

POWER SUPPLY MANAGEMENT AND PERFORMANCE OF MANUFACTURING COMPANIES IN
SOUTH-EAST, NIGERIA

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Abstract

The study examined the relationship between power supply management and performance of manufacturing companies in South-East, Nigeria. The study employed survey research design and questionnaire was used to collect data. The data collected were presented in tables and analysed using Simple Percentages, Mean Statistic and Pearson Product Moment Correlation Coefficient through SPSS version 21.0. It was found that electricity duration and electricity affordability/cost has positive relationship with customer retention and cost reduction. It concludes that whenever enterprises were faced with unstable power supply, they suffered low productivity, customers' retention, cost reduction, and market share got reduced. It was recommended that the Nigerian government should effectively improve electricity access to manufacturing companies in the country. In addition, the government should do everything within its powers to ensure that power supply in Nigeria is stable with improved capacity so as to enhance productivity of business.

Key Words: *Power Supply Management, Performance, Electricity Duration, Electricity Affordability/Cost, Customer Retention and Cost Reduction.*

Introduction

It is observed generally that in Nigeria, power supply management has not achieved the results expected to be achieved. This is because there are many challenges which still hinder the effectiveness of poor supply management and steady power for the public. This work used electricity duration, and electricity cost to measure the extent of power supply management in Nigeria. When both the manufacturing firms (like the brewery industries) and their customers have access to electricity, they will achieve their goals of production and preservation. More so, if the duration for electricity is up to 24 hours uninterrupted or anything near that, manufacturing firms will be very effective and perform well (Okoro-chukwu, 2022). When the cost of electricity as it relates to bills is very affordable, organisations will have to use electric power for their production process. When the above are positive, it means there is improved power supply management which will have positive impact on performance of manufacturing sector.

According to Nwokorie (2023), effective power supply is the road map for improved sustainability and overall performance of manufacturing sector. According to Mosoma (2020), the extent of power supply management can enhance or impede business performance. Every

organisation, especially manufacturing firms wants to achieve certain goals and objective in their business. If such goals are achieved, it means that the business is performing. That is why Okorochukwu (2022) observed that performance is the extent to which organisations achieve their goals with the available capital resources, human resources, and other organisational resources. According to Ugo (2022), organisation performance refers to the effectiveness of the organisation in fulfilling its purpose. Optimal organisational performance is the end result of all organisation systems, processes and people working in alignment with the strategic intent, in harmony with the current environment, and utilising resources in an optimal manner.

Statement of the Problem

Basically, the impact of regular power supply on business viability for manufacturing sector cannot be neglected. There is need to examine the extent to which this topic has been covered by previous studies. Going by the previous works done, the subject matter of this work “power supply management, and performance using manufacturing (breweries) in south east Nigeria”, has not been exactly covered by previous researches. Olatunji (2019) wrote on effect of electricity insecurity on the performance of small scale businesses in the Akoko area of Ondo State, Nigeria. The work used small business and was done in Akoko area of Ondo State.

Again, Cissokho and Seck (2013) examined the effects of electric power outages on the productivity of small and medium enterprises. It used small business firms. Scott, Darko, Lemma and Juan-Pablo (2014) examined how electricity insecurity affects businesses in low and middle income countries using India and Ghana. The work was more of comparative study, and was not done within south east Nigeria. Jebungei (2021) studied influence of power sector on organisational performance of cosmetic manufacturing firms in Kenya. It used cosmetics firms in Kenya. All these provides reasons for an investigation into the relationship between power supply management and performance of manufacturing companies in South-East, Nigeria.

