Electricity Insecurity and the Performance of Small Scale Businesses in Akoko Area of Ondo State, Nigeria

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Abstract

The purpose of this study is to 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 utilized for the study. Multiple regression technique was used to establish the relationship 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. The study concluded that it is essential to have stable electricity supply to promote the growth of small businesses in Nigeria. The study recommended that efforts should be made by the relevant electricity distribution company to increase the capacity of energy supplied to small businesses.

Keywords: Electricity Insecurity, Performance, Capacity, Electricity Access

1. Introduction

Constant electricity supply is central to the socio-economic activities of any country. This is because electricity is required to power the machines in the agricultural and industrial sectors of the economy. Thus the absence of stable electricity supply results into insecurity and impinged heavily on the ability of the productive sectors of the economy to render the required services to the citizens. The challenges faced by Nigerians in terms of electricity supply have been well documented in the power and electricity literature (Akuru & Okoro, 2014). Electricity consumers in the country live with harrowing experiences of power outages for many days and at times months. Though Nigeria is blessed with abundant sources of energy supply, which include renewable and non-renewable, but over time, the nation has been unable to harness them in order to put an end to the power crisis. Survey has shown that power generation in Nigeria largely depends on few functional thermal and hydro stations (Onochie, Egware, & Eyakwanor, 2015).

Small and medium scale businesses have been recognized as the catalyst for the economic growth of a nation especially for a developing country such as Nigeria. Aremu and Adeyemi (2011) posit that SMEs helps in poverty reduction, employment generation, reduction in income inequality and creation of wealth. Therefore, over time government has put in place several measures and policies to boost this very important segment of the nation's economy. These efforts include the setting up of specialized agencies such as Small and Medium Scale Enterprises Agency of Nigeria (SMEDAN) and Bank of Industry (BOI) to cater for the need of small businesses in the country. While these efforts are commendable, the absence of constant electricity supply has to a large extent constrained the activities and operations of these enterprises.

While it is safe to argue that the epileptic power supply in the country affects both the small and large industries, but the truth is that the large industries are able to mitigate the effect of erratic power supply through the use of alternative source of energy supply notably the generating sets. But in the case of the SMEs, they lacked the financial wherewithal to provide alternative energy supply thereby making them to suffer insecurity in terms of electricity supply. Studies have revealed that providing alternative electricity supply through the generating sets is thrice as costly as power supply from the national grid (Adenikinju, 2003 and Essien, 2001). Thus as noted by Aremu and Adeyemi (2011), the high cost of privately generated electricity supply is one of the greatest obstacles to the growth and development of SMEs in Nigeria.

Also, erratic power supply in Nigeria is prevalent both in the urban and rural areas of the country. However, the rural communities in Nigeria experienced greater periods of power outages than the urban areas (Moyo, 2012; and Iledare, 2015). Data from the United States Aid Agency showed that the ratio of access to electricity between urban and rural areas in Nigeria stands at 64% to 36% (USAID, 2018).

Therefore, a lot of the businesses located in the rural areas of the country are faced with excruciating consequences of incessant power outages in terms of high production cost, low profitability and low competiveness of their products (Scott, Darko, Lemma & Juan Pablo, 2014).

Studies have been conducted to determine the effects of power fluctuations in the industrial sector of the Nigerian economy (Lee & Anas, 1992; Uchendu, 1993; Adenikinju, 2005, and Moyo, 2012). Most of these studies came with the conclusion that erratic electricity supplies do negatively affect the operational effectiveness of the manufacturing sector of the economy. However, researches into the impact of erratic electricity on the performance of small and medium scale businesses have come with conflicting results over time. For example, studies by Escribano, Guasch and Pena (2009), Akuru and Okoro (2014), and Forkuoh and Li (2015) revealed that power outages have negative effect on the performance of small and medium scale enterprises. Curiously however, in a study by Cissokho and Seck (2013), it was revealed that electricity outages have positive impacts on the performance of small businesses. Some studies even revealed that solving electricity challenges does not guarantee a better performance by the SMEs as there are other more germane issues to business growth and development than access to electricity (Bose, Uddin & Mondal, 2013). Thus considering the vital role played by electricity in the development and growth of small businesses in Nigeria, it is necessary to further interrogate the discussion on this important national issue.

