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

Christian E. Bassey¹ and Imoh Kingsley Ikpe²
¹Lecturer, Department of Economics, University of Calabar, Calabar. NIGERIA
²Lecturer, Department of Economics, Akwa Ibom State University, NIGERIA

¹Corresponding Author: chrisbassey@unical.edu.ng

ABSTRACT

This research work 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 objectives of this study to analyze the comparative study of the effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. 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 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. The study recommends that the Nigerian government needs to consider the issue of power supply reliability very seriously by facilitating both private and public investment in electricity infrastructure.

Keywords-- Electricity Supply, Performance, Small and Medium Scale Enterprises, Calabar

I. INTRODUCTION

The importance of power supply to economic development of any nation cannot be overemphasized. Availability and access to reliable electricity supply has a rippling effect on productivity and welfare of society. Turning to the small and medium enterprises (SMEs), power supply serves as an indispensable input in their activities. Apart from its necessity for running many industrial machines, its role to the productivity of human capital is enormous. Virtually, all business activities, especially industrial units, require constant and effective flow of electricity. Similarly, serving as an input in production processes, electricity also contributes greatly to product marketing. In many cases, availability of power supply plays an important role in storing finished goods ahead of demand, and therefore enhances consumers’ satisfaction by assisting in making the goods available to consumers when needed. This also helps in building firm’s image and protects firm’s reputation as a result of customer’s trust being sustained on having their demand met.

The foregoing 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 socio-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. For instance, growth rate of GDP fell from 8.8% in 2012 to 7.1% in 2013 and its drop is attributed to negative growth in manufacturing subsector and service sector fueled by inadequate supply of electricity. This has along run negative effect on economic growth and development to every country (Ado & Josiah, 2015).

Turning to the importance of SMEs in economies around the world, both developed and developing, cannot be overstated. SMEs are the dynamic force for sustained economic growth and job creation and additions to Gross Domestic Product (GDP). They are valid, crucial component of an active industrial country. Ado & Josiah (2015) puts on record that the percentage contribution of SMEs to Gross Domestic Product (GDP) ranges from 60 percent in China, 57 percent in Germany, 55.3 percent in Japan and 50 percent in Korea, compared to 47.3 percent attained by Malaysia and Nigeria.
According to Organization for Economic Cooperation and Development (OECD) report, SMEs play a major role in economic growth in the OECD area, providing the source for most new jobs.

Over 95% of OECD enterprises are SMEs, which account for 60%-70% of employment in most countries. As larger firms downszie and outsource more functions, the weight of SMEs in the economy is increasing. In developing regions like Africa, the contributions of SMEs to economic growth are equally, if not more, substantial. An average of 50% of employment avenues in Africa are created by the operations of SMEs. In South Africa, 91% of formal businesses are Micro, Small and Medium Enterprises (MSMEs) and generate significant proportions of GDP and employment. In fact about 52%-57% of GDP is produced by MSMEs and 61% of employment is created by MSMEs (Berry, Poortinga, Segall & Pierre, 2002). In Ghana, for instance, 92% of formal businesses are SMEs. In comparison, though, the contribution of SMEs to GDP is greater in Ghana than in South Africa and Nigeria. SMEs contribute about 70% to GDP and provide up to 85% of employment in the manufacturing sector (Steel & Webster, 1991; Aryeetey, 2001; Abor & Quartey, 2010).

Clearly, SMEs play a key role in the economic growth and development and have been recognized as essential sources of endogenous growth. In the light of efforts to alleviate poverty and improve standards of living in Nigeria, an efficient SME sector is critical to that end. It is then imperative to create a congenial environment for their operation and growth. In assessing the above core role the availability of power supply plays, and the contribution of SMEs to economic development, bring together the need for a sound business atmosphere if an economy is to see development and improve the lives of its people.

Although, SMEs continue to be the fastest growing sector of the economies of developing countries, their operations have been engulfed by inadequate and unreliable power supply rendering most SMEs unproductive and inefficient. Access to a reliable electricity supply is considered to be very important to the operations of most small and medium size firms. Research works on electricity supply and firm performance suggest that taken the middle and lower income countries as a case, firms consider access to power supply to be one of the major limitations to their business. In addition, the 2013 enterprise survey, identified electricity as the second major obstacle to enterprise development. Thus, 49.8% of businesses in Nigeria consider insecure electricity supply as a major constraint (World Bank Enterprise Survey, 2013).