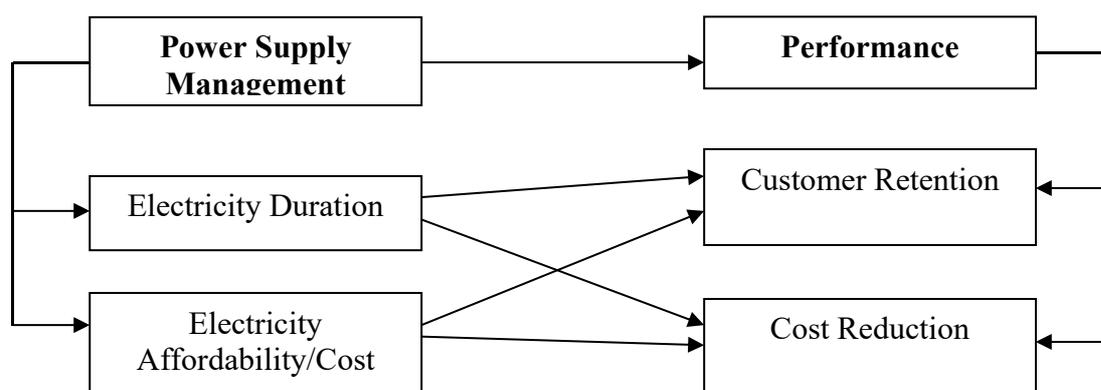


Fig. 1: Conceptual Operational Framework

Source: The Researcher’s Desk, 2025

Objectives of the Study

The main objective of this study is to investigate the effect of power supply management on performance of manufacturing companies in South-East, Nigeria. Specifically, this study is undertaken to:

1. investigate the relationship between electricity duration and customer retention of manufacturing companies;
2. examine the extent to which electricity duration relates with cost reduction of manufacturing companies;

3. assess the extent to which electricity affordability/cost relates with customer retention of manufacturing companies;
4. determine the relationship between electricity affordability/cost and cost reduction of manufacturing companies.

Research Questions

The following research questions emerge from the objectives of this study:

1. What is the relationship between electricity duration and customer retention of manufacturing companies?
2. To what extent does electricity duration relate with cost reduction of manufacturing companies?
3. To what extent does electricity affordability/cost relate with customer retention of manufacturing companies?
4. What is the relationship between electricity affordability/cost and cost reduction of manufacturing companies?

Research Hypotheses

The following research questions emerge from the objectives of the study:

Ho1: There is no significant relationship between electricity duration and customer retention of manufacturing companies.

Ho2: Electricity duration does not relate with cost reduction of manufacturing companies.

Ho3: Electricity affordability/cost does not relate with customer retention of manufacturing companies.

Ho4: There is no significant relationship between electricity affordability/cost and cost reduction of manufacturing companies.

Scope of the Study

The subject scope of this study focused on power supply management and performance of manufacturing companies in South-East, Nigeria.

Geographically, the study covered brewery industries in South-East, Nigeria. It specifically used Nigerian Brewery Enugu, Enugu State, Intafact Brewery Onitsha, Anambra State, and Nigerian Breweries Awo-Mmamma, Imo State. This is because the breweries are the oldest in the South-East and still operational.

The unit scope covered the senior and management staff of the three beverage manufacturing companies in South-East, Nigeria. This is because it is the senior and management staff that can give information on extent of power supply and performance of the organisations.

Conceptual Review

Electric Power Supply

Electricity consumers in the country are often not certain about the amount to pay for energy used because of the refusal of the electricity distribution companies to provide efficient metering system to determine the amount of power consumed (Olatunji, 2019). This creates enormous challenges for electricity consumers as they grapple with other socio-economic issues which invariably affect their standard of living. Electricity power supply stipulates the rate of electricity supply in an economy. Badmus (2017) stated that electricity is most often generated at a power station by electromechanical generators, primarily driven by heat engines

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fueled by chemical combustion or nuclear fission but also by other means such as the kinetic energy of flowing water and wind. There are many other technologies that can be and are used to generate electricity such as solar photovoltaic and geothermal power. The electric power industry provides the production and delivery of power, in sufficient quantities to areas that need electricity, through a grid connection. The grid distributes electrical energy to customers (Aigbokan, 2019).

Electric power is generated by central power stations or by distributed generation. A power supply is an electronic device that supplies electric energy to an electrical load. The primary function of a power supply is to convert one form of electrical energy to another and, as a result, power supplies are sometimes referred to as electric power converters. Some power supplies are discrete, stand-alone devices, whereas others are built into larger devices along with their loads. Examples of the latter include power supplies found in desktop computers and consumer electronics devices (Atser, 2018). Every power supply must obtain the energy it supplies to its load, as well as any energy it consumes while performing that task, from an energy source. Depending on its design, a power supply may obtain energy from various types of energy sources, including electrical energy transmission systems, energy storage devices such as a batteries and fuel cells, electromechanical systems such as generators and alternators, solar power converters, or another power supply.

