts to enhance the reliability of electricity supply are crucial for creating an enabling environment for industrialization (World Bank, 2019).

The state of power supply in South East, Nigeria, has had profound effects on various aspects of economic and social development, including industrial development, job creation, healthcare services, business growth and investment, and the cost of living. Persistent challenges such as frequent power outages, inadequate infrastructure, and high electricity tariffs have hindered progress in these areas. In terms of industrial development, unreliable power supply disrupts production processes, increases operational costs, and undermines the competitiveness of industries in the region (Onyido & Aroh, 2020). This hampers the growth of existing industries and discourages potential investors from establishing new ventures, thereby limiting job creation opportunities (Amadi *et al.*, 2021). The healthcare sector in South East Nigeria is also significantly affected by erratic power supply. Hospitals and healthcare facilities rely on electricity to power medical equipment, refrigeration systems, and lighting for surgeries and patient care. The lack of consistent power supply compromises the quality of

healthcare services, leading to challenges in patient treatment and healthcare delivery (Ekwueme *et al*., 2019). Furthermore, unreliable electricity supply adversely impacts business growth and investment in the region. Businesses require stable power supply to operate efficiently, reduce costs, and attract investments. The unreliable power infrastructure undermines investor confidence, hindering economic growth and development (Okafor et al., 2020). Moreover, the high cost of alternative power sources, such as generators and solar panels, further exacerbates the cost of living for residents in South East Nigeria (Eneh *et al*., 2021). Households incur additional expenses to cope with unreliable electricity supply, leading to increased living costs and reduced disposable income.

Despite the significant impact of power supply on economic development, there exists a noticeable gap in empirical literature specifically focusing on the effect of power supply on the socio-economic development of the South East region of Nigeria. While studies have been conducted on the broader Nigerian context, there is a lack of comprehensive research that delves into the unique challenges and dynamics of the South East region. Existing literature often provides insights into the general relationship between power supply and economic development in Nigeria as a whole (Amadi *et al.*, 2021; Onyido & Aroh, 2020). However, the South East region has distinct characteristics, including its industrial landscape, demographic composition, and historical context, which may influence the relationship between power supply and socio-economic outcomes differently compared to other regions. Therefore, a comprehensive study focusing specifically on the South East region is warranted to fill this gap in the literature. Such a study would provide valuable insights into the specific challenges and opportunities related to power supply and its impact on industrial development, job creation, healthcare services, business growth, investment, and the cost of living in the South East region of Nigeria.

1.1 Statement of the Problem

Reliable power supply is an essential catalyst for socio-economic development in any nation. It serves as the backbone of industrialization, innovation, and overall economic growth. Industries require uninterrupted electricity to operate machinery, enhance productivity, and remain competitive in the global market. Moreover, reliable power supply fosters job creation by stimulating investment and entrepreneurship across various sectors. It enables the expansion of small and medium-sized enterprises (SMEs) and encourages the adoption of technology, leading to increased efficiency and profitability. Furthermore, reliable electricity access is crucial for improving healthcare services, education, and communication networks. Hospitals rely on electricity to power medical equipment, refrigeration systems, and lighting, while schools need it for educational tools and connectivity. Access to reliable power also enhances digital inclusion and facilitates e-learning initiatives, contributing to human capital development. In conclusion, reliable power supply is not just a matter of convenience; it is a fundamental requirement for driving economic progress, reducing poverty, and improving the quality of life for citizens.

In Nigeria, the poor electricity supply is perhaps the greatest infrastructural menace confronting the citizens. The typical Nigerian firm experiences a power failure or voltage fluctuation about seven times per week or more, with each lasting for about two hours without the benefit of prior warning. Despite massive investment in power facilities, Nigerian electricity supply has remained very unreliable, a situation that drastically affects all Nigerian manufacturing sub-sectors efforts to obtain the required power input for growth and development. Furthermore, in Nigeria, electricity supply has remained erratic and inadequate as power outages, low shed,

and rationing becomes the order of the day; hence many S.M.E.s and high-income households have resorted to purchasing private generators at prohibitive cost (Gambo, 2010). The forgoing issue points out that, poor electricity supply or lack of quality and available power supply to the public and the business enterprises is a hindrance to economic development. It has the tendency of retarding economic growth and development, as well as the economic welfare of the people. Poor power supply therefore can be said to have the potency for affecting business activities in many ways. It affects firm's productivities such as causing many inputs to be idle when there is power outage. Adding up to this problem is that power outages result in huge business loss and retard SMEs activities. Based on this backdrop, the study sought to determine the effect of power supply on the socio-economic development of South East, Nigeria.

1.2 Objectives of the Study

The broad objective of the study was to Examine the effect of power supply on cost of production in South East, Nigeria;

i. Determine the effect of power supply on job creation in South East, Nigeria
ii. Analyse the effect of power supply on the healthcare services in South East, Nigeria.

1.3 Hypotheses

The following Research Hypotheses guided the Study.

i. Power supply does not have an effect on cost of production in South East, Nigeria.
ii. Power supply has no significant effect on Job creation in South East, Nigeria.
iii. Power supply does not affect the healthcare services in South East, Nigeria.

2. Review of Related Literature

Conceptual Review

Power/ Energy Supply

The concept of power supply refers to the provision of electrical energy to meet the demands of various consumers, encompassing residential, commercial, and industrial sectors. The modern power supply landscape incorporates diverse energy sources, such as fossil fuels, renewables, and nuclear power, reflecting a complex interplay of technological, economic, and environmental considerations (Wood and Wollenberg, 2012). The reliability of power supply is paramount for societal functions and economic activities. Robust power infrastructure, efficient grid management, and advanced technologies contribute to minimizing disruptions and ensuring a stable energy supply. Moreover, the transition towards smart grids and decentralized energy systems enhances the resilience and flexibility of power supply networks (Farhangi, 2010).

The concept of power supply is fundamental to modern society, underpinning virtually every aspect of daily life, from household activities to industrial production and healthcare services. Power supply refers to the provision of electricity, the lifeblood of modern civilization, which enables lighting, heating, cooling, communication, transportation, and countless other essential functions (Olaoye**,** 2019). It encompasses the generation, transmission, and distribution of electrical energy from primary energy sources to end-users, encompassing a complex network of power plants, substations, transformers, and transmission lines. Reliable and affordable power supply is essential for economic development, driving economic growth, industrialization, and technological advancement. Access to electricity enhances productivity, stimulates innovation, and improves living standards, enabling individuals and communities to pursue educational, economic, and social opportunities. Moreover, power supply plays a crucial role in addressing global challenges such as poverty alleviation, healthcare delivery, and environmental sustainability (Sinko, 2017).