Notwithstanding the costs associated with the replacement or repair of machines and other equipment, cost related to spoilage of finished goods and also the cost of incurring an alternative source of electricity like rented or self-owned generator. This brings to light why investigating the effect of power supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality through a comparative analysis.

**Objective**

The main objective of this study is to assess the effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality of Cross River State.

**Research Hypothesis**

i) \( H_0 \): There is no significant effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South.

ii) \( H_0 \): There is no significant effect of electricity supply on the performance of small and medium-scale enterprises in Calabar Municipality.

iii) \( H_0 \): Deficient electricity supply does not significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality.

**II. LITERATURE REVIEW**

**The State of Power Supply in Nigeria**

The dismal performance of the Nigerian electricity supply industry is well noted (Adenkinju, 2005; Iwayemi, 2008; FGN, 2008; FGN, 2010 among others). Nigeria’s quests for industrialization have been hampered by erratic and inadequate electric power supply (Olugbenga, Jumah & Phillips, 2013). This is largely due to inadequate generation, transmission and distribution infrastructure. Though a lot of resources have been expended to expand the industry’s infrastructure, Nigerians still experience inadequate and unreliable electric power supply characterized by high voltage variations, recurrent blackouts and heavy reliance on self-generated electricity (Iwayemi, 2008). Because of the pervasive dependence of the electricity consumers on generators, the Nigerian economy has been described as a generator economy (Ekpo, 2009) exemplified by high operational costs and poor competitiveness. Thus Nigeria’s persistent electricity crises have hampered the industrialization process of the country due largely to production stoppages and high operational cost. These have undoubtedly significantly undermined the growth and development process of the economy (Udah, 2009).

Consequently power outages have become the norm in Nigeria. In fact in 2004, major manufacturing firms experienced 316 outages. This increased by 26% in 2005, followed by an explosive 43% increase between 2006 and 2007 (Iwayemi, 2008). Due to the incessant powersupply challenges, in 2005 the Government promulgated reform of the industry by opening the sector.
for private investment especially in the generation segment of the market (FGN, 2010). The reform has however failed to enhance the quantum and reliability of power supply in Nigeria. The result is the frequent power supply failure that has made electric power supply to be very unreliable and inadequate. Electricity supply reliability has become an important public policy issue due to the enormous costs being borne by electricity users due to unreliable and inadequate electric powersupply. Ensuring electricity supply reliability has also occupied important space in private investment and operating decisions. Consumers of electricity require infrequent occurrence of outages or other power supply disturbances which usually interfere with their use of electrical appliances or halt their production or operational activities. Even at macro level, unreliable power system poses serious challenges to the socioeconomic and political structure of an economy. Some of these challenges manifest in the loss of welfare, pressure on governance, and loss of output among others (Oseni & Pollit, 2013). Poor electricity supply in Nigeria and indeed the rest of Africa has posed the greatest challenge to productivity, investment growth and competitiveness (Renneika & Svensson, 2002; ADB, 2009).

For example an average firm in Nigeria in 2007 experienced an outage of 8.2 hours, 26.3 times in a typical month translating into about 216 hours on average every month (Oseni & Pollit, 2013). Business firms respond to unreliable supply of electricity in a variety of ways which include choice of business, choice of location, output reduction, factor substitution and self-generation. However, self-generation has been the most widely adopted strategy (Lee & Anas, 1989; Adenikinju, 2005). Firms invest in back-up capacity to generate their own electricity during power outage. Reinkka & Svensson (2002) found that unreliable and inadequate electricity power supply (which compelled firms to invest in back-up generations) greatly reduces firms’ investment in other productive activities. In Nigeria, it has been estimated that firms self-generate their electricity at a cost that ranges between 16 to 30 times higher than the public supply provided electricity (UNDP/World Bank, 1993). Thus the unreliable supply of electricity imposes enormous costs on the firm. Such costs include raw materials damages, equipments spoilage and loss of productive man-hours and forgone sales, disruption of production, reduced profits and management attention among others. As a strategy of mitigating the costs of unreliable or inadequate power supply firms invest in back-up facilities to generate own electricity in-house. As a result many firms are forced to maintain back-up generation capacity.