Arising from the above facts, the questions we address in this paper are as follow: 1. what is the relationship between the capacity of electricity supply and performance of small businesses in Akoko area? 2. To what extent does the duration of electricity supply affect the profitability capability of small businesses? 3. What is the relationship between the reliability of electricity supply and the goodwill of customers of small businesses in Akoko area? 4. What is the relationship between the quality of electricity supply and cost of operations of small businesses? 5. To what extent does the cost of electricity supply affect the performance small businesses in Akoko area? Therefore, the major objective of this paper is to determine the effect of electricity insecurity on the performance of small businesses in Akoko area of Ondo state. The rest of the paper is organized as follow: The literature review, methodology of the study, data presentation and analysis, discussion of findings, conclusion and recommendations.

2. Literature Review

2.1 The Concept of Electricity Insecurity

Aldana and Kim (2014) describe electricity insecurity as the unavailability of uninterrupted power supply at prices that are not competitive or overly volatile. Some other scholars refer to electricity insecurities as 'unreliable electricity' (Scott, *et al.*, 2014), 'electricity outages' (Forkuoh & Li, 2015). In Nigeria, the issue of incessant power outages has been well documented in the literature. Also, because of the monopoly structure of the electricity market, consumers are often billed for energy not consumed in the form of 'estimated billing' which varies from month to month. 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. This creates enormous challenges for electricity consumers as they grapple with other socio-economic issues which invariably affect their standard of living.

An important measure of electricity insecurity in an environment is access to electricity supply measured in terms of frequency of interruptions and length of time of such interruptions (Scott et al, 2014 and Forkuoh & Li, 2015). Access to electricity to a large extent, affect the business decision making of firms.

2.2 Measuring Access to Electricity

Access to energy according to a World Bank study is described as 'the ability to avail energy that is adequate, available when needed, reliable, of good quality, affordable, legal, convenient, healthy and safe, for all required energy services across households, productive and community uses' (ESMAP, 2014).

Two types of measures are available for determining access to electricity by business entities: the binary measure and the multi-tier framework developed by the World Bank. The binary measure is the traditional method that measures access to electricity on two scales: available and not available. This kind of measure had been found to be grossly inadequate to measure the level of electricity supply in a business environment especially in the developing countries, as mere connection to electricity grid does not guarantee services at the right quality and quantity (Odarno, Agarwal, Devi, & Takahashi, 2016). However, a more convenient measure has been provided by the World Bank in conjunction with International Energy Agency (IEA) which they called Multi-Tier Framework (MTF) (ESMAP, 2014).

The multi-tier framework measures electricity access as a continuum of improvement, based on the performance of the electricity supply. The MTF classifies access to electricity on the basis of capacity, duration, reliability, quality, affordability, legality, health and safety.

1. Capacity: This measures access to electricity on the basis of power supplied to households ranging from the very low of 5 watts to very high power supply of above 2 kilowatts. Capacity to a large extent depends on the functionality of the critical electricity chain of generation, transmission and distribution. In Nigeria, as well as in many developing countries, these three crucial chains have not been able to deliver adequate capacity of electricity to households and business concerns due largely to variety of reasons culminating in energy losses that grossly reduced their capacity to provide requisite level of electricity supply

2. Duration: The number of hours for which electricity is available per day provides the basis for determining access to electricity by business concerns. 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.

3. Reliability: This is measured by the number of power interruptions per day. This also takes into cognizance the number of scheduled interruptions and unscheduled interruptions. 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.

4. 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.

5. 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. 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.

6. Legal: This measures the extent to which the electricity bill is paid to the utility/prepaid card seller or the authorized representative. This also deals with the level of illegal connection to the electricity grid or electricity theft.

7. Health and Safety: This measures the level of accidents arising from the use of electricity. It also relates to the level of perception of risk in the future use of electricity.

2.3 Electricity Insecurity and Business Performance

Small and medium scale business enterprises have been identified as the engine of growth for a developing economy (Sanders & Wegener, 2006). This stems from the fact that the SMEs play a central role in the economic development of a nation in terms of employment generation, income distribution, innovation and supply chain management. However, in Nigeria, Oboh (2002) identifies several factors which may impinge on the ability of the SMEs to play this important role. These factors include undercapitalization, high start-up cost, infrastructural decadence corruption and epileptic electricity supply. Among these inhibiting factors, Akinbola, Zekeri and Idowu (2017) identify epileptic electricity supply as the greatest obstacle to the achievement of efficient operation in this sector. Most of the small business concerns such as barbing saloons, business centers and cold stores have their operations crippled as a result of electricity insecurity. Evidence as to the impact of electricity insecurity on the performance of small businesses remains scanty.

