E-ISSN: 1115 - 8530 P-ISSN: 3026-8958
MPRI-JFRBD | INTERNATIONAL JOURNAL OF FINANCIAL RES. AND BUSINESS DEVELOPMENT
VOL. 03 NO. 7 – JANUARY, 2024

IMPACT OF POWER DISTRIBUTION AND METERING ON MICRO, SMALL AND MEDIUM ENTERPRISES IN NIGERIA

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Abstract

This study examines the impact of power distribution and metering on Micro Small and Medium Enterprises in Nigeria. The objective of the study is to examine issues and impacts of electric power distribution and metering on Micro Small and Medium Enterprises (MSMEs) in Nigeria. Nigeria is a large market for business penetration given its population size–the largest in the sub-Saharan region. It is home to many multinationals, micro and macro enterprises that could leverage on its natural resources and market size for growth in business. However, many businesses have experienced retarded growth and some completely shut down for inadequate electricity supply and high operational costs. This is an empirical study which relies on secondary data which were analysed using descriptive statistics such as tables and graphs. Trends analysis was used to examine the events and fluctuations of power distribution in Nigeria. The findings reveal that lack of access to electricity, high cost of electricity, lack of [redacted] proper regulation on electricity, multiple taxation on MSMEs, lack of access to funds, among others, are major challenges for the development of MSMEs. However, the study recommends among others, that Ministry of Power, alongside the Nigerian Electricity Regulatory Commission (NERC) implement policies and infrastructure projects aimed at improving electricity access for MSMEs in Nigeria.

Keywords:
Electricity, Power Distribution, Metering, MSMEs, Multiple Taxation

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Introduction

Global demand for energy is rapidly increasing with population and economic growth. Many countries all over the world are making impressive progress in meeting the increasing energy demand by increasing its supply through efficient generation, transmission, distribution and metering system. In Nigeria (the largest economy in the sub-Saharan region), poor electricity generation has remained a burden, and has inhibited the drive towards industrialization, technological advancement and development of micro and macro businesses (Ohiare, 2015). Less than 40 percent of Nigerians have access to electricity, with only 30 percent of their demands being met (Mushelia, 2004). The gap between demand and supply of power is as a result of poor and obsolete infrastructure, and poor managerial capabilities, among others.

Significantly, Nigeria is a large market for business penetration given its population size – the largest in the sub-Saharan region. It is home to many multinationals, micro and macro enterprises that leverage on its natural resources and market size for growth in business. However, many businesses have experienced retarded growth and complete shutdown of business with the major factor attributed to inadequate electricity supply and high operation costs. Recurrent power outages have forced about 90 percent of the industrial and commercial sectors to indulge in self generation of electricity, contributing to high operation costs (Adenikinju, 2005) and environmental pollution (Chukwueyem et al 2015). Self-power generation by industries and commercial entities exert costs of about four times more than what they would have to pay the national grid. A survey conducted by the Manufacturers' Association of Nigeria (MAN) revealed that expenditure on self-generated energy in the manufacturing sector increased by about 122% from $162.2 million (N58.82 billion) in 2015 to $359.5 million (N129.95 billion) in 2016 (MAN, 2014).

Unlike other African countries with commendable access to electricity (Mauritius 100%, Tunisia 100%, Egypt 99.8%, Algeria 99.1%, Morocco 99.0%, Seychelles 99.0%, Cape Verde 96.1%, South Africa 94%, Gabon 92%, Eswatini 90%, Ghana 85%, and Kenya 85%), Nigeria access to electricity as at 2019 was 62% and this declined to 57% in 2022 (Abubakar, 2023; NOIPOLLS, 2023). Many small-scale businesses with potentials for employment generation and wealth creation in the country have failed as a result of deficiency in electricity supply and high costs. Many have experienced ineffectiveness in terms of competitiveness while others operate below capacity.

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To deal with the persistent problems facing the electricity sector in Nigeria, the federal government of Nigeria (FGN) took a series of policy, institutional and regulatory reforms. However, in spite of the changes in the electricity sector, the problem around energy supply remains unabated, and it cut across access, cost, and regulations. Thus, access to electricity supply is still poor and about 80 million (43.5%) Nigerians living in the 774 local government areas across the country lack access to electricity (World Bank, 2017).

