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EFFECT OF ERRATIC POWER SUPPLY ON THE PRODUCTIVITY AND PROFITABILITY OF SMALL AND MEDIUM ENTERPRISES IN A.B.U COMMUNITY MARKET IN SAMARU ZARIA

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ABSTRACT
This research aims to analyze the effect of erratic power supply on the productivity and profitability of small and medium enterprises. This research is a cross-sectional survey. A sample of 4 S.M.E.s was selected using a probability sampling procedure using purposive sampling techniques. The criterion for selecting the S.M.E.s includes their location within the community market A.B.U Zaria and electricity use in the business operation. A structured questionnaire was used to collect the data for the study. M.R.M. in the form of O.L.S. was employed. SPSS statistical package version 16 was used to analyze the data. The finding reveals that 90.91% of the enterprises studied indicated that erratic power supply was the major constraint to their productivity and profitability, with an average of 180 hours of power outage per month lasting 6 hours per day, causing the enterprises an average of N24, 000:00 monthly. This study suggested a need for the A.B.U authority to establish an independent power plant to bridge the gap from the National grid for improved efficiency of S.M.E.s within the community market.

Keywords: Erratic Power Supply, Productivity, Profitability, S.M.E., ABU

INTRODUCTION
Small and medium enterprises play an important role in industrialization and economic growth for both developing and developed countries. Apart from increasing per capita income and output, small and medium enterprises (S.M.E.s) create employment opportunities, enhance regional economic balance through industrial dispersal, and promote effective resource utilization considered critical to engineering economic development Ogujimba et al. (2004). For example, the S.M.E.s contribute above 70 percent of total industrial employment in Nigeria, accounting for only 10-15 percent of total manufacturing output Salami. (2003), in the United States of America (U.S.A.), S.M.E.s account for over 50 percent of G.D.P. Generally, the share of S.M.E.s in the global production is over 30 percent employment generation capacity of about 58 percent of global working population Chamberiain. (2003). Electric power is of fundamental importance to any nation's social and industrial development. It is so vital to all aspects of human life, production and service delivery that it contributes in no small measure to the standard of living of the populace.

Statement of problems

In Nigeria, the poor electricity supply is perhaps the greatest infrastructural menace confronting the manufacturing sector. The typical Nigerian firm experiences a power failure or voltage fluctuation about seven times per week or more, with each lasting for about two hours without the benefit of prior warning Adenikinju. (2005). However, despite massive investment in power facilities, Nigerian electricity supply has remained very unreliable, a situation that drastically affects all Nigerian manufacturing sub-sectors efforts to obtain the required power input for growth and development.

Furthermore, in Nigeria, electricity supply has remained erratic and inadequate as power outages, had shed, and rationing becomes the order of the day; hence many S.M.E.s and high-income households have resorted to purchasing private generators prohibitive cost Gambo. (2010). This scenario causes S.M.E.s to seek alternative power sources, which increases the cost of inputs. Therefore, the organization will acquire alternative sources, and generators buy fuel and maintain them.

Given the above context, this research examines the effect of erratic power supply on small and medium enterprises (S.M.E.s) in the A.B.U. Zaria community market. Specifically, it seeks to find answers to the following questions.

i) How does erratic power supply affect the productivity of S.M.E.s in the A.B.U Zaria community market?

ii) How does erratic power supply affect the profitability of S.M.E.s in the A.B.U Zaria community market?

The study's main objective is to quantify and analyze the effect of erratic power supply on Small and Medium enterprises (S.M.E.s in A.B.U Zaria community market.

The specific objectives are:

i) To determine the effect of erratic power supply on the productivity of S.M.E.s in A.B.U Zaria community market.

ii) To analyze the effect of erratic power supply on the profitability of S.M.E.s in the A.B.U Zaria community market.

The hypotheses of the study are stated as follows.

Ho_1: There is no significant relationship between erratic power supply and productivity of S.M.E.s in A.B.U Zaria community market.