Socio-economic Development

Socio-economic development refers to sustained concerted efforts that aim to improve the economic well-being and quality of life for a community, region, or country. It encompasses a broad range of activities and policies designed to promote growth, productivity, raising the standards of living, reducing poverty and fostering social progress. Central to economic development are initiatives to enhance infrastructure, promote technological innovation and attract investment. These efforts often focus on diversifying the economy, improving educational and healthcare outcomes and ensuring sustainable use of natural resources. Economic development strategies vary widely depending on local circumstances, ranging from induistrialisation and trade policies to entrepreneurship support and sustainable development initiatives.

Ultimately, Socio-economic development aims for inclusive growth that benefits all segments of society, contributing to overall stability, resilience, and advancement in social and economic activities. Efforts to promote socioeconomic development require collaboration and partnership among governments, civil society organizations, businesses, and international stakeholders. By investing in human capital development, infrastructure, and institutions, policymakers can create an enabling environment for economic growth, social inclusion, and environmental stewardship.

Cost of Production

Cost of production refers to the total expenses incurred by a business or producer in manufacturing a product or providing a service. It encompasses all direct and indirect costs associated with the production of process, including raw materials, labour wages, utilities, rent, depreciation of equipment, and administrative expenses. Understanding and managing the cost of production is crucial for business to determine pricing strategies, profitability, and efficiency in operations. Costs are classified into variable costs, which fluctuate with production level (e.g. raw materials), and fixed costs, which remain constant regardless of output (e.g. rent). By analyzing these costs, business can calculate their break-even point and makes informed decisions regarding production volumes, resource allocation, and investment in efficiency improvement.

Job Creation

Job creation refers to the process of generating new employment opportunities within an economy, thereby reducing unemployment and providing individuals with means of earning a livelihood. It encompasses various activities undertaken by businesses, governments, and other stakeholders to expand the labor market and increase employment levels. Job creation is essential for promoting economic growth, reducing poverty, and fostering social inclusion (Oliver, 2020). It contributes to higher incomes, improved living standards, and enhanced quality of life for individuals and communities.

The concept of job creation is closely linked to factors such as economic development, investment, entrepreneurship, and labor market dynamics. Sustainable job creation requires conducive macroeconomic policies, supportive regulatory frameworks, investment in human capital development, and promotion of innovation and entrepreneurship. Moreover, addressing structural barriers such as skills mismatches, labor market rigidities, and unequal access to opportunities is crucial for fostering inclusive job creation (Lima, 2017).

Healthcare Services

Healthcare services encompass a wide range of activities aimed at promoting, maintaining, and restoring health, as well as preventing and treating illness and injury. These services are delivered by healthcare professionals and organizations across various settings, including hospitals, clinics, community health centers, and home care facilities (Ahmed, 2016). The concept of healthcare services encompasses not only medical treatment but also preventive care, health education, and support services to address the physical, mental, and social needs of individuals and communities.

Access to quality healthcare services is a fundamental human right and a key determinant of health outcomes and well-being. Healthcare services play a crucial role in improving health outcomes, reducing morbidity and mortality rates, and enhancing overall quality of life. Moreover, healthcare services contribute to economic development by promoting a healthy and productive workforce, reducing healthcare costs, and fostering innovation and technological advancement in the healthcare sector (Disasi**,** 2019).

Impact of Electricity Power on Economic Growth in Nigeria

Electricity is the run of electrical charge or electrical power through cable; it's a secondary source of energy produced from the conversion of other energy sources such as fossils fuels, solar energy, nuclear power, coil and other natural sources of energy which are called primary sources (International Energy Agency [IEA], 2016). Electricity consumption patterns in the world, shows that Nigeria and indeed African countries have the lowest rates of consumption. The country suffered from inadequate supply of usable electricity power due to the rapidly increasing demand resulted from the fast-growing number of populations which is a typical nature of developing and indeed African countries. Electricity power is not freely obtainable in nature; therefore, it must be produced by transforming other major sources of energy; mainly from renewable energy, nuclear energy and fossil fuels. However, fossil fuels remained the leading source for electricity generation in the world and indeed Nigeria. In 2020, fossil fuels generated 61% of the world's electricity power used by consumers, down from 66% in 2015 (Energy Information Administration [EIA],2020).

Nigeria generates electricity through the thermal and hydro energy sources. However, the major source of electricity generation in the country comes from fossil fuels especially gas which accounted for about 81% with the remaining percentages of electricity is generated from hydropower and other sources of energy. Nigeria's average electricity power generation is 4,000 Megawatts (MW) though, sometimes the generation hit the 5,000MW mark, with usually an average of 3,000MW being distributed to electricity consumers across the country. The fluctuation in power generation and transmission was largely due to infrastructural deficits in the country's electricity value chain. Stakeholders in the power sector believed that the current electricity power capacity in the country is increasingly inadequate to cater for the power needs of the Nigeria's growing population (Nigerian Electricity Regulatory Commission [NERC], 2020).

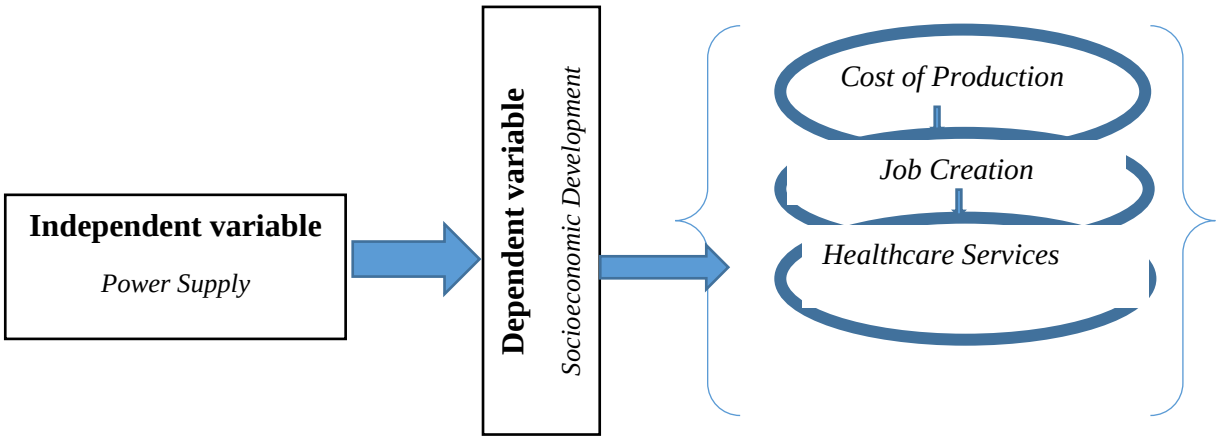
Charles (2021) posits that Nigerian government in its effort to increase electricity power generation and supply and also to ensure a clean energy source, agreed to spend about $120 million in 2016 for the continued construction and completion of Kashimbila Hydropower Dam located in Taraba State of the North Eastern part of the country which is expected to generate around 400 Megawatts of electricity and at the same time to provide portable water supply to communities within the area. Furthermore, Nigerian government recently signed a six-years contract agreement worth 1.15 trillion Naira (equivalent to about $3.8 billion) with Germany's company Siemens for an electrification project aimed at increasing Nigeria's electricity power supply to 25,000 Megawatts by 2023.