Electric power is the rate at which electric energy is transferred by an electric circuit. Electric power is generally supplied to businesses and homes by the electric power industry through an electric power grid (Makbere, 2020). In the view of Jebungei (2021) electric power is usually sold by the kilowatt hour (3.6 MJ) which is the product of power in kilowatts multiplied by running time in hours. Electric utilities measure power using an electricity meter, which keeps a running total of the electric energy delivered to a customer (Aigbokan, 2019). For electric utilities, it is the first processes in the delivery of electricity to consumers. The other processes, electricity transmission, distribution, and electrical power storage and recovery using pumped-storage methods are normally carried out by the electric power industry. On the other way round, unstable power supply entails the poor power situation in Nigeria. Ekpo (2008) observed that the most critical aspect of infrastructure to investment is power (electricity) supply which unfortunately had been on the low side in Nigeria. He went further to conclude that fixing power (electricity) will spur economic growth and make our industries more competitive.

Power Supply Management

To measure power supply management, we used electricity duration and affordability/cost.

1. Electricity duration: The number of hours for which electricity is available per day provides the basis for determining access to electricity by business concerns (Olatunji, 2019). The MTF gives a range between less than one hour and more than 18 hours per day of electricity supply on the basis of 5-tiers. It is also measured by the number of power interruptions per day. This also takes into cognisance the number of scheduled interruptions and unscheduled interruptions (Olatunji, 2019). This distinction is important because consumers are able to provide alternative source of electricity supply during scheduled interruption which tend to mitigate the level of electricity insecurity on the business. This is also in line with quality. The quality of electricity supply is measured by the level of voltage of power supply to households and business concerns. Mathew (2017) asserts that quality is one of the most difficult indices of access to electricity to measure. In the multi-tier framework, quality is

measured in terms of low voltage to high voltage on a five scale basis. Also, voltage is often reflected on the basis of how many appliances are damaged as a result of power surge.

2. Affordability/cost: This indicator measures the level of expenditure on electricity by households and business concerns. The scale of measurement ranges from low affordability to highly affordable on a five point scale. In Nigeria, households and business entities electricity consumption are billed through postpaid and pre-paid methods (Olatunji, 2019). However, majority of the billings are done through postpaid where the amount of energy consumed for the period is accessed after use by the relevant distribution authorities. In practice however, this is not done as consumers are given estimated billings which are usually more than what they actually consumed.

Organisational Performance

Organisational performance is the final achievement of an organisation which is measured either in financial and non financial indicators, and contains a few things, such as the existence of certain targets are achieved, has a period of time in achieving the targets and the realisation of efficiency and effectiveness (Gibson, Ivancevich & Donnelly, 2010). Organisational performance refers to ability of an enterprise to achieve such objectives as it concerns high patronage, customer loyalty, customer satisfaction, high profit, quality product, large market share, good financial results, and survival at pre-determined time using relevant strategy for action (Koontz & Donnell, 2013). Organisational performance can also be used to view how an enterprise is doing in terms of level of profit, market share and product quality in relation to other enterprises in the same industry. Consequently, it is a reflection of productivity of members of an enterprise measured in terms of revenue, profit, growth, development and expansion of the organisation.

Organisational performance has also been defined as successful achievement of financial performances such as increased sales, profitability and market share (Agu & Anichebe, 2015). Profitability is a measure of the effectiveness of business as it indicates what profit the business has made from its sales or money invested in the firm (Harvey, 2017). Profit maximisation, return on investment and shareholders' wealth are regarded as the primary objectives of businesses, while secondary objectives include productivity, business growth, sales maximisation, safety and security and socioeconomic goals.

Theoretical Framework

Structural Functional Theory

The contributors to the development and popularisation of this theory include Gabriel Almond, David Easton, Emile Durkheim, A.R. Radcliffe-Brown, Herbert Spencer Malinowski and Radcliff Brown etc. This theory originated in biological and medical sciences and was adopted as a mode of analysis in social sciences, especially sociology. The theory as a framework of analysis focuses attention on two primary issues. Namely: "(functions)" and "(structure)". Structural functionalism as it simply called raises two analytical questions, namely:

- What function are prerequisite and which must be performed in order to ensure the survival and maintenance of the political system?
- What structures are needed to ensure the proper and adequate performances of such functions?

This theory states that where there is a structure erected or instituted, there is a function assign to it to perform in the society. Structure refers to the arrangement within the system which performs the functions. It is also the way in which the parts are connected. The

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use of structural functional theory is based on its principles – structure and function. It should be noted here that the electric distribution companies as a structures are supposed to perform significant functions by providing electric service to the users so as to enhance development. When the structure performs its functions, there will be high level of improvement in the power supply and such will have positive impact on socio-economic development.