However, in a study by the overseas development institute, London, low productivity and profitability, high cost of operations and loss of customers' goodwill were identified as some of the effects of electricity insecurity on the performance of small and medium scale enterprises in Africa (Scott *et al.*, 2014).

1. Low productivity and profitability

Access to regular electricity supply has been considered as a factor affecting the operations of small business in terms of their productivity and profitability (Scott, *et al.*, 2014). Researchers have investigated the impact of access to electricity and productivity and came to the conclusion that there is a direct relationship between the two (Adenikinju, 2005; and Rud, 2012). However, Cissokho and Seck (2013) and Scott *et al.* (2014) note that the impacts of electricity insecurity on the productivity of the SMEs are statistically insignificant, and can even at times be positive. As for profitability, Aremu and Adeyemi (2011) asset that increased productivity will results into higher profitability for the SMEs. Thus, lack of access to electricity may make the business owners source for an alternative supply which may be far more expensive and may increase the cost of operation and thereby reducing the profit of such business. Therefore, profitability is an important factor determining the performance of small scale business.

2. Cost of Operations

The cost of operation is a key factor in determining the performance of small and medium scale enterprises. Electricity insecurity potentially affects the cost of operations of the SMEs through the repair and replacement of damaged goods as a result of unreliable power supply. The cost of providing alternative source of energy arising from incessant power outages often impacts heavily on the operations and performance of SMEs. Nurudeen, Nafiu and Jibo (2018) in their study found a positive relationship between access to electricity and cost of operations for SMEs in Dekina Local Government of Kogi State, Nigeria. However, Scott *et al.* (2014) in their study assert that electricity insecurity does not affect the cost competitiveness of SMEs because the electricity cost constitutes a small proportion of manufacturing total cost.

3. Customer's Goodwill

Every customer longs for good service and value for money in their purchasing decisions. Goodwill according to Okrepilov, Gravit, Nedviga, and Oleg (2016), is a set of assets that encourage customers to use the products and services of a given organization. Therefore, goodwill is a term in business which refers to the special type of intangible assets (brand, patent, and trademark) that represent that portion of the entire business value that cannot be attributed to any other income producing business assets tangible or intangible. The purpose of goodwill is to compensate the seller for the effort he puts into building the business (Mindrut, Manolica, & Roman, 2015). With access to electricity supply, Scott *et al.* (2014) write that a business is able to provide good services to its customers thereby eliciting a repeat performance by the buyers.

2.4 Empirical Review

In a review of electricity insecurity in Ghana, Forkuoh and Li (2015) conducted a study into electricity insecurity of the cold store operators in the Asafo market area of Kumasi Metro in Ghana. The objective of the study was to determine the impact of the power insecurity on the growth of SME in Asafo market of Kumasi in Ghana. The study employed qualitative and quantitative approach in obtaining data for the analysis. The research findings indicated that, power outages had a negative effect on SME's growth, while the cost of operating businesses saw a significant increase under the power outages. The study recommended that effort should be made to reduce the cost of alternative source of power supply in power generation.

In another study in Senegal, Cissokho and Seck (2013) examined the effects of electric power outages on the productivity of small and medium enterprises. The study utilized 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.

In another review of electricity insecurity, Scott, *et al.* (2014) 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.

Nurudeen *et al.* (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.

Based on the above literature review, the following hypotheses were formulated for the study:

H_{01}: *There is no significant relationship between the capacity of the electricity supply and the performance of small businesses in Akoko area of Ondo State, Nigeria.*

H_{02}: *There is no significant relationship between the cost of electricity and the performance of small businesses in Akoko area of Ondo State, Nigeria.*

H_{03}: *There is no significant relationship between the duration of electricity supply and the performance of small businesses Akoko area of Ondo State, Nigeria.*

H_{04}: *There is no significant relationship between the reliability of the electricity supply and the performance of small businesses in Akoko area of Ondo State, Nigeria.*

H_{05}: *There is no significant relationship between the quality of electricity supply and the performance of small businesses in Akoko area of Ondo State, Nigeria.*

3. Methodology

The research design adopted for the study is survey. In this connection, a modified form of multi-tier framework questions on access to electricity designed by the World Bank in 2015 was adopted as questionnaire to elicit responses from the respondents about their views and opinions on the effects of access to electricity on the performance of small businesses in Akoko area of Ondo State, Nigeria. The population of the study consists of the entire SMEs in Akoko area of Ondo State, Nigeria. There are four local governments in the Akoko area namely Akoko North West, Akoko North East, Akoko South West and Akoko South East. Table 1 showed the number of registered SMEs per local government in Akoko area.