Electricity is mainly consumed in residential, commercial and industrial sector, and this different consumption impacts the economy differently. Nigeria is characterized by large informal sector, where SMEs activities does not only occur but it is the major driver of the economy (Ajibola, 2016). It is therefore crucial to investigate the significance of electricity on the performance of this critical deriver of the nation's economy.

According to Olugunagbe (2023), top listed companies in Nigeria such as Dangote Cement, BUA Cement, Dangote Sugar, Transnational Corporation, Lafarge Cement, and BUA Foods Plc are facing increased overhead costs as their combined energy bill hit N221 billion in the first half of 2023. Conglomerate of factors are determinants for energy cost in Nigeria, they majorly include the rising cost of diesel and the depreciation of the naira. This has put a strain on the bottom line of companies, which now have to pass on the higher costs to consumers. Furthermore, Olugunagbe (2023) noted that analysed data obtained by BusinessDay from their financial statements showed that the eight firms recorded an 18.35 percent increase in energy costs to N221.75 billion in the first half of 2023 from N187.36 billion in the same period in 2022. Leading the pack with the highest energy costs reported in the first half of 2022 are the cement makers, with Dangote Cement spending N157.020 billion on fuel and power, a 20.82 percent growth from 2022.

Further issues around energy sector indicated that regulation and insufficiency of energy sources in Nigeria has remained a grave challenge to the country. According to Olugbemi and Komolafe, (2011) the Nigerian power sector experiences many broad challenges related to electricity policy enforcement, regulatory uncertainty, gas supply challenges, and transmission system constraints. A recent study of the Nigerian energy sector by GIZ (2015) revealed that the national grid is characterized by a poor voltage profile of the network and constrained by limited control infrastructure. Bonan, Pareglio and Tavoni (2017) also observed that overloaded transmission lines and high technical and non-

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technical losses are regular features on Nigerian national grid. It is evident that generated power falls short of the demand in Nigeria primarily due to ever-increasing energy demand resulting from an increasing population; this is a clarion call for diversification into other forms of renewable energy sources to alleviate the inadequacies of power generation.

Following all these challenges, the MAN has argued that major manufacturer's issues is tied to energy problems. The country has been making use of about 2,500 MW to 4,000 MW and this inadequate supply has an adverse effect on manufacturing sectors, and this has led to Nigeria losing investors to other African countries (MAN, 2019) such as Ghana where there exist adequate supply of electricity. For instance, in Kaduna state alone, only three out of 16 industries in kaura LG are functioning due to lack of electricity supply (**Abdulkadir, 2023**). In the light of the above, this study therefore attempts to assess the impact of power distribution and metering on the MSMEs in Nigeria. To achieve this, the paper set out the following objectives;

1. To determine effects of access to power distribution and metering on the performance of MSMEs in Nigeria
2. To ascertain the effectiveness or otherwise of regulatory frameworks on power distribution and metering system on the performance of MSMEs in Nigeria.
3. To determine challenges faced by MSMEs resulting from current financing and tax systems in Nigeria.
4. To make appropriate recommendations for enhanced power distribution and metering system towards better performance of MSMEs in Nigeria

Concept of Power Distribution and Metering

Electricity Regulation

The Nigerian Electricity Regulatory Commission is an independent body established by the Electric Power Sector Reform Act of 2005 to undertake technical and economic regulation of the Nigerian Electricity Supply Industry. The Commission is to, among others license operators, determine operating codes and standards, establish customer rights and obligations and set cost reflective industry tariffs. The Commission has its headquarters in Abuja, and currently has presence in most states of the country through its Forum Offices which function as the first level of escalation for customer complaints that are not resolved by the electricity distribution companies (DisCos). The goals of NERC are to ensure

Uninterrupted Electricity; Private Sector Participation; Consumer Protection; Fair Regulation.

Power Distribution

Power distribution consists of the electrical wiring, the distribution housing boxes (distro box) and the service end/breaker boxes. Power distribution set ups vary wildly in naming of equipment and connection terminals between live events, film/TV sets and rental houses regionally and internationally (Brent, 2016). According to Wang (2017) electric power distribution is the portion of the power delivery infrastructure that takes the electricity from the highly meshed, high-voltage transmission circuits and delivers it to customers. This study aligns with Wang definition, this is because Wangs definition enjoins precision and the flow of power supply is in consonant with understanding of power movement. That is from energy generation process to energy distribution terminal and to the final consumers, such as companies, MSMEs and home uses.