The theory was adopted because it is the role of the electric distribution companies (structure) to perform function in providing the needed electric services to the users. If the organisation performs positive function toward the achievement of its goals, the users of electric service will be happy, and that will have positive impact of manufacturing sector; hence leading to economic growth. If electric distribution companies are effective in offering the service to the public and manufacturing sector, there will be high improvement in the development of Nigeria. Therefore, the achievement of the socio-economic development within the society is only possible when electric distribution companies are pragmatically committed towards providing good electric services for its numerous beneficiaries and customers.

Empirical Review

Some studies have been done in related areas of this subject matter.

Onakoya and Odedairo (2015) examined the casual relationship between energy consumption and economic growth in Nigeria using data from 1986 to 2011. Applying granger causality test and co-integration test, the findings show absence of causality between energy consumption and economic growth. This means that electricity consumption does not have long-run impact in economic growth.

Obinwa (2016) carried out a research on the effects of business planning on the performance of Nigeria firms using the Nigeria Bottling Company as the focal point. Based on the above four research objectives, four research questions, and two hypotheses guided the study. The researcher employed descriptive survey research design and the questionnaire was used as the instrument of data collection. The staff of the Nigeria Bottling Company were used as the study population from where 80 respondents were sampled using simple random sampling technique. Though out of the 80 questionnaire distributed, only 60 were properly filled returned and used. The data collected were presented in tables and analysed using simple percentage and hypotheses were tested using analysis of variance (ANOVA). The findings revealed that there is a positive effect of business ethics on the host community and its customers and there is significant relationship between business ethics and growth of business organisation.

Badmus (2017) writes on poor electric service delivery and consumer satisfaction in Nigeria using selected communities in Enugu State as the focal point. Survey research design was used and questionnaire served as the instrument of data collection. The study used 600 respondents from Nike in Enugu State as the sample size. The research instrument comprises personal observation and questionnaire and the data were analysed using t-test statistics. It was discovered that corruption, poor funding and ineffectiveness of electric companies contribute to poor service delivery and leads to users' dissatisfaction.

Ikalama and Eketu (2017) examined poor power supply and performance of hotels in Port Harcourt. It adopts a cross-sectional survey and generated research data from 7 purposively selected hotels operating in Port Harcourt, The formulated research hypotheses were tested using Spearman's Rank Order Correlation Coefficient with the aid of the statistical

Package for social science (SPSS version 20.0). From the test results, the study found that hotels' survival is largely correlated with the extent of electricity availability and usage.

Oganezi and Lozie (2017) studied power supply and effectiveness of commercial banks in Ebonyi State, Nigeria. The study adopted a survey research design using both quantitative and qualitative approaches in the investigation. A total of 120 copies of structured questionnaire were distributed to employees of the selected commercial bank branches in Ebonyi State, Nigeria. The percentage of returned questionnaire was 91.7 %. Analysis of the data was carried out using descriptive statistical methods; simple ratios, percentages, correlations and regression. The hypotheses were tested at 0.05 level of significance. All the null hypotheses were rejected. It was found that there is significant impact power supply and effectiveness.

Ikebugo (2018) focused on electricity as the factor influencing performance in production firms in Port Harcourt City. Cluster sampling was carried out in Port Harcourt manufacturing firms, and 120 staff were sampled from 12 companies which has up to 300 population. The study used survey through the questionnaire instrument. Spearman Rank Correlation Coefficient and multiple regressions were adopted for the test of hypotheses. The study found that regular power can enhance the availability and sustainability of production firms.

Nwankwo and Ajemunigbohun (2018) focused on relationship electricity marketing and firm performance in Enugu State. The study employed cross-sectional survey design. Study was conducted in Lagos Metropolis. Duration of study was from October, 2012 to February, 2016. The study employed stratified random sampling technique and thus, gathered data through the use of structured questionnaire. The sample population consisted of 58 respondents made up of marketing managers of EEDC were randomly selected. The statistical instruments employed for this study were Simple linear regression and Kolmogorov-smirnov test. Two hypotheses were tested in this study. The study found that CRM positively influences customer retention for electricity consumers.

Nurudeen, Nafiu and Jibo (2018) investigated the relationship between electricity power fluctuation and the performance of small and medium enterprises in Dekina, Kogi State. The objective of the study was to find out the influence of unreliable electricity supply on the economic contribution and performance of SMEs in Dekina Local Government of Kogi State. The study employed the survey research designed and findings from the study revealed that unreliable electricity supply has caused increased operations cost and the ultimate liquidation of some of the SMEs in the area.