However self-generation of electricity generally costs more than the grid supplied electricity. This cost differential limits the potentials of self-generation as a permanent substitute or solution to power supply unreliability. The distribution of cost imposed by the frequent power outages is disproportionately high for the small scale businesses. Small scale businesses spend about 25% of their investment costs on back up generating plants (Lee & Anas, 1991). Even the large industrial concerns also suffer hugely from electricity supply shortages bedeviling the country. The Manufacturer’s Association of Nigeria (MAN) Survey, (2005) reports that the cost for generating power supply by Nigerian firms for production activity amounts to about 36% of firms’ costs of production. Iwayemi, (2008) also estimated that 20% of investment in large industrial projects is usually allocated to alternative source of electricity supply. In fact it is reported that banks insist on provision for captive generating plants before any loan request is considered worthy of being granted (Ajayi, 2005). The nation’s difficult business environment largely been caused by inadequate power supply is aptly described by the World Bank (2004) report that ‘manufacturing firms in Nigeria consider inadequate infrastructure particularly power supply as their most constraining. Electricity supply in Nigeria is often erratic. Consumers of electricity (residential, commercial and industrial consumers) suffer untold hardships as the State Owned Enterprise and the Power Holding Company of Nigeria (PHCN) has been unable to supply reliable power. This is despite massive injections of funds by the Federal Government into the operations of the company over recent years. The failure has significantly impacted negatively on the operations of the business sector especially the small scale subsector that operates with little capital and are thus in most cases unable to afford a back-up facility to ensure un-interrupted power supply for their operations (Ado & Josiah, 2015).

**Importance of Small and Medium-Scale Enterprises to Economic Growth**

Small scale businesses are very crucial to the economic development of any nation. They make substantial contributions to the economy through many channels. For example small scale enterprises are known to make about 55% of GDP and 65% of employment in high income countries. In the low income countries small scale businesses contribute over 60% of GDP and about 70% of total employment (Fan, 2003; Ariyo, 2006). Their economic contribution in Nigeria falls below expectation due largely to the harsh economic environment (Osotimehin, Jegede, Akinlabi & Olajide, 2012). The shallow infrastructure base of the economy means that small scale businesses just like other business types face serious operational challenges and must have to provide for most of their infrastructure needs if they have to optimize their operations. Deriving largely from the role of industrialization in the economic development process, the importance of
entrepreneurship and SMEs to Nigeria’s economic development can be summarized thus: SMEs act as Catalyst for Technological Development; SMEs are a Major Source of Employment: They provide a training avenue for the creation of future entrepreneurs in several areas of economic activity; SMEs are a major source of domestic capital formation: They aid the process of redistribution of incomes. SMEs provide intermediate / semi-processed goods for use by large-scale firms. SMEs engage in manufacturing, Sound development of SMEs has positive implications. By serving dispersed local markets, They also constitute a critical source of specialization. Within the context of rural development, SMEs help in improving rural incomes. They also serve as a strategy for checking rural-urban migration, which in their limited ways, help in reducing the development gap.

Challenges of Small and Medium-Scale Enterprises in Nigeria

The fact that SMEs have not made the desired impact on the Nigerian economy in spite of all the efforts and support of succeeding administrations and governments gives a cause for concern. It underscores the belief that there exists fundamental issues or problems, which confront SMEs but which hitherto have either not been addressed at all or have not been wholesomely tackled. A review of literature reveals indeed the following plethora of problems, which are enormous, fundamental and far reaching: first, Inadequate, inefficient, and at times, non-functional infrastructural facilities, which tend to escalate costs of operation as SMEs are forced to resort to private provisioning of utilities such as road, water, electricity, transportation, communication, etc (Obitayo 2001). Secondly, Bureaucratic bottlenecks and inefficiency in the administration of incentives and support facilities provided by the government. These discouragement would-be entrepreneurs of SMEs while stifling existing ones. Thirdly, Lack of easy access to funding/credits, which can be traceable to the reluctance of banks to extend credit to them owing, among others, to poor and inadequate documentation of business proposals, lack of appropriate and adequate collateral, high cost of administration and management of small loans as well as high interest rates (Fabunmi 2004).

Others are discrimination from banks, which are averse to the risk of lending to SMEs especially start-ups; High cost of packaging appropriate business proposals; Uneven competition arising from import tariffs, which at times favour imported finished products; Lack of access to appropriate technology as well as near absence of research and development; High dependence on imported raw materials with the attendant high foreign exchange cost and scarcity at times.