Metering

Metering system means a meter and the associated current transformers, voltage transformers, metering protection equipment including alarms, LV electrical circuitry, associated data collectors, data transmitters related to the measurement and recording and transmitting to the Data Collection System the active energy and/or reactive energy, as the case may be (NERC, 2014).

According to Makanjuola *et al.,* (2020) metering is 'the process and method of utilizing devices to measure the amount and direction of electrical energy flow, particularly for end-use'. Metering is a way of measuring the amount of physical quantity of electricity transmitted when activated by a powered device (Ann E.U et al, 2020). This study aligns with definition of Makanjuola et al, (2020) because the essence of metering in the power sector aimed at measuring consumption of the energy either as an individual or as a cooperate body.

Access to Electricity

In our present world, electricity is the most widely used and desirable form of energy. One important observable trend is that the increase in country's population results to the increase in electricity demand (Oyedepo, 2012). In many developing countries especially African and some Southeast Asia countries, power supply is generally known for its unreliability and high disruption which affects

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production efficiency and competiveness. Africa is indeed endowed with the widest possible range of energy resources for electricity generation such as coal, natural gas, petroleum, solar, hydro, geothermal, nuclear, etc. but the continent's power sector remains severely underdeveloped and the energy consumption in general and electricity consumption in particular are relatively low (Economic Commission for Africa (2004) in Mayo, 2012).

At the country level, Nigeria is heavily endowed with abundant resources but electricity generation is relatively low. According to the Worldbank (2023), only 48% of Nigeria's population have access to electricity. The access to electricity is relatively low compared to other African countries.

In comparison with the top ten economies in Africa, Nigeria's access to electricity is low, while electricity production is also among the lowest in among the top 10 African countries as earlier mentioned. However, efforts made by the government have not yielded appreciable results as the country still battles with electricity crisis. The study will discuss the various issues and challenges relating to electricity access in Nigeria in the following sub sections.

Cost of Electricity

Electricity pricing (referred to as electricity tariff or the price of electricity) varies significantly from country to country and across locality within a particular country. Electricity tariffs vary by type of customer, typically by residential, commercial, and industrial connections. Many factors go into determining an electricity tariff, such as the price of power generation, government subsidies, local weather patterns, transmission and distribution infrastructure, and industry regulation. Electricity prices generally reflect the cost to build, finance, maintain, and operate power plants and the electricity grid (Phillip, 2014). Some utilities are for-profit, and their prices will also include a financial return for shareholders and owners. Electricity price forecasting is the method by which a generator, utility company, or large industrial consumer can predict the wholesale prices of electricity with reasonable accuracy. The cost to supply electricity varies minute by minute. (Phillip, 2014).

There are two different types of tariff structures. The first one being one that charges a flat fixed price for every kWh consumed. This means that variation in costs to the consumer is directly linked to their own consumption (NAPEE, 2009). The second is the amount of money frame by the supplier for the supply of electrical energy to various types of consumers. In other words, the tariff is the

methods of charging a consumer for consuming electric power. The tariff covers the total cost of producing and supplying electric energy plus a reasonable cost (Ignacio, 2010). The actual tariffs that the customer pay depends on the consumption of the electricity. The consumer bill varies according to their requirements. The industrial consumers pay more tariffs because they use more power for long times than the domestic consumers. The electricity tariffs depend on the following factors:

Type of load; Time at which load is required; The power factor of the load and the amount of energy used (Ignacio, 2010).

Two-part Tariff; In such type of tariff, the total bill is divided into two parts. The first one is the fixed charge and the second is the running charge. The fixed charge is because of the maximum demand and whether the electricity is consumed or not the payment will be made. While the second charge (running) depends on the energy consumption by the load. That is the more the consumer consumes the power the more he/she pays (Watkins, 1915).

Power factor Tariff; The tariff, which depends on the power factor of the load is known as the power factor tariff. The power or load factor is defined as the average load divided by the peak load in a specified time period (Watkins, 1915) It is a measure of the utilization rate, or efficiency of electrical energy usage; a high load factor indicates that load is using the electric system more efficiently, whereas consumers or generators that underutilize the electric distribution will have a low load factor.