Ho_2: There is no significant relationship between the erratic power supply and the profitability of S.M.E.s in the A.B.U Zaria community market.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Power Supply Electricity

According to Adeyemo. (2009), electricity is part of the infrastructure, the primary physical facility upon which all other system activities depend significantly. The power supply is the most important commodity for national development; with electrical energy, people are empowered to work from the domestic level to the cottage industries; employment is generated through the small and medium industries. It factors input in the production process of small and medium enterprises and the manufacturing sector in

general. Electricity supplies have a significant impact on economic activities Valesquez and Pichler. (2010), this is because it is used for varied purposes, including production, storage, powering of office equipment, and product display. Consequently, the use of electricity serves as input for production. This makes electricity an essential commodity for all industry types-manufacturing, service and distribution.

Supplies of electricity strongly influence the buying organization's ability to gain a competitive advantage and provide solutions. This is because operators of S.M.E.s have a high dependency on electricity as a standardized input; without it, they cannot produce to satisfy their customers. Therefore, this dependency on electricity supplies explains the value of electricity to S.M.E.s operators Haanes et al. (2011). Productivity is globally acknowledged as crucial and critical to a country's competitiveness and integration into the global economy. It is generally defined as the output produced per unit to resources consumed. It can also be defined as "the rate at which a worker, a company produces goods, and the amount produced, compared with how much time, work and money are needed to produce them" Hornby. (2006).

Productivity serves as the very factor that enables societies to generate wealth through an optimal mix of available resources such as human knowledge and skills, technology, raw materials, energy, capital and intermediary services. Productivity growth contributes to the prosperity of the nations, making organizations, individuals, and nations compete in the global market, translating into improved quality of life in Gbenga. (2014). Productivity is the efficiency and effectiveness with which inputs (Land, capital, labor, materials, time, energy etc.) are combined and utilized in an environmentally and socially sustainable manner to produce quality goods and services for the satisfaction of human needs Gbenga. (2014). Productivity is essentially seen as a ratio to measure how well an organization, individual, industry, or company converts input resources (labor, materials, machines, etc.) into goods and services, i.e., an overall measure of the ability to produce goods and services Bdliya. (2010).

According to the Encarta dictionary, erratic means inconsistent, not predictable and regular, especially in being likely to depart from expected standards at any time. Thus, the erratic power supply in this study would mean irregular and inconsistent electric power supply. Erratic Power Supply occurs due to one or more technical problems, which occur on the electrical network during power generation, transmission and distribution. Productivity is helpful as a relative measure of the actual output of production compared to the actual input of resources, measured across time or against familiar entities. As output increases for a level of input, or as the input decreases for a constant output level, an increase in product occurs.

Therefore, a "productivity measure" describes how a welan organization's resources are used to provide input. Productivity is a required tool in evaluating and monitoring the performance of an organization, especially a business organization, Gbenga. (2014). Profitability means to profit from all business activities of an organization, company, firm, or enterprise. It shows how efficiently the management can profit by using all the available resources in the market, according to Harward and Liptom. (1961). Profitability is the"ability of a given investment to earn a return from its use."

However, the term profitability is not synonymous with the term efficiency". Profitability is an efficiency index regarded as a measure of efficiency and management guide to greater efficiency. A profitability ratio is a measure of profitability, which is a way to measure a company's performance. Profitability is simply the capacity to make a profit. A profit is left over from income earned after deducting all costs and expenses related to earning of income James and John. (2005).

Small and Medium Enterprises SMEs

A single standard definition for Small and Medium enterprises might not be possible because of its variations in the definition from country to country and from sector to sector Gunasekaran et al. (2000). Therefore, there is no single universally accepted definition of S.M.E.s in Nigeria. Nigerian ministries, research institutes, agencies, private sector institutions, etc., use different definitions. However, there are various definitions for micro, small and medium enterprises. In Nigeria, the number of employees, capital invested, and turnovers have been used to define micro, small and medium enterprises (S.M.E.s). According to the Central Bank of Nigeria (CBN), micro-enterprises have less than ten personnel and more diminutive than N500, 000.00k capital base; small enterprises have less than 50 personnel and less than 1 million capital base. In contrast, medium enterprises are classified as employing between 50 to 99 staff and a capital base of less than N150 million, CBN (2003).