Prospects of Small and Medium-Scale Enterprises in Nigeria

The identified problems of SMEs notwithstanding their prospect far outweighs them, given the crucial role SMEs play in the industrial and economic growth and development of developing countries like Nigeria. Apart from the government’s concerted and relentless efforts towards revamping and sustaining the vibrancy of this all-important sub-sector, the private sector as well as professional groups and associations are also not relenting in their own vital contributions to the development of the subsector.

The current thrust of the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) gives hope, confidence and optimism that going forward, government’s attention would continue to be attracted to the SME subsector. The Agency is already about concluding a nationwide census/survey of micro, small and medium enterprises (MSMEs), which it commenced. Given its challenging mandate of initiating and articulating ideas for micro, small and medium enterprises’ policy thrust as well as promoting and facilitating development programmes, instruments and support services to accelerate the development and modernization of MSMEs, SMEDAN badly needed to have a comprehensive understanding and knowledge of the population of MSMEs in the country, their distribution by sectors such as agriculture, manufacturing, services, trade, construction, mining, technology, etc, and their distribution by rural and urban areas as well as the level of vertical and horizontal linkages within and between various sectors of industry so as to access the level of industrial integration and the incidence of sub-contracting and its potential in giving a flip to industrial development.

The census/survey will also enable SMEDAN to determine and assess the major operating difficulties of MSMEs relating to both market functions (such as demand-pricing factors, supply factors, raw materials, technology infrastructure, etc) and policy environment as it relates to regulatory, incentive and support regimes. The overall benefits of the census/survey would hinge on the expected robust data and information, which SMEDAN would employ as a basis for policy formulation, implementation and intervention, effective developmental planning, vital advice on new investments, grow and profitable areas, raw materials availability as well as available technology, available markets, available sources of funds and assistance.

The survey exercise is also expected to adequately equip and empower SMEDAN to effectively do the following, inter alia: i. Map out effective strategies for revamping and reforming the MSMEs sub-sector through appropriately advising the government on policy formulation and execution.ii. Recommend the right
operators for various incentives and support by government including funding, be it loan, equity and grants. iii. Offer relevant advisory services to state governments on how best to support and invigorate MSMEs in their domains bearing their peculiarities and circumstances in mind. iv. Identify viable projects for both local and foreign investors in order to attract foreign investment. v. Identify viable projects with export potentials and also identify and advise on the appropriate foreign markets in order to boost foreign exchange earnings. vi. Identify and assess MSMEs critical requirements in the areas of capacity building, skills gap, knowledge, skills and process and liaise with the relevant institutions and agencies of government like the National Poverty Eradication Programme (NAPEP), the Centre for Management Development (CMD), the National Directorate of Employment (NDE), etc. vii. Establish a befitting business support centre for each state in the federation. viii. Facilitate the promotion and government patronage of quality local products of MSMEs for either local consumption or export or both.

Empirical Review

Adenikinju (2005) undertook an analysis of the economic costs of power outages in Nigeria using the revealed preference approach. He estimated the marginal cost of power outages to businesses in Nigeria to be in the range of $0.94 to $3.13 per kWh of lost electricity. Reinikka & Svensson (2002) analyzed the impact of poor provision of infrastructure on firm performance in Uganda using a discrete choice model on business survey data. They concluded that unreliable power supply causes firms to substitute complementary capital (for backup generators) as a response to deficient public services. Estimating investment equations on the same data, they found that poor complementary public capital significantly reduced private investment. Lee & Anas (1991) in their study on manufacturers’ responses to infrastructure deficiencies in Nigeria reported four different response patterns adopted by manufacturing firms which include self-sufficiency (where the firm provides all its infrastructure needs), standby private provision (the firm has its own facilities which it turns to when public supply is absent or quality and reliability fall below acceptable standards), public source as standby (the firm relies on its own facilities and turn to public supply when the quality and reliability improves) and captivity (where the firm relies entirely on the public service despite the quality and reliability of such supplies). Lee, Anas, Verma & Murray (1996) in their study of reasons for self-generation of electricity by manufacturing firms in Nigeria, Indonesia and Thailand found that because of economies of scale in internal electricity generation enjoyed by larger firms, small scale businesses are at disadvantage and therefore suffer more from electricity supply unreliability than larger firms. Udah, (2009) undertook an empirical study on the effect of electricity supply on industrial development in Nigeria and found that the dismal performance of the electricity sector has contributed in retarding the industrial development of Nigeria. He therefore concluded that fixing the electricity sector is central to the realization of industrial development of Nigeria. Ado & Josiah (2015) examined the impact of deficient electric power supply on the operations of small scale businesses operating in north east of Nigeria. From the population of small scale businesses, a sample was selected through the use of stratified random sampling to ensure the effective representation of the population of small scale businesses in north east Nigeria. Results from data analysis indicate the severity of electricity supply outages and the costs imposed by power supply outages on the operation of this class of businesses in the region. They recommended the need for policy attention towards revitalizing the electricity sector of Nigeria forenhanced supply of electricity to the national economy, and when this is achieved, the small business subsector will be in a position to effectively lead in the drive towards industrializing the Nigerian economy.