The current capacity generation is around 3,600MW which is below the 6,000MW proposed by the government before the end of 2009. This level of capacity is said to decrease sometimes to even below 3000MW owing to maintenance work on some gas pipelines or sudden drop from the national grid (Onuoha, 2010). David and Sylvester (2016) revealed that electricity power play a vital role in socio-economic development, industrial breakthrough, health, education, employment and overall welfare of citizens, efficient electricity power supply as well as its efficient utilization is needed for an economy to completely experience growth and development. In Nigeria, inadequate electricity power for consumption negatively affects the country's economic prosperity, as the two factors are directly related. This calls for the need to strengthen the effectiveness of electricity generation agencies by providing them with proper and latest tools to replace the inadequate and obsolete ones to ensure Nigeria's economic growth.

It shows fluctuations of electricity power with an upward constant trend which indicates its increasing at an increasing rate throughout the study periods while economic growth also shows a constant increasing trend during that period. Example, the figure revealed that in 1981 electricity power consumption in Nigeria was 50.9 kWh but increases to 81.8 kWh in 1982 and maintained a constant trend up to around 1983, after that it falls to 62.0 kWh in 1984 then the trend fluctuated at an increasing trend up to around 2006 where the electricity power stand at 111.7 kWh. The trend maintained a fluctuated increasing trend to 142.7 kWh in 2013, and then maintains an almost constant trend up to 2019. While that of GDP increases from $1.5 billion in 1981 to $4.6 billion in 2019. The GDP figure then increases again from $1.5 billion in 1999 to $4.6 billion in 2016 then slightly decrease to $4.5 in 2017 billion, and later return to $4.6 billion again in 2019. In a nutshell, the two variables have a positive relationship during the period of the study. Meaning that, uninterrupted power supply will bring about greater the productive sectors of the economy thereby contributing to higher economic growth in the country.

The current condition of electricity power sector in Nigeria results to electricity power generation and transmission crisis in which industrial growth and socioeconomic development paces are kept below the potential of the economy. Limitations in the Nigerian electricity power sector constrained the country's economic growth; World Bank (2021) revealed that, 85 million Nigerians don't have access to grid electricity; this represents 43% percent of the country's population and makes them among the nations with the largest energy access deficit in the world. Generation issues, transmission and distribution networks failures as well as water management challenges are well known problems of Nigeria's electricity power sector; together, they confined the sector's productivity and makes it unable to support Nigeria's economy. The lack of reliable electricity power supply is a significant constraint for citizens and business consumption, resulting to annual economic losses estimated at $26.2 billion (₦10.1 trillion) which is equivalent to about 2% of the Gross Domestic Product (GDP). The little megawatts of electricity power generated is not enough to ensure uninterrupted power supply and consumption in the country. Residential sector consumes more of it than the commercial and industrial sectors which are more productive among the sectors of the Nigerian economy. The situation creates problem to the Nigerian economic production activities which subsequently led to massive reduction in the country's economic growth (Oyedepo, 2015).
It is evident that attention of many recent studies mostly focused-on electricity power consumption or energy consumption only thereby neglecting the electricity power generation and supply side. They also applied different techniques of estimation and different time periods, thus having different results. Majority of the studies revealed positive and significant relationship among the variables, such as the study of Adeleke and Titus (2018) who revealed

a positive relationship among the FDI, energy consumption, carbon emission and economic growth in Nigeria. While the study conducted by Dantama et al. in (2012) revealed a negative and insignificant relationship between coal consumption and economic growth. Similarly, some studies revealed mixed result, such as the study conducted on the relationship between energy consumption and economic growth in the Nigeria by Gbadebo and Chinedu (2009). Their result shows the existence of long run positive relationship among energy consumption and real GDP, Further result of their study revealed a negative relationship among the variables when lagged. Therefore, this study considered electricity power generation and supply sides including the already studied consumption side.



Theoretical Framework

This work anchored on Structural Functionalism Structuralism and Modernisation theory.

Structural Functional Structuralism.

The Structural Functional Theory or Functionalism emerged on the ideals of the French sociologist Durkheim (1917), he sees structure in terms of solidarity or as a set of relatively stable and patterned relationships of social units, while function is the consequences of social activities which make for adaptation or adjustment of a given structure or its component parts. It emphasised that the society relates through the various social institutions such as government, law, education, religion, among others, and these working together ensures solidarity and stability. The lives of the people are guided and shaped by social structures which are relatively stable patterns of social behaviour. Each social structure has social functions, or consequences for the operation of society as a whole.

Another important contributor to the structural functional theory is Parson who argued that for a system to achieve functional imperatives, there should be essential conditions in place for the enduring existence of a system, thus, he developed four-function paradigm to achieve equilibrium hence satisfying the needs of the society. These four functions are adaptation, goal attainment, integration and latency or pattern maintenance and tension management. According to him, the society requires the process of socialisation, the internalisation of social values, and the mechanism of social control so that deviance can be checked (Parson, 1951).

The society is a structure with interrelated parts designed to meet the needs of the people in it and same strive to achieve equilibrium as canvassed by structural functional theorists like Durkheim (1997) and Parson (1951) but not all contributions are inherently good or functional for society, thus, there are acts that have consequences which lesson the adaptation or adjustment of the system. Function here is in terms of the positive contribution of a part to the whole, thus, functions are those contributions or consequences that make for the adaptation or

adjustment of a given society. Therefore, for the working of society and its institutions, it is important that all share a set of common values and norms (Merton, 1968).