The Nigerian National Council on Industry (NNCI), on the other hand, defined micro-enterprises as one with a labor size of not more than ten workers and total capital of not more than N500,000.00k, small scale enterprises is an enterprise with a labor size of 11-100 workers or total capital of not more than N50, million, including working capital but excluding the cost of land, while a medium scale enterprise is the one with a labor size of 101-300 workers or total capital of over N50 million but not more than N200 million including working capital but excluding the cost of land Udechukwu. (2003). According to the Jamadu. (2001). classification, small scale business is one with a capital outlay between N1.5 million and N50 million, including working capital, but excluding the cost of land and or Number of employees between 11-100 Ukenna et al. (2010). For this study, the definition of Nigerian National Council in industry (NNCI) Ukechukwu (2003) will be adopted; this will enable the researcher to include as many firms as possible in this research work.

Theoretical Framework

Power outages affect both developed and developing countries. Three theories have explained the effect of erratic power supply on firms" performance. They are the production function, alternative, and indirect approaches. And this research work adopted an indirect approach based on how much firms spend on acquiring and running generators due to power outages. Electricity is a significant component of virtually any production process as such limited supply can, directly and indirectly affect firms' economic activities. In documenting such a crucial economic role of energy, a common approach in the literature is to measure the output loss associated with electricity outages. One analytical framework used is a production function in which electricity contributes directly

to firms' output as separate input and indirectly as a determinant of the extent to which other direct inputs such as capital equipment are used (see, for instance, Adenikinju. (2005)

An alternative approach, a subjective method, is based on a self-assessment by which surveys ask firms to quantify the loss they incur due to power outages. This approach relies on the assumption that firms will be positioned to provide a relatively accurate valuation of how much it cost them to replace more frequently or to repair damaged machinery or equipment, or assess the lost output due to idled input. A simple approach to evaluating power outages' costs consists of just aggregating the cost amounts provided in the survey. However, many biases can plaque the outcome since firms may overestimate the incurred costs, hence, overemphasizing the constraint that electricity poses to their business activity Uchendu. (1993). An indirect approach similar to the latter is based on how much firms spend on acquiring and running generators.

As shown earlier, firms may turn to the generation of their electricity; such an approach offers better insights than the former based on production functions because it may be impossible to differentiate between electricity-constrained firms functioning correctly and firms not facing power outages. Compared with the self-assessment approach, the values one gets from this proxy method tend to be more accurate or less prone to biases associated with the firm's assessment. However, this proxy method is not immune from problems because the amount spent on power generation may not indicate the actual Cost of power outages. Some firms facing financial constraints (which could result from power outages) may not satisfy their whole need for energy. Further, relying on how much they spend on generators could exclude firms not using generators and thus tend to systematically underestimate the Cost associated with electricity outages (see, among others, Beenstock et al. (1977), Benstein and Hega. (1988).

Empirical Literature Review

The poor state of infrastructure supply in developing countries hurts their economic performance. For example, a survey conducted in several countries found that infrastructure costs and problems of unreliability rank high among issues in the business environment—a Study conducted by Imoro and Owusu. (2012) on 320 selected MSI from three industrial clusters in Kaduna's" metropolis, revealed that an unannounced blackout causes a deficit of about 5.3% in quality of electricity they required which was attributed as a result of transformer and feeders overloads, increasing customer population, unrealistic tariffs charge and among other. According to Musuliu. (2012), among the earliest studies to examine the impact of power supply and its Cost on the Nigerian manufacturing sector using surveyed data were Ukpong. (1973), Lee and Anas. (1989), and Uchendu. (1993). Their results predicted that small firms suffer more from unreliable electricity supply than large firms. Godwin. (2005), in his study on micro-enterprises with a sample size of 43 enterprises in rural Tanzania, revealed that the growth rate of micro-enterprises was higher in areas with constant electricity services than in areas with frequent failure of electricity supply. The study also observed the decline and closure of micro-enterprises in some areas due to frequent electricity services, high competition and market saturation, etc. George and Oseni. (2012), in their study of the relationship between

electric power and the unemployment rate in Nigeria, discovered that the causes of unemployment in Nigeria are due to inadequate and unstable power supply to industrial sectors.