III. METHODOLOGY - RESEARCH DESIGN

The design used for the study is survey design. It is adopted because; it is economical and permits the collection of data from a large sample. This design is employed because this research is aimed at assessing the comparative study of the effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. The approach was adopted based on the expectation that it would allow for the free expression of ideas and perception by the respondents.

Research Area

The study area is Calabar metropolis, comprising of Calabar Municipality and Calabar South local government areas with a total population of 367,848 (176,218 for Municipality and 191,630 for Calabar South (NPC, 2006). The Calabar Metropolis has a land mass of 29,133 square kilometers and located between latitude 4°5 55 and 80°30 East of the Green Meridian. The Metropolis is bounded by Calabar River to the west, Akpabuyo local government area to the east, Odukpani local government area to the north and Atlantic Ocean to the south. It is a cosmopolitan city which embraces all ethnic groups in Nigeria. The three dominant ethnic groups are the Efiks, Quas and the Efuts which share common culture and religion. English and Efik are the languages widely spoken. The municipality is predominantly a Christian city with few Muslims and traditional religious groups and
mainly occupied by civil servants, businessmen and traders. It also has industries and establishments such as airport, export processing zone, Naval and Army base, Tinapa business resort (Non Functional), NNPC depot, cement factory etc. Calabar is famous for their rich cultural heritage, warm hospitality and peace-loving disposition. There are numerous SMEs established in the areas.

Population of the Study

The population of the study comprises of small scale entrepreneurs, medium scale business men and women, shop owners and Power Holding Company of Nigeria (PHCN) staff in the two selected local government areas as tabulated below.

<table>
<thead>
<tr>
<th>S/N</th>
<th>People</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Small business owners</td>
<td>350</td>
</tr>
<tr>
<td>2</td>
<td>Medium scale business owners</td>
<td>230</td>
</tr>
<tr>
<td>3</td>
<td>PHCN Staffs</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>625</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2021

Sampling Size Determination

The sampling size was determined using Taro Yamane’s formula for known population as follows:

\[ n = \frac{N}{1 + N \times \varepsilon^2} \]

\[ n = \frac{625}{1 + 625 \times (0.05)^2} \]

\[ n = 244 \]

Hence, the sample size for this study is made up of two-hundred and forty-four (244) people chosen from the study population.

Sampling Technique

The sampling technique adopted for the study is the simple random sampling technique. In this technique, each of the respondents has equal and independent chance of being selected for the study. The simple random sampling method will be used to select small scale entrepreneurs, medium scale business men and women, shop owners and PHCN staff from whom the research data will be collected.

Sources of Data

Both secondary and primary data are required for this study. Primary data was collected from small scale entrepreneurs, medium scale business men and women, shop owners and PHCN staff, through structured questionnaire. Secondary data was collected from textbooks in public libraries, newspapers, magazines and internet. The instrument of data collection was questionnaire, 244 copies were distributed to cover the selected sample and distributed to various small scale entrepreneurs, medium scale business men and women, shop owners and PHCN staff in the study areas.

Validity of the Instrument

In ensuring that the research purpose is met, the instrument for data collection (questionnaire) was thoroughly scrutinized by the supervisor to enhance the validity of the questionnaire. The supervisor meticulously analyzed the instrument employed in the research work to ascertain the relevance of the content to the purpose of the study and the hypotheses raised. The content, structure and style of the constitution of the instrument were scrutinized. Irrelevant and ambiguous statements was recast or removed. The final items accepted and approved were those that directly measure what they are assigned to measure.

Reliability of the Instrument

To ensure the reliability of the research instrument, a pilot study was carried out from the study area. Test retest method of estimation of reliability was done.