The structure of the society is different from an organism which can be studied separately from its function. This function involves a structure consisting of a set of relationships among unit entities, the continuity of the structure being maintained by a life-process made up of the activities of the constituent units. Thus, the assumptions states that, there is a necessary condition for survival of a society is a minimal integration of its parts, the concept of function refers to those processes that maintain the necessary integration, and in each society, structural features can be shown to contribute to the maintenance of necessary solidarity. This theory is germane in highlighting the nexus between structural inefficiency, unemployment and security challenges. When a particular structure within the system is inefficient in service delivery, it affects other aspects of the system hence producing negative consequences (Redcliffe-Brown, 1952; Anosike, 2010).
In sum, Functional Structuralism emphasised on individual's contributions, consensus and order which ensures the stability of the society. The theory tries to enhance one's ability to problem solving and assisting greatly in the performance of complex institutions that make up society hence all structures emerge and exist to perform certain functions. This means that structures can be identified according to certain function and the way it is created plays a crucial role in determining how it functions. Thus, structure consists of certain set or pattern of behaviour and the function of a structure determine its behaviour (Parsons,1951; Durkheim, 1997; David, 2015).

By application, this structural functional theory explains the nexus between the erratic power supply and the socio-economic challenges that emerged as a result of the former. From the stand point of the arguments of functionalism, it is established that the failure of the Discos(Distribution Companies in Nigeria) to provide constant power supply led to the closure of companies and other businesses went into extinction because they can no longer afford to fuel their generator and government policy disallow them (particularly the textile industry) from using solar power hence the increasing rate of unemployment and security challenges such as armed robbery, political thuggery, frustration among others. This is clearly because, available evidence shows that there is increasing level of unemployment, poverty and insecurity, poor health service delivery among others (Anosike, 2010). The theory has been criticised for being incapable of explaining change and placed much emphasis on closed system and its hierarchy.

Empirical Review

Aleba, Prinslov and Gawlik (2019) employed descriptive and Bivariate statistics to examine relationship between electricity supply and industrial growth in South Africa (Guateng and North-West Provinces) to establish some findings such as that fluctuation in electricity supply negatively affects employees motivation to work, delay product line deadline, affect telecommunication an profit margins of firms.

Aremu (2019) focused on epileptic electric power generation and supply in Nigeria: causes, impact and solution. The paper observes that a majority of Nigerians now pay excessively for darkness as they experience power outage for an average of 20 hours daily, while their estimated billing has continued to increase astronomically, unabated. This has impacted negatively on the socio-economic development of the country and is currently inciting conflicts between the electricity distribution companies and aggrieved consumers across the country. In

view of the above, the paper identified some factors responsible for this ugly development and highlights some of its effects on Nigeria's economy. Data for the study was obtained through oral interviews with electricity consumers (especially in Ekiti, Osun and Oyo states) and officials of Ibadan and Benin Electricity Distribution Companies; personal observations; group discussion method; and a rigorous library search of related literature. The study employed the descriptive and analytical qualitative methods of historical research to analyse its data. It recommends that electricity supply should be given necessary attention by the government to enable the country harness her rich human and material resources.

Alen (2019) focused on Power Infrastructure Investment and Industrial Expansion Guangzhou, China while employing Input-output analysis and industrial survey. The study adopted Computable General Equilibrium (CGE) modeling. The finding revealed that investment in power infrastructure projects, such as electricity generation capacity expansion and transmission network upgrades, stimulates industrial expansion and supply chain development. Power sector investments generate multiplier effects, driving demand for intermediate inputs, labor, and capital goods across industries. The study concluded that Power infrastructure investment is a key driver of industrial development and economic growth, with spillover effects on employment creation and income generation. The study recommended that Scale up investments in power infrastructure projects and prioritize energy access in industrial policy and planning frameworks to accelerate industrialization and promote inclusive growth.

Kim (2020) conducted a study on Energy Access and Industrialization in Jakarta, Indonesia using the Firm-level survey and industrialization analysis. Statistical Tool used was Structural equation modeling. It found that limited access to reliable electricity inhibits industrialization efforts, constraining manufacturing sector growth, technological adoption, and value chain integration. Energy access constraints exacerbate industrial productivity gaps, inhibiting economic transformation and job creation. The study concluded that Energy access is a critical enabler of industrialization and economic development, influencing firms' competitiveness, innovation capacity, and market performance. The recommended that government should Expand energy access initiatives and prioritize electricity infrastructure development to support industrialization strategies and stimulate inclusive growth.

Rodriguez (2020) conducted a study on Power Supply Reliability and Industrial Productivity in São Paulo, Brazil. Firm-level survey and production function analysis was adopted as the methodology while using Statistical Tool based on Total Factor Productivity (TFP) estimation. The finding revealed that industrial firms operating in areas with reliable power supply demonstrate higher levels of productivity and efficiency compared to those facing frequent power outages. Power supply reliability positively impacts production processes, equipment utilization, and output quality, leading to cost savings and competitive advantages. The study concluded that Power supply reliability is a critical determinant of industrial productivity and competitiveness, influencing firms' ability to meet market demands and sustain growth. The study recommended that government Strengthen power infrastructure resilience and energy access in industrial zones to support productivity enhancement and industrial upgrading efforts.

Alo and Adeyemo (2021) conducted a study on Distorted electricity supply and the profitability of Small and Medium Scale Enterprises: A Survey of selected inhabitants in Southwest Nigerian States. The correlation coefficient and simple regression analysis techniques were used to analyze the responses from the respondents. Findings from the study showed that effective power supply (EPS) exhibited a significant positive impact on the profitability of business enterprises and the cost of maintaining mechanical generators (KHZ) as an alternative

source of power has a negative effect on the profitability of the enterprises. The study concluded that power supply has a significant influence on the profitability of SMEs in Nigeria.

Bassey and Ikpe, (2021). analyzed the comparative study of the effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality, using small and medium scale businessmen and women as well as power holding company staff. The survey research design was adopted and a twelve (12) item structured questionnaire was used to obtain a sample size of 248 small and medium scale business owners and power holding staff randomly selected from the population. The results of the study revealed that there is a significant effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. The results further revealed that insufficient electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. The study concluded that there are enormous difficulties being experienced by businesses in Cross River State and other parts of Nigeria due to inadequate and unreliable electric power supply. Thus an inadequate and unreliable supply of electricity imposes costs and therefore constrained firms' operational performance as firms suffer high overhead cost due to the deficient electricity supply from the national grid.