Also, Aremu and Adeyemi. (2011), in their studies on small and medium survival strategies for employment generation in Nigeria, revealed that S.M.E.s in Nigeria cannot run a profitable business on power generating sets in a highly competitive and open economy like Nigeria because of the high cost of fuel and maintenance. Dele. (2009), in his study of power generating sets rescue Nigerians from the erratic power supply, revealed that frequent power supply led to small and medium manufacturing firms relying more on personal generators for running their machine than the public power supply, which eventually resulted to the S.M.E.s increasing in their Cost of production and consequently reduces their profit margin.

A study conducted by Doe and Asamoah. (2014), using a systematic sampling approach, with a sample of 70 S.M.E.s in Ghana, the study revealed that without reliable energy supply, S.M.E.s could not produce increased quantities and quality, leading to poor sales, hence lower the level of profitability. Also, a study conducted by Nagetha and Subrahmanya. (2006), using the Cobb-Douglas production function with a 44 sample of small-scale industries in India, found that energy was the most critical contributor to the value of output among all inputs.

METHODOLOGY

Source of Data and Sample size

This study would make use of both primary and secondary data. The primary data was obtained with administered questionnaires, while the secondary data were obtained from existing research works in academia and organizations. The study used a probability sampling procedure in a purposive sampling technique. The method was applied in selecting the Number of firms that constitute the study's sample size. And a sample of 20 small and medium enterprises within the community market with a total of 4 categories of S.M.E.s by activities such as Barbing Saloon, Hairdressing, Electrical/Electronic repairs and Photocopy/secretarial was sampled to determine the effect of erratic power supply on productivity and profitability of the S.M.E.s in the market. The research instrument used in this study is a structured questionnaire. The research was made of two sets of variables. These are dependent and independent variables. The dependent variables for this study were the enterprise's productivity and profitability. The independent variable used in this research study was the Cost of electricity charged from PHCN, Cost of the fueling of generators and maintenance, labor cost, Number of an hour per day of a power outage and Cost of alternative source of power.

Model Specification

The impact of electricity failure on the performance of small and medium enterprises has been discussed and analyzed by various studies. It involves the analysis of the macro production process function with electricity generation expenditure and other related variables as an input and the performance (output) as a dependent variable. Moroney

(1967), to establish the importance of energy in clay industries, employed a regression analysis using ordinary least squares. He used a Cobb-Douglass production function, which was most generally used because it accurately characterizes many production processes, Petersen and Lewis. (2002).

The Cobb – Doughlass function was of the form

$Y = AK^{\alpha} + L^{\beta} + E^{\gamma} + M^{\alpha}$

Moroney introduced energy into the Cobb-Douglass production function because of its importance in the production process (see the work of Sternbuks. (2010). Adopting the Cobb-Douglass production function, Moroney considers this model to be.

$Y = \beta_0 + \beta_1 K + \beta_2 L + \beta_3 E + \beta_4 M + \mu$….. (I)

Where Y = value of the output of S.S.I. form in the cluster K = value of capital (current value of plant and machinery)

L = Labour cost

E = Energy cost

M = Raw material and other miscellaneous cost (excluding energy).

μ = Random error term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ > parameters, that when adopting a similar model for this research, were the following

$Y = \beta_0 + \beta_1 RTC + \beta_2 NHDPO + \beta_3 CFG + \beta_4 LC + \beta_5 CASP + \beta_6 CS + M$ ….(II)

Where

Y = referring to enterprises' productivity and profitability within the period.