Data Treatment Techniques

Data analysis will be undertaken using qualitative as well as quantitative techniques. It is expected that a major segment of the information to be collected during the survey are qualitative and may not be easily quantified. Descriptive statistics such as frequencies, percentages etc will be employed in most of the analysis in summarizing trends, changes and comparison across certain characteristics. The data collected will be analyzed with relevant statistical tool such as the chi-square statistic. Final presentation will take the form of description, tabulation and illustrations. The research will also make use of table and charts for presentation as appropriate. The basic formula for chi-square statistic is stated thus:

\[ X^2 = \frac{\sum(OF-EF)^2}{EF} \]

Where

- \( X^2 \) = chi-square statistic
- \( \Sigma \) = Summation sign
- \( OF \) = observed frequencies
- \( EF \) = Expected frequencies

The degree of freedom for chi-square is computed as \( df = (R-1)(C-1) \)

Where \( df \) = degree of freedom

\( C = \) Column \( R = \) Row
**Decision Rule**

The chi-square ($X^2$) test represents the difference between the given frequencies and the expected frequencies obtained. If for instance the calculated value of ($X^2$) is greater than the($X^2$) value given in the table, there is association between the variable being measured. Thus, confirming the alternate hypothesis. But if the calculated value of chi-square ($X^2$) is less than $X^2$ given in the table, there is no association between the variables in the hypothesis, thus accepting the null hypothesis. The rejection of the null hypothesis means acceptance of the alternate hypothesis. In this research therefore, five percent (0.05) level of significance is employed.

**IV. DATA PRESENTATION AND ANALYSIS**

The tables presented below contain the analytical details relating to the findings from the respondents. Of the 244 questionnaires distributed to the respondents, 158 copies were filled and returned by them, and hence used for the analysis.

**Table 1:** Distribution of Respondents by Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>63</td>
<td>60.2</td>
</tr>
<tr>
<td>Female</td>
<td>95</td>
<td>39.8</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2021

Table 1 above indicates the sex of the respondents that returned the questionnaire. 39.8% of them were female while 60.2% were male.

**Table 2:** Distribution of Respondents by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-20</td>
<td>19</td>
<td>12.0</td>
</tr>
<tr>
<td>21-25</td>
<td>30</td>
<td>18.9</td>
</tr>
<tr>
<td>26-30</td>
<td>35</td>
<td>22.2</td>
</tr>
<tr>
<td>31-35</td>
<td>29</td>
<td>18.4</td>
</tr>
<tr>
<td>36-40</td>
<td>29</td>
<td>18.4</td>
</tr>
<tr>
<td>41 years &amp; above</td>
<td>16</td>
<td>10.1</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2021

Table 2 above shows the age distribution of respondents, 12%, 18%, 22.2% and 18.4% were aged between 15-20 years, 21-25 years, 26-30 years, and 31-35 years respectively. 18.4% and 10.1% ranged between 36-40 years and 41-49 years respectively.

**Table 3:** Distribution of Respondents by Educational Qualification

<table>
<thead>
<tr>
<th>Educational</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSLC</td>
<td>12</td>
<td>7.6</td>
</tr>
<tr>
<td>WAEC/NECO</td>
<td>13</td>
<td>8.2</td>
</tr>
<tr>
<td>OND</td>
<td>17</td>
<td>10.8</td>
</tr>
<tr>
<td>NCE</td>
<td>16</td>
<td>17.1</td>
</tr>
<tr>
<td>HND</td>
<td>27</td>
<td>17.1</td>
</tr>
<tr>
<td>B.Sc./BA/B.Ed.</td>
<td>37</td>
<td>23.4</td>
</tr>
<tr>
<td>MSC/MA/M.Ed</td>
<td>22</td>
<td>13.9</td>
</tr>
<tr>
<td>Ph.D</td>
<td>14</td>
<td>8.9</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2021

Table 3 above shows the composition of respondents by educational background. 7.6% and 8.2% of them were holders of FSLC and WAEC/NECO certificates respectively. 10.8%, 10.1% and 17.1% of the
respondents were holders of OND, NCE and HND certificates respectively. 23.4% had first degree while 13.9% had Masters and only 8.9% were holders of Ph.D in related fields.

**Table 4:** Distribution of Respondents by Marital Status

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>85</td>
<td>53.8</td>
</tr>
<tr>
<td>Single</td>
<td>73</td>
<td>46.2</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2021

Table 4 indicates the marital status of respondents. 53.8% of them were married while 46.2% were still single.