Table 1: Registered SMEs in Akoko Area

Local Govt. Area	Number of Registered SMEs
Akoko North East	101
Akoko North West	39
Akoko South East	61
Akoko South West	46
Total	247

Source: field Survey (2018)

Since the study population is known, therefore, we applied the Taro Yamani (1967) formula to determine the sample size. $n = \dfrac{N}{1 + N(e^2)}$

Where N = 247

e = 0.05

Thus, the sample size based on the above formula was 153. The simple random technique was used to distribute the questionnaires to the respondents.

Variables identified in the study from the various reviews in the literature include the independent and dependent variables. Electricity Insecurity (Independent Variable) was measured by access to electricity supply and this in turn was measured on the basis of five important constructs used in the measurement of access to electricity in the multi-tier framework provided by the Work Bank. These include capacity, duration, availability/cost, reliability and quality of electricity supply. The SMEs Performance (Dependent variable) was measured using three constructs: Productivity and Profitability, Cost of Operations and Customers' Goodwill.

3.1 Model Specification

The model for the study was adopted from the work of Forkouh and Li (2015). The variables in study were operationalised on the basis of a multiple regression formulated as follows:

$$SMEP = f(AES) \tag{1}$$

From variables earlier identified, then the above can further be specified as follows:

$$SMEP = f(PP, CO, CG) \tag{2}$$

Also, we have:

$$AES = f(CAS, DUS, COS, REL, QUA) \tag{3}$$

Thus, the above can be used to reformulate equation 1 as follows

$$SMEP = f(CAS, DUS, COS, REL, QUA) \tag{4}$$

Equation 3 can be expressed in its linear form as

$$SMEP = \varphi_0 + \varphi_1 CAS + \varphi_2 DUS + \varphi_3 COS + \varphi_4 REL + \varphi_5 QUA + \mu \tag{5}$$

Where, SMEP = Small and Medium Enterprises Performance

AES = Access to Electricity Supply, CAS = Capacity of Supply, DUS = Duration of Supply

COS = Cost of Supply, REL = Reliability of Supply, QUA = Quality of Supply

μ = Stochastic error term, φ_0 = Intercept or the constant, φ_1, φ_2, φ_3, φ_4, φ_5 = the parameters of the model

The data collected were initially edited to detect and correct any omissions and errors to ensure consistency and completeness. Thereafter, the edited data were coded and analyzed through the use of IBM Statistical Package for Social Sciences (SPSS), version 19.0. To ensure the validity of the test instrument, a test re-test method was adopted whereby a prior survey was conducted among some SMEs owners in the area of study as to the clarity of questions and the adequacy of the time frame required in answering the questionnaire.

From the feedbacks from these respondents on how well they understood the questionnaire, they agreed that the questions are clear and well understood. The Cronbach Alpha test was used to ascertain whether the multiple question Likert scale surveys are reliable. The result of the reliability analysis are presented table 2.

Table 2: Reliability test using Cronbach Alpha

S/N	Variables	Number of Items	Cronbach Alpha Value
1	Capacity of supply	4	0.815
2	Duration of supply	4	0.842
3	Affordability/cost of supply	3	0.791
4	Reliability of supply	4	0.752
5	Quality of supply	3	0.763

Source: Researcher's computation based on field field survey 2019 using SPSS 19.0

4. *Presentation and Analysis Of Results*

Out of the 153 questionnaires distributed, only 132 respondents properly filled and returned their questionnaires. This showed a response rate of 86%.

Table 3 showed the summary of the respondent's opinions about electricity insecurity and small businesses performance in Akoko area. The mean for each of the variables showed the average responses on a scale of 1-5 based on the multi-tier framework, and the standard deviation measured how concentrated the data are about the mean. Hence, capacity of supply (CAS), duration of supply (DUR) and reliability of supply (REL) recorded low means of 1.734, 1.835 and 1.631 respectively. However, the standard deviations for all the variables were very low which indicate that the values in the statistical data are close to the mean and thus fit for analysis.

Table 3: Descriptive Statistics

Variables	Mean	Standard Deviation	N
SMEP	3.672	.561	132
CAS	1.734	.497	132
DUR	1.835	.647	132
COS	3.562	.541	132
REL	1.631	.834	132
QUA	3.612	.743	132

Source: SPSS 19.0 Computation

Table 4 showed the summary of the model. The R^2 value of 0.593 which is an indication of the goodness of fit of the model is statistically significant. In empirical analysis, it is not unusual to obtain a high R^2 as in the case of this model, which could mean that some of the regression coefficients are either statistically insignificant or have signs that are contrary to a-priori expectations (Gujarati, 2003). The adjusted R^2 value of 0.517 is also statistically significant which indicates that after taking into accounts; the number of regressors, the model explains about 60% of the variations in job performance.