Gabi (2019) researched on pre-paid meter and firm performance in Accra Ghana. Participative theory was adopted as the researcher employed descriptive survey design, using a population/sample of 2000 staff in selected 19 firms from Accra Metropolis Ghana. Interview system was used as the major instrument from where data were analysed using mean statistics. It was discovered that pre-paid meter usage has affected production firms as they pay more to have electricity.

Ogundipe and Apata (2019) used Vector Error Correction Model (VECM) to examine the casual relationship between energy consumption and economic growth in Nigeria. The study found the existence of a unique co-integrating relationship amidst variables that is energy consumption impact economic growth in both short and long-run.

Olatunji (2019) determine the effect of electricity insecurity on the performance of small scale businesses in the Akoko area of Ondo State, Nigeria. A descriptive research design was utilised for the study. Multiple regression technique was used to establish the relationship

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among the study variables. The results from the analysis revealed that capacity of electricity supply, duration of electricity supply and reliability of electricity supply had significant positive relationship with the performance of small businesses. However, results from the study could not establish a relationship between cost of electricity supply, quality of electricity supply and the performance of small businesses.

Udah (2019) carried out a research on industrial development, electricity crisis, and economic performance in Nigeria. The researcher focused on Enugu urban of Enugu State as the focal point. In line with the above, two research objectives, two research questions and two hypotheses guided the study. Survey research design was used and questionnaire served as the instrument for data collection. Big business enterprise and residents (200 in all) in the study area were selected as sample. The data collected were presented in tables and analysed using simple percentage and analysis of variance (ANOVA). The research revealed that electricity power supply is one of the basic instrument for enhancing business stability and growth; the issue of irregular/poor power supply is the major hindrance to business operators and resident in the area; the issue of over charges, lack of pre-paid meter and negative attitude of the former power holding company of Nigeria also hinder electricity supply and utilisation in the area.

Aliya (2020) analysed the power sector reform and its business performance in India. The work used ex-post facto research design. It analysed data using mean and t-test. It discovered that power sector reform can enhance business performance.

Nwokorie (2023) examined electric power and business growth in selected manufacturing firms in Port Harcourt, Rivers State, Nigeria. The work adopted survey research design; and questionnaire was used as an instrument of data collection. The data collected were presented in tables and analysed using simple percentage and Pearson Product Moment Correlation Coefficient (at 0.05% level of significance) through SPSS version 21.0. On the basis of data analysis, it was found that there is significant relationship between electricity and business profitability of manufacturing companies in Port Harcourt, Rivers State; there is significant impact of electricity on customer patronage of manufacturing companies in Port Harcourt Rivers State; there is significant effect of electricity reliability on quality products in manufacturing companies in Port Harcourt Rivers State; and electricity affordability/cost does not affect business expansion in manufacturing companies in Port Harcourt Rivers State.

Cissokho and Seck (2023) examined the effects of electric power outages on the productivity of small and medium enterprises. The study utilised a non-parametric approach based on Data Envelopment Analysis (DEA) to find out the relationship between power outages and the performance of SMEs in Senegal. Results from the study revealed a positive relationship between power outages and productivity of the SMEs. This result was attributed to the fact that the owners of SMEs are able to adopt sound management practices to mitigate the effects of incessant power cuts in Senegal.

Nwankwo and Njogo (2024) researched on electricity supply and industrial development in Nigeria. The study was qualitative in nature as descriptive survey was employed and questionnaire served as the research instrument. The people of Okigwe in Imo State made up the population from where 50 power users within Umuchima and Okpara road were sampled for the study. Analysis of variance and regression statistics were used for analysis of data. The result of the regression shows that, the electricity (ELEC), Gross fixed capital formation (GFCF), industrial production (INDU) variables and population have the positive sign. That is, they are positively related to RGDP per capita. Turning to the industrial production

expenditure model, the electricity generation expenditure, gross fixed capital formation and population variables are positively related to GDP per capita as a way of facilitating the economic development.

Enu and Havi (2024) researched on electric consumption and economic development in Ghana. The study was carried out to determine the influence of electricity on economic growth in Ghana. Descriptive survey research design was used and sample/population comprised 2,800 power users of electricity in Ango Accra Ghana. Panel interview was used as the research instrument and the data collected were analysed using mean frequency and standard deviation. The study revealed that in the long term, a hundred percent increase in electricity power consumption will cause real gross domestic product per capita to increase by approximately fifty-two percent. However, in the short run, electricity consumption negatively affects real gross domestic product per capita. The study again revealed that unidirectional causality run from electricity consumption to economic growth meaning that any policy actions taken to affect the smooth consumption of electricity in Ghana will definitely affect her gross domestic product per capita.