Electricity Regulation (ER)

Drawing from the above, the country is still in need of a market-oriented policy that will increase investors' participation in constructive development of the available resources. Effective policy making is a veritable tool to strengthen the prospect for investment and development of ER technology. Feed-in tariffs, investment tax credits and renewable portfolios are some policy issues that could be useful to enhance better share of RE in the nation's power generation mix. The suggested issues are regulatory strategies to lower the costs of RE while increasing the adoption of RE sources. With the fact that soaring upfront investment expenses of RE development is sometimes responsible for their being ignored by potential investors, well-structured policies can be employed to resolve issues regarding subsidies and tax waivers (Mohammed et al, 2013)

Concept of MSMEs

The Micro, Small and Medium Enterprises (MSMEs) are globally acknowledged as the oil required to lubricate the engine of socio-economic transformation of any nation (National MSMEs Collaborative Survey, 2010). The MSME sector is strategically positioned to absorb up to 80% of jobs, improve per capita income, increase value addition to raw materials supply, improve export earnings and step up capacity utilisation in key industries. The sector is structured across other key sectors, including Agriculture, Mining and Quarrying, Building and Construction, Manufacturing, Solid Minerals, etc, and thus has strong linkages with the entire range of economic activities in the country (National MSMEs Collaborative Survey, 2010).

According to the National Bureau of Statistics, Nigeria has 43 million households, with an average of one entrepreneur per household. Lagos has over a million homes with over three million MSMEs, implying an average of three entrepreneurs per family in Lagos. Many young people in Nigeria have discovered that a single source of income is insufficient for survival, which is why a larger percentage of Nigerian entrepreneurs are between the ages of 18 and 50. According to the FATE Foundation's report on the State of Entrepreneurship in Nigeria, 67 percent of Nigerian entrepreneurs are between the ages of 18 and 35 (Nigeria MSME Report, 2022).

The term SME (without the 'micro') was previously used but it has become fashionable to talk about MSME instead of SME. Often the terms MSME and SME are interchangeable, and simply mean any enterprise that is not 'large'. In almost any country, SMEs make up the bulk of all enterprises. For instance, in China, SMEs account for more than 98 per cent of industry and contribute to 60 per cent of China's GDP, 75 per cent of its industrial value-added output and 50 per cent of its revenue (Zhang and Xia, 2012). MSMEs in Nigeria is however faced with challenges such as multiple taxation, lack of access to fund among others. Figure 1 shows the funding trend of MSMEs in Nigeria.

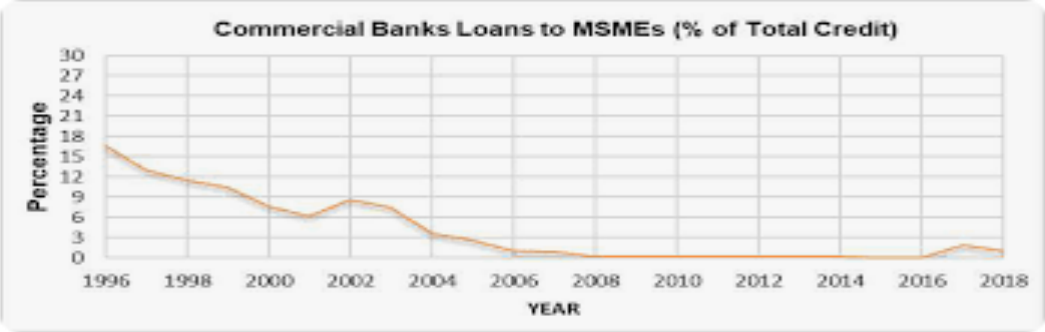


Figure 1: Funding MSMEs in Nigeria: 1996 – 2018 (Sciendo, 2022)

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This implies that from 2002 to 2018, financial support to MSMEs keep declining yearly, indicting lack of needed support for MSMEs in Nigeria. This had equally limited the MSMEs contribution to GDP in Nigeria.

Empirical Review

Relationship between Electricity Supply and the Performance of SMEs

A study conducted by Scott *et al*. (2014) reveals a relationship between electricity outages and the performance of SMEs in low- and medium-income countries. The study establishes a positive correlation between electricity outages and costs of SMEs business operations. Electricity outages exert more cost on the SMEs in the form of high cost of alternative power generation, loss of output, and damage of equipment. Also, electricity outages lead to high product cost and reduce labor productivity of the SMEs (Doe and Asamoah, 2014; Tarun *et al*., 2013; Cecelsi, 2004). Auru and Okoro (2011) found that about 820 manufacturing SMEs shut down operation in Nigeria between 2000 and 2008 as a result of energy insecurity and high cost of alternative energy generation.