Christian and Imoh (2021) looked into the effect of electricity supply on the performance of Small and Medium-Scale Enterprises in Nigeria: A case study of Calabar South and Calabar Municipality of Cross River State. The survey research design was adopted. The results of the study revealed that there is a significant effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. The results further revealed that insufficient electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. The study concludes that there are enormous difficulties being experienced by businesses in Cross River State and other parts of Nigeria due to inadequate and unreliable electric power supply. Thus an inadequate and unreliable supply of electricity imposes costs and therefore constrained firms' operational performance as firms suffer high overhead cost due to the deficient electricity supply from the national grid.

Akinyemi et al (2021) focused on impact of Electricity Supply on the Performance of Small and Medium-Scale Enterprises (SMEs) in Nigeria: A Case Study. The data was analyzed using Statistical Package for Social Science (SPSS), variance analysis (ANOVA) and Correlations and Ordinary Least Squares (OLS) techniques. A total of 120 questionnaires were distributed, of which 90 were compiled and analyzed. The findings showed that there is significant impact of electricity supply on the performance of SMEs in Ado-Odo Ota Area, in Ogun State. Also, alternative power sources have significant impact on performance of SME in Ado-Odo Ota Area, in Ogun State. Therefore, by and large, from the findings of this study.
Afukonyo (2023) investigated the impact of inadequate power supply on small and medium scale Enterprises: A Case study of Takum Local Government Area of Taraba State. The study also used 30 structured questionnaires to collect primary data directly from the selected SMEs. The study identified that epileptic power supply has a negative impact on SMEs making them to spend about 20% - 30% on backup energy. The study also revealed that epileptic power supply does not affect the operational performance of SMEs and that the supply of power to SMEs is not sufficient.

Gap in Empirical Review

Despite the significance of power supply for socioeconomic development, there is a noticeable gap in empirical reviews specific to South East, Nigeria. While broader studies exist on the global or national scale, only a few similar research has investigated the localized dynamics of power supply and its direct impact on economic development in South East, Nigeria. This highlights the need for the present study to fill this crucial void, providing context-specific insights that can inform targeted policies and interventions to address the unique challenges and opportunities faced by industries in South East, Nigeria.

3. Methodology

Research Design

The work employed a mixed-methods approach. Quantitative data were gathered through surveys and archival records, measuring industrialization indicators, power supply metrics, and economic output within select organisations to understand nuanced impacts. Statistical analyses were carried out providing a comprehensive understanding of the dynamics in South East's industrial landscape

Population of the Study

The population of the study includes all the residents in the three States of South East Nigeria. The population of these states according to population projection for 2022 is 10,950,771.

Determination of Sample Size

In determining the sample size, the researcher used the Taro Yamane formula (1967) of sample size determination as follows:

The formula n = $\frac{N}{1+N(e)^2}$

Where:

N = population;
1 = constant,
E = Degree of error (i.e 4% or 0.04)

The sample size is computed thus:

n = $\frac{10,950,771}{1+10,950,771}$ $(0.04)2$

n = $\frac{10,950,771}{1+10,950,771 \text{ x.} 0.0016}$

n = $\frac{10,950,771}{1+17521.2336}$

n = $\frac{10,950,771}{17522.2336}$ = 624.97

n = approximately 625. Therefore, the sample size is 625

Sampling Technique

The study employed a stratified random sampling technique to ensure representation across diverse industrial sectors in South East, Nigeria. The strata were defined based on industry types, such as manufacturing, agriculture, and services. Within each stratum, a random sample of industries, individuals, Non-governmental organization, etc were selected. This approach allows for a comprehensive examination of power supply effects on various sectors, offering insights into the nuanced impacts on different industries contributing to South East, economic landscape. The sample size was determined statistically to ensure sufficient representation and generalizability of findings to the broader industrial context in the state.

Method of Data Collection

The questionnaire was considered as the most appropriate measuring instrument because the researcher was dealing with respondents who are scattered in various units in South East, Nigeria. The researcher developed a total of fifteen (15) interview guides for the interview section. The questionnaire instrument was in a 5-point Likert scale structured form (Strongly agree =5, Agree = 4, undecided = 3, Disagree = 2, Strongly disagree = 1).

Methods of Data Analyses

The data collected were analyzed using descriptive statistics such as frequency, simple percentage and the mean score for the research questions, employing the Statistical Package for Social Sciences (SPSS). Data generated from the study was used to test the hypotheses using the t-test statistical tool.

4. Data Presentation and Analysis

Data Presentation

A total of Six Hundred and twenty-five (625) copies of the questionnaire were distributed to the respondents and Six hundred and one were returned, Twenty-four (24) copies were not returned/ were not useful for the due to mutilation and multiple responses. This showed Ninety-Eight (98%) percent instrument return rate.

Data Analysis

Analysis of Research Questions

Research Question One: What effect does power supply have on cost of production in South East, Nigeria?

Table 1: Effect of power supply on cost of production in South East, Nigeria

S/N		SA	A	U	D	SD	N	Sum	Mean	Std. Deviation
1	Unreliable power supply forces businesses to rely on expensive generators, significantly raising overall operational expenses due to fuel and maintenance costs	195 31.0	247 50.9		66 6.9	93 0.3	601	3532.00	4.02	.89948
2	Frequent power outages disrupt production schedules, leading to delays and decreased productivity, which can impact timely delivery and customer satisfaction	169 19.2%	227 62.6%	-	126 14.4	33 3.8	601	3396.00	3.86	.88744
3	Fluctuation in power supply can damage sensitive machinery and equipment, resulting in increased repair and replacement costs, further burdening production budgets.	175 19.9%	383 69.5%		27 3.1%	66 7.5	601	3528.00	4.01	.72871
4	Inconsistent power availability can lead to lower production output, affecting the overall efficiency and profitability of manufacturing operations in the region.	232 39.4%	293 46.2%		60 6.8%	66 7.5	601	3666.00	4.17	.85625
5	Higher production costs due to unreliable power supply are often passed on to consumers, leading to increased prices for goods and services in the market.	209 23.8%	313 62.4%		60 6.8%	61 6.9	601	3539.00	4.03	.76420
	Valid N (listwise)						601			
	GRAND MEAN								**4.018**	

Source: Field Survey 2024 and SPSS Result Output Version 23.0

Table 1 shows the descriptive statistics on the Effect of power supply have on cost of production in South East, Nigeria (based on theoretical acceptance mean rating of 3.0). The Sum, Mean and Standard Deviation for the items are indicated.