**Table 5:** Distribution of Respondents by Business/Working Experience.

<table>
<thead>
<tr>
<th>Working Experience</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 years</td>
<td>36</td>
<td>22.7</td>
</tr>
<tr>
<td>6-10 years</td>
<td>41</td>
<td>25.9</td>
</tr>
<tr>
<td>11-15 years</td>
<td>31</td>
<td>19.6</td>
</tr>
<tr>
<td>16-20 years</td>
<td>26</td>
<td>16.4</td>
</tr>
<tr>
<td>21 years and above</td>
<td>24</td>
<td>15.2</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2021

From the above table 5, 22.8% and 25.9% of the respondents have spent 1-5 years and 6-10 years in the firm respectively. 19.6% of them have spent 11-15 years doing businesses, while 16.4% expended 16-20 years. Only 15.2% have put in more than 20 years and above.

**Test of Hypothesis**

The chi-square statistical method described in chapter three of this research was used to test the hypotheses.

**Hypothesis I:**

$H_0$: There is no significant effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South.

The statistical analysis used in testing the hypothesis was the chi-square statistical analysis. The results of the analysis as presented in table 6 above indicates that the $X^2$ value of 8.19 is greater than critical value of 3.04 at .05 level of significance with 1 degree of freedom. This means that the $X^2$ value is statistically significant. Thus, the null hypothesis should be rejected while the alternate hypothesis is retained. This implies that electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar South.

**Hypothesis II:**

$H_0$: There is no significant effect of electricity supply on the performance of small and medium-scale enterprises in Calabar Municipality.

The $X^2$ value of 5.52 is greater than critical value of 3.04 at .05 level of significance with 1 degree of freedom. This means that the $X^2$ value is statistically significant. Thus, the null hypothesis should be rejected while the alternate hypothesis is retained. This implies that electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar Municipality.

**Table 6:** Chi-square analysis of the relationship between electricity supply and performance of small and medium-scale enterprises in Calabar South

<table>
<thead>
<tr>
<th>Responses</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
<th>Cal $X^2$</th>
<th>Critical $X^2$</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed</td>
<td>50(41.01)</td>
<td>31(39.99)</td>
<td>81</td>
<td>8.19</td>
<td>3.04</td>
<td>1</td>
</tr>
<tr>
<td>Disagreed</td>
<td>30(38.98)</td>
<td>47(38.01)</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>78</td>
<td>158</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N=158; significance level = .05; df =1 Authors Computation 2021

**Table 7:** Chi-square analysis of the effect of electricity supply on the performance of small and medium-scale enterprises in Calabar Municipality

<table>
<thead>
<tr>
<th>Responses</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
<th>Cal $X^2$</th>
<th>Critical $X^2$</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed</td>
<td>52(44.65)</td>
<td>33(40.35)</td>
<td>85</td>
<td>5.52</td>
<td>3.04</td>
<td>1</td>
</tr>
<tr>
<td>Disagreed</td>
<td>31(38.35)</td>
<td>42(34.65)</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>75</td>
<td>158</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N =158; significance level = .05; df=1 Authors Computation 2021
The statistical analysis used in testing the hypothesis is the chi-square statistical analysis. The results of the analysis as presented in table 7 above indicates that the chi-square value of 5.52 calculated is greater than the critical value of 3.04 at .05 percent level of significance with 1 degree of freedom. This means that the X² value is statistically significant. Thus, the null hypothesis is rejected while the alternate is retained. This implies that electricity supply significantly impact on the performance of small and medium-scale enterprises in Calabar Municipality.

**Hypothesis III**  
**Ho**: Deficient electricity supply does not significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed</td>
<td>54(45.19)</td>
<td>31(39.81)</td>
<td>85</td>
</tr>
<tr>
<td>Disagreed</td>
<td>30(38.81)</td>
<td>43(34.19)</td>
<td>73</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>74</td>
<td>158</td>
</tr>
</tbody>
</table>

N = 158; Significance level = .05; df =1

The findings from the third hypothesis showed that deficient electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. This was empirically confirmed when the calculated X² value of 7.94 was greater than the X² value tabulated of 3.04 at 0.05 percent level of significance with 1 degree of freedom. This finding corroborates with the view of Udah (2009), who undertook an empirical study on the effect of electricity supply on industrial development in Nigeria and found that the dismal performance of the electricity sector has contributed in retarding the industrial development of Nigeria.