Energy insecurity seems to have more effect on the growth of medium-and large-scale enterprises than small ones, and influences choice of location for investments by MSMEs (Adenikinju, 2005). A study on firms operating under electricity constraint in developing countries by Alby *et al*., (2011) found that countries with high frequency of power outages have less concentration of small firms in sectors with high energy requirement. This is because only large firms have the capacity to absorb the high-cost self-generation of electricity to reduce the effects of outages (Alby *et al.*, 2011). Evidence from India implies that in countries with high levels of electricity insecurity, firms find it unattractive and unprofitable to expand or move industries with enhanced productivity, as this will mean more reliance on electricity with its associated high cost (Abeberese, 2012).

Khobai, Mugano, and Le Roux (2017) explore the relationship between electricity prices and economic growth in South Africa within a multivariate framework over the period 1985-2014. The autoregressive distributed lag (ARDL) bounds test is implemented to determine long run relationship among the variables. The findings of the ARDL model suggest that there is a long run relationship between electricity supply, economic growth, electricity prices, trade openness, employment and capital. Specifically, the empirical findings reveal that electricity prices negatively affect economic growth while electricity supply; trade openness, capital and employment have a positive impact on economic growth. These findings bring a

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fresh perspective for creating electricity policies that will enhance economic growth in South Africa. This is a current work from Khobai, Mugano, and Le Roux (2017) that explore the relationship between electricity prices and economic growth in South Africa. The scope of the study was stated, the tool of analysis was stated and the measures for economic growth was also stated. But the study failed to state the statistical package that was employed to test the data. For example, the error correction model, stata, vector error correction model or ordinary least square regression technique.

Chiaroni et al (2017) investigate the impact that the electricity tariff reform is likely to have on investments in renewable energies (i.e., photovoltaics) and the adoption of energy efficiency measures (i.e., installation of heat pumps and efficient home appliances) in the residential market in Italy. The study develops detailed cost comparisons and simulations considering two different investment scenarios (before and after the reform) to conclude that the reform will: (i) have a negative impact on investments in photovoltaic systems; and (ii) favor the adoption of energy efficiency measures, such as efficient home appliances. The above study is current and topical but it could employ all the necessary properties such as tools of analysis, scope etc. that would have been needed in the study. Above all, the study of Chiaroni et al (2017) that investigated the impact that the electricity tariff reform is likely to have on investments in renewable energies was weak and mostly theoretical in nature.

Ado and Josiah (2015) examined the impact of deficient electric power supply on the operations of small-scale businesses operating in North-East Nigeria. They discovered the severity of electricity supply outages and the costs associated with it, including self-generation costs, on the operation of this class of businesses in the region. Hence, they recommended the need for policy attention towards revamping electricity in Nigeria to enhance the performance of the SMEs sector to realize its potential in contributing to economic development of the country.

Theoretical Review

Structural-functional theory, also called **functionalism,** sees society as a structure with interrelated parts designed to meet the biological and social needs of the individuals in that society. Functionalism grew out of the writings of English philosopher and biologist, Herbert Spencer (1820–1903), who saw similarities between society and the human body. He argued that just as the various organs of the body work together to keep the body functioning, the various parts of

society work together to keep society functioning (Spencer 1898). The parts of society that Spencer referred to were the **social institutions**, or patterns of beliefs and behaviors focused on meeting social needs, such as government, education, family, healthcare, religion, and the economy.

Functional Structuralism emphasised 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 could no longer afford to fuel their generator. Thanks to the recently signed Electricity Act 2023, government policy had in the past disallowed them (particularly the textile industries among others) from generating power on their own, hence the increasing rate of unemployment and security challenges such as armed robbery, political thuggery, frustration among others. This is because, available evidence shows that there is increasing level of unemployment, poverty and insecurity, poor health service delivery among others (Anosike, 2010). This study adopted the **Structural-functional theory because it shows the connectivity between the two study variables. Electricity is vital to MSMEs because MSMEs cannot survive without electricity. Therefore, this study align itself to Structural-functional theory.**

Methodology

The study made use of secondary data obtained from the National Bureau of Statistics (NBS), Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), and Statista. The data sourced from these institutions covered a period from 2010 to 2023. Additionally, information from verified online sources was incorporated to provide further insights and a more comprehensive analysis.