The responses obtained from item number one, as it can be seen revealed that the mean score is 4.02 and the standard deviation is 0.89948. This suggests that the responses of the respondents are positively inclined. The overall mean score of the variable is 4.02 and a standard deviation of 0.89948 is evidence that the respondents agreed that Unreliable power supply forces businesses to rely on expensive generators, significantly raising overall

operational expenses due to fuel and maintenance costs. The results of item number two, revealed that the mean score is 3.86 and the standard deviation is 0.83744, is suggestive of the fact that positivity is the view of the respondents. The overall mean score of the variable is 3.86 and a standard deviation of 0. 88744 suggests that the respondents agreed that frequent power outages disrupt production schedules, leading to delays and decreased productivity, which can impact timely delivery and customer satisfaction.

The results obtained from item number three, revealed that the mean score is the 4.01 and the standard deviation is 0.72871, this affirmed to the fact that positivity is the view of the respondents on the item. The overall mean score of the variable is 4.01 and a standard deviation of 0.72871 affirmed that the respondents agreed that Fluctuations in power supply can damage sensitive machinery and equipment, resulting in increased repair and replacement costs, further burdening production budgets.

Considering the results obtained from item number four, the mean score is 4.17 and the standard deviation is 0.85625, this agreed to the fact that the respondents are very much positive about the item. The overall mean score of the variable is 4.17 and a standard deviation of 0.85625, admit that the respondents agreed that Inconsistent power availability can lead to lower production output, affecting the overall efficiency and profitability of manufacturing operations in the region.

Equally, the results of item number five, indicated that the mean score is the 4.03 and the standard deviation is 0.76420; this agreed to the fact that the respondents are very much positive about the item. The overall mean score of the variable is 4.03 and a standard deviation of 0.76420 showed that the respondents agreed that Higher production costs due to unreliable power supply are often passed on to consumers, leading to increased prices for goods and services in the market.

The Grand Mean of 4.018 is an indication that the respondents are firm in their conviction that power supply affect cost of production in South East, Nigeria

Research Question Two: How does power supply affect job creation in South East, Nigeria?

Table 2: How power supply affect job creation in South East, Nigeria

		SA	A	U	D	SD	N	Sum	Mean	Std. Deviation
1	Unstable power supply hampers business expansion and startups, reducing opportunities for job creation and economic development in the region	230 26.2	227 38.8	19 2.2	168 32.0	7 0.8	601	3140.00	3.57	1.20735
2	High costs from alternative power sources deter investments, leading to fewer businesses and, consequently, fewer job opportunities	203 23.1	261 67.0	19 2.2	61 6.9	7 0.8	601	3553.00	4.04	.77525
3	Frequent power outages lower productivity levels in existing businesses, causing layoffs and limiting the capacity to hire new employees	190 21.6	400 71.4		61 6.9		601	3580.00	4.07	.69919
4	Potential investors avoid regions with poor power supply, resulting in fewer new businesses and job creation projects in the South East	169 19.2	421 74.8		61 6.9		601	3559.00	4.05	.68415
5	Skilled workers may migrate to regions with better infrastructure, including reliable power supply, leading to a loss of local talent and reduced job creation.	197 22.4	365 67.4		89 10.1		601	3531.00	4.02	.79378
	Valid N (listwise)						601			

Source: Field Survey 2024 and SPSS Result Output Version 23.0

Table 2 shows the descriptive stat**istics** on how power supply affect job creation in South East, Nigeria (based on theoretical acceptance mean rating of 3.0). The minimum, maximum, Mean and Standard Deviation for the items are indicated.
The responses obtained from item number one, revealed that the mean score is 3.57 and the standard deviation is 1.20735, this suggests that the responses of the respondents are positively disposed of. The overall mean score of the variable is 3.57 and standard deviation of 1.20735 is an indication that the respondents agreed that Unstable power supply hampers business expansion and startups, reducing opportunities for job creation and economic development in the region. The results of item number two, revealed that the mean score is 4.04 and the standard deviation is 0.77525, this is suggestive of the fact that positivity is the view of the respondents. The overall mean score of the variable is 4.04 and a standard deviation of 0.77525 suggests that the respondents agreed that High costs from alternative power sources deter investments, leading to fewer businesses and, consequently, fewer job opportunities.

As obtained in item number three, it revealed that the mean score is 4.07 and the standard deviation is 0.69919, this affirmed positivity in the view of the respondents on the item. The overall mean score of the variable is 4.07 and standard deviation of 0.69919 affirmed that the respondents agreed that Frequent power outages lower productivity levels in existing businesses, causing layoffs and limiting the capacity to hire new employees. Again, considering the results obtained from item number four, which indicated that the mean score is 4.05 and the standard deviation is 0.68415; this agreed to the fact that the respondents are positive about the item. The overall mean score of the variable 4.05 and standard deviation of 0.68415 shows that the respondents agreed that Potential investors avoid regions with poor power supply, resulting in fewer new businesses and job creation projects in the South East.

The results of item number five, indicated that the mean score is the 4.02 and the standard deviation is 0.79378, this agreed to the fact that the respondents are very much positive about the item. The overall mean score of the variable is 4.02 and a standard deviation of 0.79378 showed that the respondents agreed that Skilled workers may migrate to regions with better infrastructure, including reliable power supply, leading to a loss of local talent and reduced job creation.
Research Question Three: What is the effect of power supply on the healthcare services in South East, Nigeria?
Table 3: Effect of power supply on the healthcare services in South East, Nigeria

		SA	A	U	D	SD	N	Sum	Mean	Std. Deviation
1	Unreliable power supply causes frequent malfunctions of critical medical equipment, compromising patient care and treatment effectiveness in healthcare facilities.	148 16.9	374 66.5	3 0.3	89 10.1	37 4.2	601	3383.00	3.85	.94431
2	Power outages disrupt daily operations, leading to delays in medical procedures, diagnostics, and patient admissions, adversely affecting overall healthcare delivery.	88 10.0	408 73.3	46 5.2	61 6.9	48 5.5	601	3288.00	3.74	.92652
3	Inconsistent power supply jeopardizes the storage of temperature-sensitive medications and vaccines, risking spoilage and reducing the availability of essential treatments.	141 16.1	344 65.0	2 0.2	148 16.9	16 1.8	601	3355.00	3.82	.90288

4	Unstable electricity hampers emergency services, making it difficult to perform urgent surgeries and treatments, thereby increasing patient mortality and morbidity rates	147 16.7 %	353 66.1	2 0.2	131 14.9	18 2.1	601	3413.00	3.88	.85014
5	Frequent power issues create stressful working conditions for healthcare professionals, contributing to job dissatisfaction and challenges in retaining skilled medical staff	236 26.9 %	292 59.1	27 3.1	84 10.7	2 0.2	601	3527.00	4.01	.86536
	Valid N (listwise)						601			

Source: Field Survey 2024 and SPSS Result Output Version 23.0

Table 3 showed the descriptive statistics on the effect of power supply on the healthcare services in South East, Nigeria (based on theoretical acceptance mean rating of 3.0). The Sum, Mean and Standard Deviation for the items are indicated.