The finding from the third hypothesis showed that deficient electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality. This was empirically confirmed when the calculated X² value of 7.94 was greater than the X² value tabulated of 3.04 at 0.05 percent level of significance with 1 degree of freedom. This finding is in line with the view of Ado & Josiah (2015) who examined the impact of deficient electric power supply on the operations of small scale businesses operating in north east of Nigeria and indicate the severity of electricity supply outages and the costs imposed by power supply outages on the operation of businesses in the region.

On the demographic trend, 60.2% of the respondents were male while 39.8% were female. About 12%, 18%, 22.2% and 18.4% were aged between 15-20 years, 21-25 years, 26-30 years, and 31-35 years respectively. 18.4% and 10.1% ranged between 36-40 years and 41-49 years respectively. On the basis of educational qualification, 7.6% and 8.2% of them were holders of FSLC and WAEC/NECO certificates respectively. 10.8%, 10.1% and 17.1% of the respondents were respectively holders of OND, NCE and HND certificates. 23.4% had first degree while 13.9% had Masters and only 8.9% were holders of Ph.D in related fields, accordingly. 53.8% of the respondents were married while 46.2% were still single. 22.8% and 25.9% of the respondents according to the findings have spent 1-5 years and 6-10 years in business respectively. 19.6% of them...
have spent 11-15 years doing businesses, while 16.4% expended 16-20 years. Only 15.2% have put in more than 20 years and above doing small and medium scale businesses in Calabar South and Calabar Municipality.

VI. SUMMARY OF FINDINGS

The research work centers on the comparative study of the effect of electricity supply on the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality, Cross River State. Three hypotheses were formulated for the study. The hypotheses were tested by using chi-square statistic to justify the truth or otherwise of the hypotheses. Survey design was adopted in this study. It consisted of one hundred and fifty eight (158) small and medium scale business owners and power holding company staff randomly drawn from the population. A well structured questionnaire was used in obtaining the data. In testing the hypotheses, all the calculated $X^2$ values were greater than the critical $X^2$ value at the given level of significance and degree of freedom. This results in rejecting the null hypotheses while the alternative hypotheses were retained. Related literatures were equally reviewed.

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 both Calabar South and Calabar Municipality of Cross River State. The results further revealed that deficient electricity supply significantly affect the performance of small and medium-scale enterprises in Calabar South and Calabar Municipality.

VII. RECOMMENDATIONS

Based on the findings of this study and conclusion drawn from it, the following recommendations are made:

i). The Nigerian Government needs to consider the issue of power supply reliability very seriously by facilitating both private and public investment in electricity infrastructure. This can be done by constructing more dams to complement the existing ones even in Cross River State as a riverine state. This will go a long way in enhancing the performance of the small and medium scale businesses and thus ensuring the industrial development of Nigeria.

ii). The government should be serious on the ban on the importation of generators, this will send a clear signal to the cabal in the power sector that it is not business as usual.

iii). Government should also place stiff penalties on those who destroy and steal power installations, those caught should be prosecuted to serve as a deterrent to others.

iv). The power sector should be liberalized further for more investors to enter so as to make power more accessible to the consumers and the business operators.

v). A monitoring team should be setup by the government to monitor the activities of the private power distribution companies so as to avoid exploitation of the consumers of electricity by these capitalists. When this is done, it will go a long way in boosting small scale businesses in the state and thus leads to rapid growth in the economy of Cross River State and Nigeria.

VIII. CONCLUSION

From the data analysis conducted it is clear that small and medium scale businesses suffer from inadequate and unreliable supply of electricity in Calabar metropolis which imposes costs in many ways. Most of the small and medium scale businesses invest resources to complement the publicly provided but insufficient electricity supply in the metropolis. They are compelled to invest significant amount of their resources as back up facilities to self-provide electricity when the publicly provided power becomes unreliable or of lower quality. It was also discovered that small and medium scale businesses by making such investment they deny themselves investments in other capital. Additionally all firms invest adequately to provide for all their electricity needs due to the paucity of resources. These findings confirm documentary evidence on the 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 constrains on firms’ operational performance. Small scale businesses in Nigeria and Cross River State in particular suffer high overhead cost due to the deficient electricity supply from the national grid.

REFERENCES