Table 4: Model Summary

Model	R	R Square	Adjusted R^2	Std. Error of Estimate
1	.770	.593	.517	.305

Source: SPSS 19.0 Computation

Table 5 showed the analysis of variance of the model. The F- Statistic which measures the overall goodness of fit and linearity of relationship in the model at 11.562 and its probability of 0.000 is statistically significant at all levels of significance. This indicates that there was a simultaneous linear relationship between the dependent variable and all the explanatory variables combined.

Table 5. Analysis of Variance

Model	Sum of Square	Df	Mean Square	F	Sig.
Regression	9.261	3	3.087	11.562	.000
Residual	34.487	129	.267		
Total	43.747	132			

Source: SPSS 19.0 Computation

The regression equation of the model is stated below on the basis of the results obtained from table 6.

$JP = 0.689 + 0.295CAS + 0.283DUS + 0.146COS + 0.427REL + 0.022QUA$ (6)

4.1 *Test of Hypotheses*

Five hypotheses were formulated for the study. These hypotheses are tested below based on the results obtained from table 6.

Table 6: Coefficients

MODEL	Unstandardised Coefficient		Standardised Coefficient	T	Sig
	B	Std, Error	Beta		
Constant	.689	.118		5.866	.000
CAS	.295	.092	.459	3.086	.023
DUS	.283	.099	.379	2.856	.005
COS	.146	.604	.667	.242	.321
REL	.427	.123	.263	3.470	.000
QUA	.022	.065	.027	.335	.730

Source: SPSS 19.0 Computation

Hypothesis One: There is no significant relationship between the capacity of the electricity supplied and performance of small businesses in Akoko area of Ondo State.

The results from table 6 showed that the coefficient of capacity of supply (CAS) is positive, thus indicating a direct relationship between the performance of small businesses and capacity of the electricity supply. The t-value of the coefficient of CAS at 3.086 with a probability of 0.023 is statistically significant. . Thus we reject the null hypothesis that there is no significant relationship between the capacity of electricity supply and the performance of SMEs in Akoko area.

Hypothesis Two: There is no significant relationship between duration of electricity supply and the performance of small businesses in Akoko area of Ondo State.

The results from the regression model in table 6 showed that the coefficient of duration of electricity supply is positive, thus conforming to our a priori expectation that a direct relationship exist between the performance of the SMEs and the duration of of electricity supply. Also, the t-value of the coefficient of DUR at 2.856 with a probability of 0.000 is statistically significant at all levels of significance. Therefore, we reject the null hypothesis that there is no significant relationship between the duration of electricity supply and the performance of small businesses in Akoko area.

Hypothesis Three: There is no significant relationship between the cost of electricity and the performance of small businesses in Akoko area of Ondo State

Results from the regression model in table 6 showed that the t-value for the coefficient of cost of electricity (COS) at 0.242 with a p-value of 0.321 is not statistically significant at less than 5% level of significance. Therefore we cannot reject the null hypothesis that there is no significant relationship between cost of electricity and the performance of SMEs in Akoko area of Ondo State.

Hypothesis Four: There is no significant relationship between the reliability of supply and the performance of small businesses in Akoko area of Ondo State,

The coefficient of reliability of supply (REL) is positive as shown in table 6. This indicates that when all other variables in the model are held constant, then increasing the reliability of electricity supply will lead to increase in the performance of the SMEs. Also, the t-value of the coefficient of REL at 3.470 with a p-value of 0.001 is statistically significant at less than 5% level of significance. Therefore, we reject the null hypothesis that there is no significant relationship between the reliability of electricity supply and the performance of small businesses in Akoko area of Ondo State.

Hypothesis Five: There is no significant relationship between the quality of electricity supply and the performance of small businesses in Akoko area of Ondo State, Nigeria.

Though the coefficient of the quality of supply is positive as shown in table 6, thus indicating a direct relationship between quality of supply and SMEs performance, however, the t-value of 0.335 with a p-value of 0.730 is not statistically significant at 5% level of significance. Thus, we cannot reject the null hypothesis that there is no significant relationship between quality of electricity supply and performance of small businesses in Akoko area of Ondo State under the period of study.