The responses from item number one, revealed that the mean score is 3.85 and the standard deviation is 0.94431, this suggests that the responses of the respondents are positive in their view. The overall mean score of the variable is 3.85 and a standard deviation of 0.9443 is an indication that the respondents agreed that Unreliable power supply causes frequent malfunctions of critical medical equipment, compromising patient care and treatment effectiveness in healthcare facilities. Item number two results, revealed that the mean score is 3.85 and the standard deviation is 0. 92652; this is suggestive of the fact that positivity is the view of the respondents. The overall mean score of the variable is 3.85 and a standard deviation of .92652 suggests that the respondents agreed that Power outages disrupt daily operations, leading to delays in medical procedures, diagnostics, and patient admissions, adversely affecting overall healthcare delivery.

As obtained in item number three, it revealed that the mean score is 3.82 and the standard deviation is 0.90288, this affirmed to the fact that their positivity in the view of the respondents on the item. The overall mean score of the variable is 3.82 and a standard deviation of 0.90288 affirmed that the respondents agreed that Inconsistent power supply jeopardizes the storage of temperature-sensitive medications and vaccines, risking spoilage and reducing the availability of essential treatments. A closer look at the results obtained from item number four, indicated that the mean score is 3.88 and the standard deviation is 0.85014, this agreed to the fact that the respondents are positive about the item. The overall mean score of the variable is 5.10 and a standard deviation of .85014 admit that the respondents agreed that Unstable electricity hampers emergency services, making it difficult to perform urgent surgeries and treatments, thereby increasing patient mortality and morbidity rates.
Similarly, the results of item number five, indicated that the mean score is the 4.01 and the standard deviation is 0.86536, this agreed to the fact that the respondents are very much positive about the item. The overall mean score of the variable is 4.01 and a standard deviation of 0.86536 showed that the respondents agreed that Frequent power issues create stressful working conditions for healthcare professionals, contributing to job dissatisfaction and challenges in retaining skilled medical staff.

Test of Hypotheses

Hypotheses were proposed in order to determine the effect of power supply on socioeconomic development of South East, Nigeria. These hypotheses guided the formulation of outcomes and results for this research report. The one-sample t-test is one of the t-variations test and it is used to detect whether the sample significantly differs from the population. The observed

sample mean, theoretical population mean, sample standard deviation, and sample size are used in the formula for a one-sample t-test. It is denoted mathematically by the following:

$$t = \frac{x_1 - x_2}{\sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)}}$$

$$df = n_1 + n_2 - 1$$

$$n = \sum_{k=1}^{n} \frac{(x1 - \pi)2}{n1 - 1}$$

$$n = \sum_{k=1}^{n} \frac{(x2 - \pi)2}{n2 - 1}$$

where

t = Student's t-test
x1 = mean of first group
x2 = mean of second group
s1 = standard deviation of group 1
s2 = standard deviation of group 2
n1 = number of observations in group 1
n2 = number of observations in group 2

Test of Hypothesis One

Restatement of Hypothesis One

Ho: Power supply does not have a significant effect on cost of production in South East, Nigeria

Table 4: One-Sample Test

	Test Value = 26					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Frequent power outages disrupt production schedules, leading to delays and decreased productivity, which can impact timely delivery and customer satisfaction	796.442	877	.000	-21.98747	-22.0417	-21.9333

Source: Field Survey 2024 and SPSS Result Output Version 23.0

Decision Rule:

1. Reject Ho if the P-Value cal < 0.05 at 5% level of significance.
2. Otherwise, accept the null hypothesis (Ho).

From table 4, the independent sample t-test gave a Mean Value of 4.0137, the Standard Deviation of 0.91848, t-value of -796.442, and this is significant at .000. Since .000 is less than 0.05, this means that at .05 level of significance, the p-value of .000 is significant. Hence the null hypothesis is rejected.

Decision: From the sample t-test analysis in Table 4, based on the t-value of -796.442, and P-value of 0.00, in table 4, it was found that Power supply does have a significant effect on cost of production in South East, Nigeria and this influence is statistically significant at 5% level of significance as the P-value is within 5% significance level. This result, therefore suggests that

we should accept our alternate hypothesis one (H_1) which states that Power supply does have a significant effect on cost of production in South East, Nigeria.

Test of Hypothesis Two

Restatement of Hypothesis Two

Ho: Power supply has no significant effect on job creation in South East, Nigeria

Table 5: One-Sample Test

	Test Value = 8					
					95% Confidence Interval of the Difference	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Unstable power supply hampers business expansion and startups, reducing opportunities for job creation and economic development in the region	-128.604	877	.000	-3.98633	-4.0472	-3.9255

Source: Field Survey 2024 and SPSS Result Output Version 23.0

Decision: From the sample t-test analysis in Table 5 based on the t-value of -128.604, and P-value of 0.00, in table 5, it was found that Power supply has a significant effect on job creation in South East, Nigeria and this influence is statistically significant at 5% level of significance as the P-value is within 5% significance level. This result, therefore suggests that we should accept our alternate hypothesis one (H_1) which states that Power supply has a significant effect on job creation in South East, Nigeria.

Test of Hypothesis Three

Restatement of Hypothesis Three

Ho: Power supply does not have a significant effect on the healthcare services in South East, Nigeria

Table 6: One-Sample Test

	Test Value = 13					
					95% Confidence Interval of the Difference	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Inconsistent power supply jeopardizes the storage of temperature-sensitive medications and vaccines, risking spoilage and reducing the availability of essential treatments.	-295.988	601	.000	-9.25513	-9.3165	-9.1938

Source: Field Survey 2024 and SPSS Result Output Version 23.0

From table 6, the independent sample t-test gave a Mean Value of 3.7449, the Standard Deviation of 0.92652, t-value of -295.988, and this is significant at .000. Since .000 is less than 0.05, this means that at .05 level of significance, the p-value of .000 is significant. Hence the null hypothesis is rejected.