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The dataset in this study encompassed information on electricity consumption, which was facilitated by financial resources for MSMEs. The data was analysed quantitatively and presented using descriptive statistics such as tables and graphs. The analysis encompassed aspects such as access, regulation of power distribution, and metering to achieve the objectives of the study The Furthermore, trend analysis was employed to depict the annual performance of MSMEs and investigate the correlation between the variables of interest.

Data Presentation and Analysis

Table 1 presents comprehensive and detailed information on the consumption of electricity, as well as the significant contribution of MSMEs to the overall GDP throughout over a period of 14 years.

Table 1: Access/Consumption of Electricity by Commercial and Public Services and Contribution of MSMEs to GDP in Nigeria from 2010 to 2023

S/N	Years	Electricity Consumption Commercial & Public in Trillions	Contribution of MSMEs to GDP in %
1	2010	19,616	46
2	2011	22,248	46.35
3	2012	23,857	47.23
4	2013	22,068	47.88
5	2014	22,964	48.34
6	2015	23,994	48.51
7	2016	24,631	49.23
8	2017	25,282	49.78
9	2018	25,844	49
10	2019	26,619	48
11	2020	27,304	46.28
12	2021	24,038	42.78
13	2022	24,039	48
14	2023	24,038	43

Source: SMEDAN, NBS Report, 2022 and Statista, 2023

Analysis of the data in Table 1 provided an opportunity to can gain valuable insights into the evolving trends and patterns of electricity usage, as well as understand the pivotal role that MSMEs play in shaping and influencing the economic landscape. However, while the table provides a solid foundation for analysis, it is crucial to further delve into more intricate and nuanced details in order to effectively and directly address the specific research objectives related to regulatory challenges, financing issues, and multiple taxation. Through the utilization of more extensive and comprehensive information, coupled with a meticulous and rigorous analysis, this provides insight to delve deeper into the complexities and intricacies of these pressing issues, ultimately providing a more robust and insightful understanding of the challenges and opportunities that lie ahead. Furthermore, Table 2 shows the summary statistics of the electricity consumption by MSMEs over the study period.

Table 2: Summary Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ECCP	14	19616	27304	24,038.71	1,967.35	387,0491.4	-.485	.597	.901	1.15
MSMEs	14	42.78	49.78	47.1700	2.12945	4.535	-1.132	.597	.674	1.15

The summary statistics reveal a notable increase in the mean electricity consumption for commercial and public use over the observed years, reaching 24,038.71 trillion, with a fluctuating trend and considerable variability. Concurrently, the mean contribution of Micro, Small, and Medium Enterprises (MSMEs) to GDP is 47.17%, displaying a varying pattern with a decline in recent years. The negative skewness suggests a slight leftward distribution, while positive kurtosis indicates a moderately peaked and slightly heavy-tailed distribution for both electricity consumption and MSMEs' contribution to GDP. These statistics provide a quantitative overview of the trends, variability, and distributional characteristics of the key variables, laying a foundation for more in-depth analyses to explore the relationship between electricity access, regulatory challenges, financing issues, and taxation concerns faced by MSMEs in Nigeria. Figure 2 the graphical details of the electricity consumption by commercial and public entities as well as the contributions of MSMEs to the national GDP over the study period (2010 – 2023)