ETC = Electricity tariff charge by PHCN

NHDPO = Number of hour per day of power outage

CFG = Cost of fueling of generators

LC = Labour cost

CASP = Cost of alternative source of power

M = Random error term

Now equation (μ) sis modified and specified as

$Y_{i-j} = \beta_0 + \beta_1 ETC_{1i} + \beta_2 NHDPO_{2i} + \beta_3 CFG_{3i} + \beta_4 LC_{4i} + \beta_5 CASP_{5i} + \mu$ … (iii)

Where

Y_{i-j} = referring to productivity and profitability within the period.

E.T.C. = Electricity tariff charge by PHCN within the period

C.F.G. = Cost of the fueling of generators within the period

NHDPO = Number of an hour per day of a power outage within the period.

LC = Labor cost within the period

CASP = Cost of alternative source of power by SMEs within the period

μ = Random error term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, + \beta_5, \beta_6 < o.$

The model (iii) explains the relationship between the dependent and independent variables.

Methods of Data Analysis and Technique of Estimation

This research study used descriptive and econometric approaches using primary data sources for more reliable results. The descriptive statistical technique was used to summarize and describe the nature of the variables captured for this study. Under the inferential statistics, a multiple regression model (M.R.M.) in ordinary least squares was employed. The model was estimated based on the ordinary least squares O.L.S. whereby the parameters or the coefficients of the multiple regressions were obtained. Their statistical reliability was tested based on the t-ratios and adjusted R^2 and F statistics. Tolerance and Variance Inflective Factors (V.I.F.) values were used to detect the presence of multicollinearity among the variables. Statistical package for social science (SPSS) 16 versions was used to run the regression. This was due to its availability and simplicity as it is capable of displaying regression results together with other tes.t

Presentation of Regression Result

The regression results are presented and analyzed in this section. The first regression result estimates the relationship between productivity as a dependent variable with the Number of an hour per day of a power outage (NHDPO), Cost of the fueling of the generator (C.E.G.), Labour Cost (L.C.) Power Holding Company of Nigeria Plc (PHCNC) bill charge (E.T.C.) and Cost Alternative Source of Power (CASP) as independent variables.

Regression Result (Productivity)

Table 4.1.1: Shows the result of ordinary least-square (productivity) as the dependent variable

Variable	Coeff	t.cal	Sig-t
Constant	6.343E-17	.000	1.000
NHPD	-1.125	-3.118	.004
CFG	2.661	222.586	.000
LC	-4.708	-108.773	.000
CASP	2.682	61.491	0.000
PHCN	-5.516	-1.118	.273

Source: Researcher Computation using SPSS 16 version (August, 2021)

R - Square (R^2) = 1.000
F - Calculated = 2.212
F – tabulated = 2.57
Sig P Value = 0.000
Observation = 37

Table 4.2.1b Shows Collinearity Result

Variable	Tolerance	Variance Inflective factor (VIF)
HNPD	.217	4.606
CFG	.708	1.413
LC	.699	1.431
CASP	.265	3.779
PHCN	1.000	1.000

Source: Researcher Computation using SPSS 16 version (August 2021)

Analysis of the Results

Table 4.1.1 shows that the multiple regression coefficients of determination R^2 = 21.000. This implies that 100% of the explanatory variable explains variations on the dependent variable. The table also shows the coefficient of other dependent variables.

Firstly, our findings discovered that the Number of hours per day of power outage hurts productivity. The coefficient which explains the relationship between NHPD and productivity was -1.125. This shows an increase in NHPD by 100 can decrease productivity by 112.5. Also, using t-statistic, the coefficient of NHPP shows that NHPD was statistically significant at the 5 percent level.