Scott, Darko, Lemma and Juan-Pablo (2024) examined how electricity insecurity affects businesses in low and middle income countries. The objective of this study was to assess and quantify the impact of electricity insecurity on firms' productivity and competitiveness, and how it impacts on their investment decisions for start-up and expansion. The study carried out regression analysis to determine the effects of electricity insecurity on firms' total factor productivity, cost-competitiveness, investment, and generator ownership, using data from the Enterprise Surveys for the six selected countries. The study showed a negative relationship between electricity insecurity and firms' total factor productivity.

Research Gap

Some related studies have been done on the subject matter. However, the exact topic has not been covered. Research gap exist as follows:

1. **Subject matter:** Most of the past studies covered independent variable (power supply management without the same dependent variable i.e. performance). Others covered dependent variables without the independent variable. For that, there is gap on the topic.
2. **Geographical gap:** This work covered only selected brewery companies in South East Nigeria. Some of the past studies did not use Nigeria organisations. Some that used Nigeria organisations were not done within the south east, but used other parts of Nigeria. Still, few works done within the south east did not used breweries companies.

Methodology

Research Design

The work used survey design. Survey is a research plan through which primary data are consulted and utilised.

Population of the Study

The population of this study covered 313 senior and management staff of three major breweries companies in South-East, Nigeria. They are therefore presented in the table below:

Table 1: The breweries and population under study.

S/N	Name of Company	Number of Staff
1	Nigeria Brewery Enugu, Enugu State	120
2	Intafact Brewery Onitsha, Anambra State	93

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3	Nigerian Breweries Awo-Mmamma, Imo State	100
	Total	313

Sources: Personnel Unit of the Breweries under Study, 2025.

Sample Size Determination

The statistical formula derived by Taro Yamane (1969) was employed thus:

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

When n = sample size to be derived
 N = total population
 e = tolerable level of error of significance (0.05)

$$1 = \text{constant}$$

$$n = \frac{313}{1+313(0.05)^2}$$

$$n = \frac{313}{1+0.783}$$

$$n = \frac{313}{1.783}$$

$$n = 176$$

The sample size is therefore 176

Sampling Techniques

Simple random method was used.

Instrument for Data Collection

The instrument for data collection is the questionnaire.

Validity of Research Instrument

Content and face validity methods were used.

Reliability of Research Instrument

For this work, a pilot test was first conducted with a separate group who are not but possess similar characteristics with the respondents. The Pearson Product Moment Correlation Coefficient (PPCC) (r) was used to calculate the reliability index which gave 0.78.

Method of Data Analysis

The data collected in this study were analysed using mean statistics and Pearson Product Moment Correlation Coefficient (PPMCC) at 0.05 level of significance through Statistical Package for Social Sciences (SPSS version 21.0).

Data Presentation, Analysis and Interpretation

It should be noted that out of 176 copies of the questionnaire distributed, only 152 copies were returned and used.

Question 1: What is the relationship between electricity duration and customer retention of manufacturing companies?

Table 2: The relationship between electricity duration and customer retention of manufacturing companies.

S/N	Questionnaire Items	SA	A	D	SD	N	ΣX	X	Dec.
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1	Improved power duration will lead to improved customer retention	50	77	15	10	152	471	3.1	Positive
2	Sales turnover and increase customer base will increase through improved production from regular power	71	40	25	16	152	470	3.1	Positive
3	Effectiveness of power supply is the avenue for increased customer retention	68	84	-	-	152	524	3.4	Positive
4	Customer referral will increase when the company has regular power supply	66	83	-	-	152	513	3.4	Positive
5	Customer retention/reference will increase when the company produce more through electricity power supply	68	68	10	6	152	502	3.3	Positive
	Grand mean							3.3	

Source: field survey, 2025

It was discovered in table 2 that all the items were positive. This is because item 1 has a mean of 3.1, item 2 has a mean of 3.1, item 3 has a mean of 3.4, item 4 has a mean of 3.4 and item 5 has a mean 3.3; hence all the items have mean scores more than 2.5 and above. It is therefore concluded that there is significant relationship between electricity duration and customer retention of manufacturing companies.

Question 2: To what extent does electricity duration relate with cost reduction of manufacturing companies?

Table 3: The extent electricity duration relates with cost reduction of manufacturing companies.