4.2 Discussion of Findings

The test of hypothesis one in this study revealed a significant positive relationship between capacity of electricity supply and performance of small businesses in Akoko area. Capacity of supply in this study was measured by the amount of watts of electrical energy supplied to each business from the national grid. Thus, in a situation of low capacity, these businesses are not able to make use of their electrical appliances for production purpose. The mean of the customers' response to questions on capacity of supply as shown in table 3 is low at 1.734. This showed that many of the respondents considered the capacity of electricity supply inadequate for their business operations. This result is not surprising if we are to take into cognisance the views of Adenikinju (2005), Akinbola *et al,* (2017) and Nurudeen *et al,* (2018), that adequate access to electricity supply by small businesses has positive impact on their ability to produce goods and generate profits. Thus, low capacity of supply constitutes a form of constraints and insecurity on the ability of the small businesses to provide satisfactory services to their customers.

The test conducted on hypothesis two revealed a significant positive relationship between duration of supply and the performance of small businesses. Duration of supply in this study was captured by the number of hours in which electricity is available per day. The mean of responses on duration of supply at 1.835 is low as shown in table 3. Thus, the respondents considered electricity not to be available for most hours of the day. This result agreed with the findings of Aliyu, Ramli and Saleh (2013) that incessant power outages exist in most communities in Nigeria, thus constituting major constraints as well insecurity on the ability of the small businesses to render productive services to their customers.

The test of hypothesis three revealed that the cost of supply does not have significant effect on the performance of small businesses. This result is surprising if we are to consider the hue and cry from citizens in Nigeria about exorbitant electricity charges arising from estimated billings of customers by the various distribution companies in the country. However, Scott *et al* (2014) noted that electricity costs constitute only a small proportion of total manufacturing costs of most SMEs in developing countries. Arguments have also been made that consumers in Nigeria will be willing to pay for the cost of electricity provided that the energy will be available and reliable (Oseni, 2017; Babawale & Awosanya, 2014).

The test of hypothesis four revealed a significant positive relationship between the reliability of supply and performance of small businesses. Reliability was measured by the number of unscheduled interruptions per week and how long is each interruption. Table 3 showed that the mean response to questions on reliability is 4.341, meaning that the number of unscheduled outages is quite high in this area. Thus, a situation where businesses experience high number of power interruptions implies low access to electricity and invariably poor performance in terms of their production and profit generation (Arlet *et al,* 2014). Also, Tortora and Rheault (2012) assert that poor electricity reliability results into critical productivity losses for most business concerns in developing countries including Nigeria.

Test of hypothesis five revealed that there is no significant relationship between the quality of electricity supply and the performance of small businesses in Akoko area. Quality of electricity in this study was measured by asking the respondents to assess the voltage of power supply. Mathew (2017) however asserts that quality is one of the most difficult measures of access to electricity to quantify in practice. This is because access to electricity can be measured either from the supplier or customers' perspectives. However, on the question of quality which is based on the voltage supplied, the supplier stands in a better position to determine this.

On the whole, the lack of access to stable electricity supply by most of the businesses in Akoko area of Ondo State have impacted negatively on their ability to generate sufficient profit over the years. Many of the residents of this local government often lived without electricity supply from the national grid for most part of the year. Those engaged in the welding business are often idle for most part of the months in a year because of their inability to recourse to alternative power supply through the use generating sets. Many of such businesses have closed their shops because of the precarious nature of electricity supply in this area.

5.1 Conclusion

Findings from this study have shown that there is significant relationship between access to electricity and performance of small businesses in Akoko of Ondo State. The findings also revealed that low access to electricity supply constrain the SMEs ability to serve their customers satisfactorily, thus constituting insecurity to their business. Since the SMEs are the engine of growth for a developing economy, it is instructive that policy makers in the country take urgent steps to stem the tide of insecurity in the electricity sector. This must be done so as to guarantee the needed development in the rural area to reduce the incidence of rural/urban migration in the country.

5.2 Recommendations

Based on the findings in this study, the following recommendations will help to reduce the level of electricity insecurity and thus improve the performance of small businesses in Ondo State.

1. Efforts should be made to supply more electrical transformers to Akoko area so as to increase the capacity of electricity supply, and thus reduce the level of insecurity.

2. Government should provide solar panel power as back up during periods of power outages from the grid in the rural communities to assist the small businesses in their electricity challenges.

3. Small businesses should go into ventures that utilize less of electricity supply from the national grid, since the supply from that source is not reliable in Akoko area.

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