Second, it was found that the Cost of fueling the generators (C.F.G.) positively affects the productivity of the enterprises. The coefficient which explains the relationship between the Cost of fueling the generator and productivity was 2.661. This shows that a decrease in the Cost of fueling generators by N1000.00 can increase productivity by 266%. Also, using t-statistics, the coefficient of C.F.G. shows that the C.F.G. was statistically significant even at a 5 percent level. Thirdly, our findings also found that the labor cost (L.C.) hurts the productivity of the enterprises. Thirdly, the coefficient which explains the relationship between labor cost and productivity was -4.708. This shows that an increase in the labor cost by N1000.00 can decrease productivity by 470%. Also, using t-statistics shows that Labour cost is statistically significant even at a 5 percent level.

Fourthly, it was also found that the cost of alternative sources of power positively affects the productivity of the enterprises. The coefficient which explains the relationship between CASP and productivity was 2.682. This shows that a decrease in the Cost of alternative power sources by N1000.00 can increase productivity by 268.2%. Also, using t-statistic, the coefficient of CASP was a statistically significant event at the 5 percent level. Finally, it was also discovered that the tariff charge, i.e., the electricity tariff charge by PHCN, negatively affects the productivity of the enterprises. The coefficient which explains the relationship between electricity tariff charge and productivity was -5.516. This shows that an increase in electricity tariff charge by PHCN ₦1000.00 can decrease productivity by 551.6%. Also, using t-statistics, the coefficient of E.T.C. was not statistically significant even at the 10 percent level.

The second regression result estimates the relationship between profitability as a dependent variable with the other five independent variables (i.e., NHPD, C.F.G., L.C., CASP and E.T.C.).

Regression Result (Profitability)

Table 4.2.2 shows the result of ordinary least –square (profitability as dependent variable.

Variable	Coeff	t.cal	Sig-t
Constant	1.264	.000	1.000
NHPD	**156.472**	3.118	.004
CFG	**-1.129**	**-6.759**	.000
LC	**.530**	**8.805**	.000
CASP	**1.844**	**3.041**	.005
PHCN	**1.267**	**3.732**	**.001**

Source: Researcher Computation using SPSS version (August, 2021)

R - Square (R^2) = .911
F - Calculated = 69.483
F – tabulated = 2.57
Sig P Value = .000*
Observation = 31

Table 4.2.2b shows collinearity Result

Variable	Tolerance	Variance Inflective factor (VIF)
HNPD	.217	4.606
CFG	.708	1.413
LC	.699	1.431
CASP	.265	3.779
ETG (PHCN)	1.000	1.000

Source: Researcher Computation using SPSS version (16) (August, 2021)

Analysis of the Results

Table 4.2.2 shows that the multiple regression coefficients of determination R^2 = .911. This implies that 91.1% of the explanatory variable explains the dependent variable's variation. The table also shows the coefficient of other independent variables.

Firstly, our findings revealed that the number of hours per day of power outage positively affects the profitability of the enterprises. The coefficient which explains the relationship between HNPD and profitability was 156.472. This means a decrease in the HNPD by 100 can increase the profitability by 156.472%. Also, using the t-statistic ratio, the coefficient of HNPD was .004. This shows that NHPD is statistically significant even at a 5 percent level. Secondly, our finding also discovered that the Cost of the fueling of generators hurts the profitability of the enterprises. The coefficient which explains the relationship between the Cost of the fueling of generators and profitability was – 1.129. This shows that an increase in the cost of generators' fueling by N1000.00 can decrease the profitability by 112.9%. Also, using t-statistics, the coefficient of C.F.G. is .000; this shows that C.F.G. is statistically significant even at a 5 percent level.

Thirdly, it was also found that the Labour Cost has a positive effect on the profitability of the enterprises. The coefficient which explains the relationship between L.C. and profitability was .530. This shows that a decrease in the L.C. by N1000.00 can increase the profitability by 53%. Using t-statistics, the coefficient of L.C. was .000; this shows that L.C. is statistically significant even at a 5 percent level. Fourthly, it was also found that the cost of an alternative source of power positively affects the profitability of enterprises. The coefficient which explains the relationship between CASP and profitability was 1.844. This shows that a decrease in the CASP can increase profitability by 184.4%. Using t-statistics, the coefficient of CASP was .005; this indicated that CASP is statistically significant even at a 5 percent level. Finally, our findings also found that the electricity tariff charge by PHCN has a positive effect on the profitability of the enterprises. The coefficient which explains the relationship between E.T.C. and profitability was 1.267. This shows that a decrease in the E.T.C. by N1000.00 can increase the profitability by 126.7%. Also, using t-statistics, the coefficient of E.T.C. was .001. This means that E.T.C. is statistically significant even at a 5 percent level.