S/N	Questionnaire Items	SA	A	D	SD	N	ΣX	X	Dec.
1	There is poor electricity duration for the company	2	-	139	11	152	297	2.0	Negative
2	Cost reduction of the company is possible through improved power duration	57	89	4	2	152	505	3.3	Positive
3	There is need for regular power supply so as to improved effectiveness and reduce waste	60	50	22	20	152	454	3.0	Positive
4	The hope of improved public electricity duration for the company is high	5	10	68	69	152	255	1.8	Negative
5	More power system for the company is an	68	84	-	-	152	524	3.4	Positive

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	avenue to increase its customer base for patronage								
	Grand mean							2.7	

Source: field survey, 2025

It was discovered in table 3 that not all the items were positive. This is because item 1 has a mean of 2.0, item 2 has a mean of 3.3, item 3 has a mean 3.0, item 4 has a mean of 1.8 and item 5 has a mean 3.4; hence not all the items have mean scores below 2.5. It is therefore concluded that electricity duration relates with cost reduction of manufacturing companies.

Question 3: To what extent does electricity affordability/cost relate with customer retention of manufacturing companies?

Table 4: The extent electricity affordability/cost relates with customer retention of manufacturing companies.

S/N	Questionnaire Items	SA	A	D	SD	N	ΣX	X	Dec.
1	Low cost of bill can reduce price of products and lead to improved sales	123	15	9	5	152	560	3.7	Positive
2	Electricity bill affordability is the avenue to improve customer retention	101	33	11	7	152	532	3.5	Positive
3	Increase customer base is possible through low bill for the company	89	45	12	6	152	521	3.4	Positive
4	High level of customer preference is possible through low cost of product and low bill for the company	40	77	23	19	152	456	3.0	Positive
5	There is need to give production companies lower bills so as to motivate them to sell products on affordable rate to customers	60	50	22	20	152	454	3.0	Positive
	Grand mean							3.3	

Source: field survey, 2025

It was discovered in table 4 that all the items were positive. This is because item 1 has a mean of 3.7, item 2 has a mean of 3.5, item 3 has a mean of 3.4, item 4 has a mean of 3.0 and item 5 has a mean 3.0; hence all the items have mean scores more than 2.5 and above. It is therefore concluded that electricity affordability/cost relates with customer retention of manufacturing companies.

Question 4: What is the relationship between electricity affordability/cost and cost reduction of manufacturing companies?

Table 5: The relationship between electricity affordability/cost and cost reduction of manufacturing companies.

S/N	Questionnaire Items	SA	A	D	SD	N	ΣX	X	Dec.
1	The electricity distribution company give our organisation affordable bill	25	16	71	40	152	330	2.2	Negative
2	Low cost of bill can encourage firm growth	89	45	12	6	152	521	3.4	Positive
3	There is significant relationship between the bill of the company and cost reduction in production	60	50	22	20	152	454	3.0	Positive
4	Our company is achieving cost reduction based on reduce bill of electricity	10	6	68	68	152	262	1.7	Negative
5	There is need for offer of affordable bills to companies to enable them achieve their business goals	68	84	-	-	152	524	3.4	Positive
	Grand mean							2.7	

Source: field survey, 2025

It was discovered in table 5 that all the items were negative. This is because item 1 has a mean of 2.0, item 2 has a mean of 1.9, item 3 has a mean 2.2, item 4 has a mean of 1.8 and item 5 has a mean 1.6; hence all the items have mean scores below 2.5. It is therefore concluded that there is significant relationship between electricity affordability/cost and cost reduction of manufacturing companies.

Test of Hypotheses

Ho1: There is no significant relationship between electricity duration and customer retention of manufacturing companies.

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Fig. 2: To test the hypothesis five, data in table 4.2 was used.

H _{i1}	There is significant relationship between electricity duration and customer retention of manufacturing companies	Pearson Correlation = 0.85 Sig = 0.05 N = 152 Grand mean = 3.3	VALID
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Source: Data in table 2

The analysis has a grand mean of 3.3. The above table indicates that the Pearson product moment correlation is 0.85 which reveals that there is significant relationship between electricity duration and customer retention of manufacturing companies. Hence, the null hypothesis is rejected.

Ho2: Electricity duration does not relate with cost reduction of manufacturing companies.

Fig. 3: To test the hypothesis six, data in table 3 was used.