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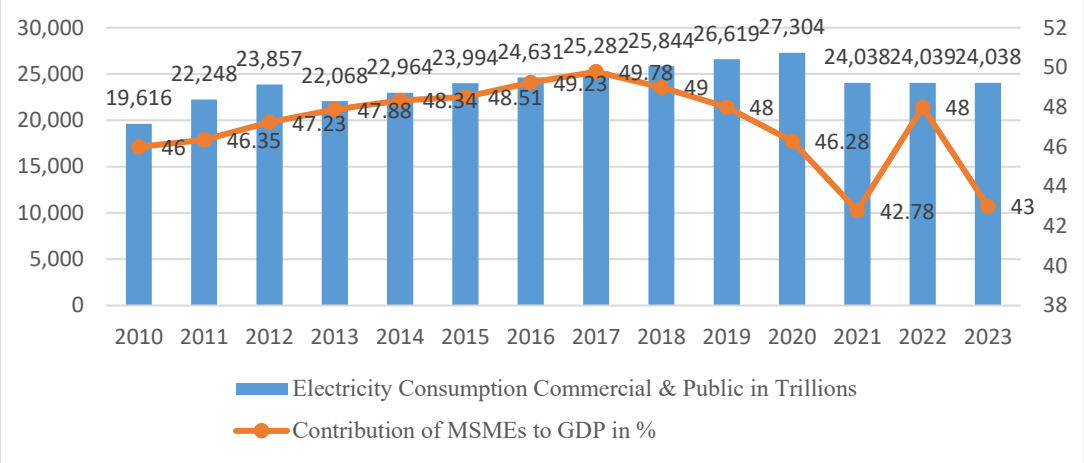


Figure 2: Electricity Consumption and MSMEs Contribution to GDP from 2010 to 2023

Figure 2 indicates a consistent increase in electricity consumption from 2010 to 2023. Despite this, the contribution of MSMEs to GDP has shown a fluctuating trend, initially increasing but later experiencing a decline. This suggests that, while electricity consumption has been on the rise, it does not necessarily translate to a proportional increase in the performance of MSMEs. Further analysis is needed to understand the factors contributing to the performance of MSMEs in relation to electricity access. Hence Figure 3 shows the analysis of the effects of regulation, financing, and taxation on the performance of the MSMEs and their contribution to national GDP

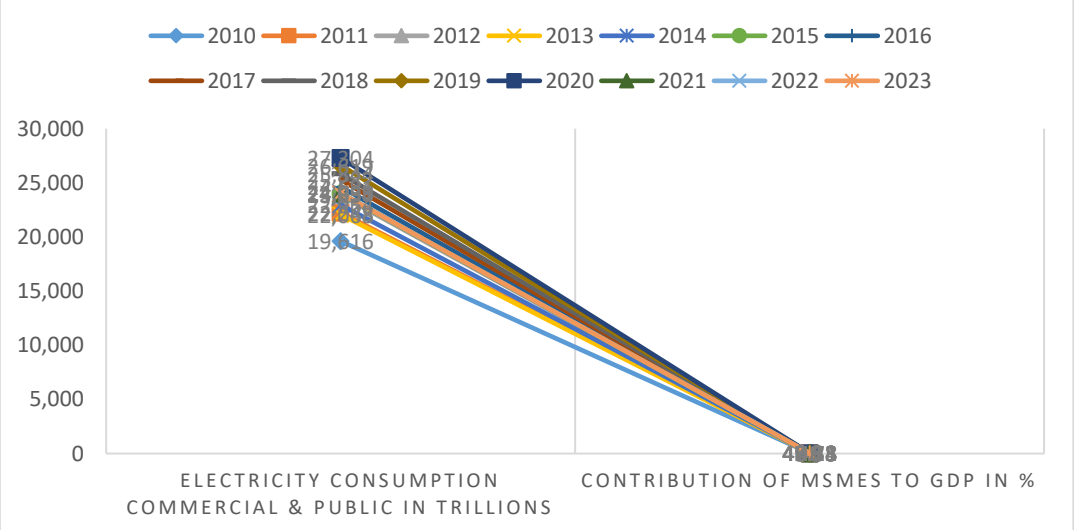


Figure 3: Effects of Electricity Regulation, Financing, and taxation on performance of MSMEs

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As indicated in Figure 3, poor regulation on power distribution, poor financing, and multiple taxation are major challenges affecting the performance of MSMEs in Nigeria which is in agreement with (Adewara, et al. 2023). These challenges have significant negative effects on the financial performance of MSMEs in the country (Gabriel et al. 2023). The unreliable power distribution hinders the smooth operation of businesses, leading to decreased productivity and increased costs. Insufficient financing options limit the ability of MSMEs to invest in their operations (Okodua, et al. 2022). Additionally, multiple tax burdens and administrations further reduce the investment potential of MSMEs and hinder their financial performance. These challenges highlight the need for improved regulation and infrastructure in the electricity sector, increased access to financing options, and the harmonization of tax systems to alleviate the burden on MSMEs in Nigeria.