Conventionally, the decision was to accept the F-statistics as a good model if the critical F-value was less than the calculated F-value. From the analysis, the calculated F-valued for productivity was 2.212; profitability was 69.483, respectively. For productivity, the F-Cal is less than F-critical. That is F-cal = 2.212< F-tab $_{(0.05,\ 5,\ 27)}$ = 2.57, but for profitability, F-cal = 69.483> F-critical $_{(0.05,\ 5,\ 27)}$ = 2.57.

Therefore, it can be concluded that the erratic power supply has a significant effect on profitability but with no significant effect on productivity on the S.M.E.s in the A.B.U community market. Therefore, this allows the researcher to accept the alternative hypothesis on profitability and reject the alternative hypothesis on productivity.

Also, the study used tolerance and inflective vector factors to detect the presence of multicollinearity among the variables; that is, the closer the tolerance to zero, the greater the degree of collinearity of that variable with the other regressors. On the other hand, the closer tolerance is to 7, the greater the Evidence that the variable is not collinearity with the other regressors. Using inflective variance factor (V.I.F.), the greater the value of V.I.F., the more "troublesome" or collinearity the variable; if the V.I.F. of a variable exceeds 10, that variable is said to be highly collinear Damodar. (2003).

Hypothesis Testing

To analyze the results obtained from the user software package and the parameters and the values that explained the relationship between dependents, i.e., productivity, profitability and the independent variables.

Table 4.2.4 Result of Test of Hypothesis

S/N	Hypothesis	F-Cal	F-Tab	P-Value	Remark
1.	There is no significant relationship between erratic power supply and productivity of S.M.E.s in A.B.U. Zaria	2.212	2.57	.000	Significant
2.	There is no significant relationship between erratic power supply and profitability of S.M.E.s in A.B.U. Zaria.	69.483	2.57	000	Significant

Hypothesis 1

There is no significant relationship between erratic power supply and productivity of S.M.E.s in A.B.U. Zaria community market. From table 4.2.4, the F-calculated on the effect of erratic power supply on productivity was 2.212 with a corresponding P-value of 0.000. From the analysis, the F-calculated value (F-cal = 2.212) was less than the F-critical (F-tab = 2.57), that is F-Cal = 2.212]< F-tab $_{(0.05, 5, 27)}$ = 2.57 at 5 percent significant level. Therefore, we accept the null hypothesis and reject the alternative that erratic power supply has no significant effect on the productivity of S.M.E.s in the A.B.U Zaria community market.

Hypothesis 2

There is no significant relationship between erratic power supply and profitability of S.M.E.s in A.B.U. Zaria community market. Table 4.2.4, the F-calculated on the effect of erratic power supply on profitability was 69.483 with a corresponding P-value 0.000. From the analysis the F-Calculated value (F-cal = 69.483) was greater than the F-critical (F-tab =2.57), that is F-Cal = 69.483]>F-tab = 2.57 at 5 percent significant level. Therefore, we reject the null hypothesis and accept the alternative that erratic power supply significantly affects the profitability of S.M.E.s in the A.B.U Zaria community market.

DISCUSSION OF THE FINDINGS

From our research study, the inferential statistic/result findings agreed with some of our expectations of the research work, that erratic power supply affects the productivity and profitability of S.M.E.s in A.B.U. Zaria community market.

Firstly, in our findings, it was discovered that the Cost of fueling generators (C.F.G.) hurts the productivity of the enterprises. This finding agreed with Adebayo and Alake. (2012) discovered that the cost of operating a self-power generating set was 50 times the cost of operating on power supply from the national grid by PHCN. Also, these findings agreed with Aremo and Adeyemi. (2011), whose study found that S.M.E.s in

Nigeria cannot run a profitable business on power generating set in a highly competitive and open economy like Nigeria because of the high fuel and maintenance cost.