Decision: From the sample t-test analysis in Table 6, based on the t-value of -295.988, and P-value of 0.00, in table 6, it was found that Power supply does have a significant effect on the healthcare services in South East, Nigeria and this influence is statistically significant at 5% level of significance as the P-value is within 5% significance level. This result, therefore

suggests that we should accept our alternate hypothesis one (H_1) which states that Power supply does have a significant effect on the healthcare services in South East, Nigeria.

Discussion of Findings

The first objective sought to examine the effect of power supply on cost of production in South East, Nigeria. From the t-test result which indicated that the estimated that the effect that Power supply have on cost of production in South East, Nigeria is positive for the predictor variable, proving that the presence of the predictor for independent variable would lead to a positive effect on the cost of production in South East, Nigeria. Given the sign that sample t-test analysis in Table 4.9, based on the t-value of -796.442, and P-value of 0.00, in table 4.9, it was found that Power supply does have a significant effect on cost of production in South East, Nigeria. The findings indicate that power supply significantly impacts the cost of production in the South East, Nigeria, highlighting several critical aspects. Firstly, the region's reliance on alternative power sources, such as generators, due to unreliable electricity, substantially raises operational costs. Fuel expenses and generator maintenance contribute to higher production costs, affecting businesses across various sectors. For instance, manufacturing firms incur additional expenses to maintain continuous production, ultimately increasing the cost of goods and services (Adenikinju, 2003).

One the objectives of the study was to determine the effect of power supply on job creation in South East, Nigeria. The hypothesis two result revealed that Power supply has a significant positive effect on job creation in South East, Nigeria. This is evident on table 4.10, based on the t-value of -128.604, and P-value of 0.00, it was found that Power supply had a significant effect on job creation in South East, Nigeria. The findings suggest that reliable power supply significantly positively impacts job creation in the South East, Nigeria, across several key dimensions. Firstly, consistent electricity enables businesses to operate more efficiently and cost-effectively. When firms can rely on a stable power supply, they reduce expenses associated with alternative energy sources, such as generators, and can allocate more resources to expanding their operations and hiring additional staff (Adenikinju, 2003). Secondly, reliable power supply boosts the productivity of existing businesses. With fewer disruptions and downtime, companies can increase their output and, consequently, their revenue. This improved business performance often translates into greater employment opportunities, as firms require more workers to meet higher production demands (Oseni & Pollitt, 2013).

Hypothesis three sought to analyse the effect of power supply on the healthcare services in South East, Nigeria. The result affirmed that Power supply has a significant positive effect on job creation in South East, Nigeria. From the sample t-test analysis in Table 4.13, based on the t-value of -295.988, and P-value of 0.00, in table 4.13, it was found that Power supply has a significant positive effect on job creation in South East, Nigeria. The findings indicate that reliable power supply has a significant positive impact on job creation in the South East, Nigeria, through various channels. Firstly, consistent electricity enables businesses to operate efficiently and cost-effectively. Firms that can rely on stable power reduce expenses associated with alternative energy sources, such as generators, allowing them to allocate more resources toward expanding their operations and hiring additional staff (Adenikinju, 2003). Secondly, reliable power supply boosts productivity in existing businesses. With fewer disruptions and downtime, companies can increase their output and revenue. This improved business performance often translates into greater employment opportunities, as firms require more workers to meet higher production demands (Oseni & Pollitt, 2013).

Moreover, stable electricity supply attracts new investments to the region. Potential investors are more likely to establish businesses in areas with dependable infrastructure, knowing that consistent power will support their operational needs. This influx of investment leads to the creation of new businesses and industries, further contributing to job creation and economic growth (Iyoha & Oriakhi, 2017). Additionally, reliable power supply enhances the development of small and medium-sized enterprises (SMEs), which are crucial for job creation. SMEs often struggle with the high costs of unreliable electricity. With stable power, these businesses can grow, innovate, and hire more employees, fostering a more dynamic and inclusive job market (Eneh, 2011). Overall, improving the power supply in the South East is vital for stimulating job creation, attracting investments, and promoting sustainable economic development.

5. Summary of Findings

The following were the findings from the study:

i. From the study, it was discovered that Power supply does have a significant negative effect on cost of production in South East, Nigeria, (this is where the t-value is -796.442, and P-value is 0.00) This implies that Unreliable power supply in South East Nigeria significantly increases production costs, forcing businesses to rely on expensive alternatives like generators.

ii. The findings from the hypothesis two indicated that Power supply had a significant negative effect on job creation in South East, Nigeria (this is where t-value is -128.604, and P-value is 0.00). This means that Reliable power supply in South East Nigeria boosts job creation by enhancing business efficiency, attracting investments, and fostering SME growth, leading to increased employment opportunities and economic development.

iii. Equally, the finding of hypothesis three affirmed that Power supply has a significant negative effect on job creation in South East, Nigeria (based on the t-value of -295.988, and P-value of 0.00). The findings showed that Stable power supply in South East Nigeria positively impacts job creation by enabling business expansion, attracting investment, and supporting SME growth, leading to increased employment and economic development.

Conclusion

The study concluded that power supply significantly influences the economic development of South East Nigeria, several key implications arise. Reliable electricity is foundational for industrial productivity, influencing cost efficiencies and competitive market pricing. Moreover, consistent power availability fosters job creation across various sectors, supporting economic stability and prosperity. Conversely, frequent outages and reliance on costly alternatives like generators inflate operational expenses, hampering business growth and investment attractiveness. The socioeconomic impact extends beyond commerce to affect healthcare, education, and overall quality of life. Stable electricity ensures uninterrupted medical services and enhances educational opportunities through consistent learning environments. However, inadequate infrastructure undermines these sectors, perpetuating socio-economic disparities and limiting regional development potentials.

Recommendations

Based on the findings, the following recommendations were made:

i. To mitigate the impact of power supply on production costs in South East Nigeria, policymakers should prioritize infrastructure development. This includes enhancing grid reliability, promoting renewable energy sources, and subsidizing energy-efficient technologies.

ii. To enhance job creation in South East Nigeria through improved power supply, policymakers should prioritize infrastructure upgrades and grid reliability. Encouraging investments in renewable energy and promoting energy-efficient technologies can stabilize electricity access.

iii. Given the positive impact of reliable power supply on job creation in South East Nigeria, policymakers should prioritize infrastructure improvements and grid stability. Encouraging investments in renewable energy sources and promoting energy-efficient technologies will sustainably support job growth. Furthermore, fostering an enabling environment for small businesses through consistent electricity access can enhance employment opportunities.

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