Discussion

The fluctuation of power distribution in Nigeria has an impact on the growth of MSMEs. Studies have shown that the growth of manufacturing firms in Nigeria is positively influenced by electricity distribution. However, another study found that electricity distribution has a negative and insignificant relationship with manufacturing sector output in Nigeria (Akiri, 2015). It is important to note that the impact of power distribution on MSMEs may vary depending on factors such as the efficiency of the electricity market and the use of clean energy technologies. While one study focused on the potential of a mini-hydropower plant to partially offset the use of fossil fuel-powered generators and reduce greenhouse gas emissions (Edet, et al. 2022), another study emphasized the need for sustainable power distribution and the implementation of an energy mix involving conventional and renewable technologies to achieve rapid economic development (Anwana, & Akpan, 2016). Therefore, the fluctuation of power distribution can affect the growth of MSMEs in Nigeria, but the specific impact may depend on various factors and the implementation of appropriate strategies
The relationship between electricity consumption and the performance of Micro, Small, and Medium Enterprises (MSMEs) is complex and requires further analysis. While there is a consistent upward trajectory in electricity consumption from 2010 to 2023, the contribution of MSMEs to the Gross Domestic Product (GDP) has shown inconsistent and fluctuating patterns over the same period. Initially, there was a positive surge in MSMEs' contribution to the GDP, but this momentum was

not sustained as they later experienced a decline in performance. To understand the underlying dynamics and determinants of MSME performance in relation to electricity access, a comprehensive examination is necessary. Thus, this study examined the impacts of electricity regulation, financing opportunity, and taxation on the performance of MSMEs. This study however revealed that electricity consumption was not only responsible for the MSMEs performance but other factors among which are the poor electricity regulation, inadequate MSMEs financing, and multiple taxation. Other factors could also be explored and understood to provide more comprehensive explanation and for further scrutiny on this and their complex relationship.

Conclusion

The study centers on the impact of power distribution and metering on Micro Small and Medium Enterprises in Nigeria. Over the years, Nigeria is a large market for business penetration given its population size – the largest in the sub-Saharan region. It is home to many multinationals, micro and macro enterprises that leverage on its natural resources and market size for growth in business. However, many businesses have experienced retarded growth while some have completely shut down their businesses with the major factor attributed to inadequate electricity supply and high operation costs among others. The study made use of secondary data obtained from the National Bureau of Statistics (NBS), Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), and Statista, while descriptive statistics such as tables and graphs were used to present the analysis of the study. This was done with emphasis on electricity consumption and performance of MSMEs and their contribution to Nigeria GDP. The findings revealed that; high cost of electricity, lack of proper regulation on electricity; multiple tax on MSMEs, lack of access to fund among others are challenges facing the MSMEs in Nigeria.

Recommendations

1. Ministry of Power, Nigerian Electricity Regulatory Commission (NERC), and Distribution Companies (Discos) should establish regular maintenance and upgrading procedure for electricity distribution infrastructure including the metering system to enhance power distribution to Micro, Small, and Medium Enterprises (MSMEs) in Nigeria. This initiative aims to improve the reliability, efficiency, and capacity of the electricity distribution network,

addressing the challenges faced by MSMEs and promoting sustainable business operations.

2. Nigerian Electricity Regulatory Commission (NERC) with relevance agencies should review and streamline regulations, ensuring a more transparent, efficient, and responsive regulatory framework tailored to the unique needs of Micro, Small, and Medium Enterprises (MSMEs) in Nigeria. This initiative aims to create a conducive environment, improve compliance, and enhance the overall regulatory experience for MSMEs in the power sector.
3. Federal Inland Revenue Service (FIRS) and relevant tax authorities to streamline and harmonize the tax regime for Micro, Small, and Medium Enterprises (MSMEs) in Nigeria. Doing this would simplify and ensure transparency in taxation system. I would also eliminate the burden of multiple taxation, fosters business growth, and encourages compliance among MSMEs.
4. Central Bank of Nigeria (CBN), Bank of Industry (BOI), and other relevant financial institutions should design and implement targeted financial inclusion programs specifically tailored to address the challenges of poor access to funds for Micro, Small, and Medium Enterprises (MSMEs) in Nigeria. This initiative would provide affordable and accessible financing options, fostering the growth and sustainability of MSMEs in the country.

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