Secondly, this research also found that tariff charges from PHCN negatively affect the productivity of the enterprises. This result agreed with Imoro and Owusu. (2012), who discovered in 320 selected MSI from three industrial clusters in Kumasi metropolis that unrealistic tariff rate charge by Public Utility Company affect the quality of electricity they required. But, on the other hand, the study also found a positive effect of tariff charges from PHCN on the profitability of the enterprises. This result also agreed with Bental and Ravid. (1982), who discovered in their study that the cost of producing electricity by enterprises was higher than the tariff rate charged by the utility company in the country.

Finally, it was found from this research study that the Cost of an alternative source of power has a positive effect on both the dependent variables. This result was confirmed with Musuliu. (2012) discovered that the demand for backup generators resulted from power outagesfirm's size and management's experiences. Other factors include the firm's reputation and the internet for the firm's operation.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of the Findings

In this study, we empirically evaluate the effect of erratic power supply on the productivity and profitability of S.M.E.s in the A.B.U. Community market. The study used five sets of independent variables: number of hours per day of electricity outage, Cost of fueling of generators, labor cost, electricity tariff charge by PHCN and the Cost of alternative source of power. The data of these independent variables are obtained from 4 selected enterprises in the community market in A.B.U Zaria. A probability sampling procedure in the form of purposive sampling technique in selecting the Number of forms that constitute the study's sample size was used.

The major findings show that the multiple regression estimated fit both productivity and profitability with R^2 = 1.000 and R^2 = .911, respectively. This implies that the explanatory variable explains 100 percent and 91.1 percent in the variation on the independent variables. Also, the F statistic values for productivity was 2.212, and profitability was 69.483, respectively. It was also found out that NHPD has a negative effect, C.F.G. has a positive effect, L.C. has a negative effect, CASP has a positive and E.T.C. (PHCN) has a negative effect on productivity with their coefficient as -1.125, 2.661, -4.708, 2.682 and -5.516 respectively and are all statistically significant at 5 percent level.

Finally, it was found that NHPD has a positive effect, C.F.G. has a negative effect, L.C. has a positive effect, CASP has a positive effect, and E.T.C. (PHCN) has a positive effect on profitability, respectively, with their respective coefficient as 156.472, -1.129, 0.530, 1.844 and 1.267 and are all statistically significant at 5 percent level.

Conclusion

Small and medium enterprises play an essential role in the A.B.U community market, Kaduna state, and Nigeria in general, both in wealth and employment generation, poverty alleviation, etc. Yet, their activities and even survival are hindered by many constraints incredibly erratic power supply. This study was concerned with how erratic power supply affects the productivity and profitability in A.B.U. Community market in Samaru. Four samples (4) of small and medium enterprises were studied, and the findings revealed that 90.911 percent of the enterprises indicated that erratic power supply was the major constraint to their activities, with an average of 180 hours of power outage in a month lasting 6 hours per day causing the enterprises an average of N24,000.00 monthly.

Recommendations

This research study aimed to recommend that sound and viable enterprises be established and enhance their productivity and profitability. However, for this to be realized, an effort from individuals, business organizations and government agencies is highly needed. In light of this, the study considered the following as a way forward.

Firstly, based on our findings, it was revealed that S.M.E.s could not operate profitable business on generators set or other source of alternative power due to the high cost of fueling and maintenance. Therefore, in the view of the above, there is an urgent need from the government to improve the supply and distribution of public power so that S.M.E.s productivity and profitability can be enhanced.

Finally, based on the above findings, the research suggested that A.B.U Zaria authority should embark on an independent power project plan to increase the capacity of the megawatts supply by the National grid so that the S.M.E.s in the community market will enjoy uninterrupted power supply to enable them to function effectively and efficiently.

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