H _{i2}	Electricity duration relates with cost reduction of manufacturing companies	Pearson Correlation = 0.70 Sig = 0.05 N = 152 Grand mean = 2.7	VALID
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Source: Data in table 3

The analysis has a grand mean of 2.7. The above table indicates that the Pearson product moment correlation is 0.70 which reveals that electricity duration relates with cost reduction of manufacturing companies. Hence, the null hypothesis is rejected.

Ho3: Electricity affordability/cost does not relate with customer retention of manufacturing companies.

Fig. 4: To test the hypothesis eight, data in table 4 was used.

H _{i3}	Electricity affordability/cost relates with customer retention of manufacturing companies	Pearson Correlation = 0.85 Sig = 0.05 N = 152 Grand mean = 3.3	VALID
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Source: Data in table 4

The analysis has a grand mean of 3.3. The above table indicates that the Pearson product moment correlation is 0.85 which reveals that electricity affordability /cost relates with customer retention of manufacturing companies. Hence, the null hypothesis is rejected.

Ho4: There is no significant relationship between electricity affordability/cost and cost reduction of manufacturing companies.

Fig. 5: To test the hypothesis nine, data in table 5 was used.

H _{i4}	There is significant relationship between electricity affordability/cost and cost reduction of manufacturing companies	Pearson Correlation = 0.70 Sig = 0.05 N = 152 Grand mean = 2.7	VALID
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Source: Data in table 5

The analysis has a grand mean of 2.7. The above table indicates that the Pearson product moment correlation is 0.70 which reveals that there is significant relationship between

electricity affordability/cost and cost reduction of manufacturing companies. Hence, the null hypothesis is rejected.

Discussions of Findings

Electricity Duration and Customer Retention of Manufacturing Companies

It was found in research hypothesis one that there is significant relationship between electricity duration and customer retention of manufacturing companies. It has a mean and Pearson results of 3.3 and 0.85. The major challenges of production firms are low level of electricity capacity, poor power duration and low voltage (Agbo, 2017). This accounts for the reason why Ijezie (2016) opines that erratic power supply is one of the factors that puts organisational profitability at risk.

Electricity Duration and Cost Reduction of Manufacturing Companies

It was found in our research hypothesis two that electricity duration relates with cost reduction of manufacturing companies. It has a mean and Pearson results of 0.70 and 2.7. According to Jebungei (2021), Nigeria lack regular electricity duration and that has affected the efficiency, effectiveness and productivity of private section organisations.

Electricity Affordability/Cost and Customer Retention of Manufacturing Companies

It was found in research hypothesis three that electricity affordability/cost relates with customer retention of manufacturing companies. It has a mean and Pearson results of 3.3 and 0.85. In his study, Okoro-chukwu (2022) discovered that stable power supply helped to achieve high customer base, expansion, effectiveness and customer retention. According to Ibrahim (2021), consistent electricity supply has the capability to influence or engineer the growth of firms, through improved customer patronage.

Electricity Affordability/Cost and Cost Reduction of Manufacturing Companies

It was found in our research hypothesis four that there is significant relationship between electricity affordability/cost and cost reduction of manufacturing companies. It has a mean and Pearson results of 0.70 and 2.7. Basically, affordable price of electricity and improved duration can have positive impact on efficiency of production sectors (Ugo, 2022).

Conclusion

The benefits of electricity on business viability cannot be neglected. This is because private power sources are very costly and can reduce productivity and patronage of a manufacturing organisation. Basically, the issue of unstable power supply has been one of the problems affecting performance and growth of manufacturing business firms in Nigeria. Unstable power supply remains not only a challenge but a shame to the Nigerian government. It is worrisome that Nigeria's power sector has high energy losses, a low collection rate and low access to electricity by the private sector and individuals. The study found that electricity access, electricity duration and electricity affordability/cost has positive relationship with patronage, efficiency and productivity. Based on that, the researcher strongly believes that the country's electrical power demand is high but actual generation is considerably below demand. The researcher concluded that whenever enterprises were faced with unstable power supply, they suffered low productivity, customers' retention, cost reduction, and market share got reduced.

Recommendations

Based on the findings, the researcher recommended that:

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1. The government and Electricity distribution companies should try as much as possible to improve electricity duration so as to add values to manufacturing companies' productivity.
2. Electricity distribution companies should develop strategies to improve their electricity duration so as to enhance quality products and customer retention of manufacturing firms.
3. The government and power companies should not make electricity cost to be high so as to achieve business expansion for production firms.
4. The government should not leave the electric power generation and distribution in the hands of private power companies, to ensure affordability of bills.

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