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Impact of power (electricity) supply on the performance of small and medium scale enterprises in Adamawa state: Case study Mubi north local government area

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Abstract
This study was undertaken to investigate the impact of power (electricity) supply on the performance of small and medium scale enterprises in Mubi. Primary data were used and the data were generated through questionnaire. The questionnaires were coded and the variables used are the monthly turnover of small and medium scale enterprises in Mubi, KV supplied to SMEs by the power distribution company in Mubi, number of employees, tax, wages and salaries, years of business and the expenditure on alternative power supply. Monthly turnover was used as a proxy to performance while KV was used to proxy power supply. The study employed descriptive analysis, correlation analysis as well as the regression analysis. The results of the analyses revealed that power supply and the performance of small and medium scale enterprises are negatively correlated. However, the regression result showed that power electricity supply has a positive impact on the performance of small and medium scale enterprises in Mubi. The study recommended among others, that stable electricity supply should be provided to enable the young businesses survive and grow.

Keywords: electricity supply, SMEs, correlation analysis, regression analysis, Mubi

Introduction

The economy is a complex dynamic, requiring greater attention in terms of its analysis and efficient management for productivity, stable growth and increased standard of living of the people. Since 17th century, efforts were being made to promote economic growth and attention was also focused on Small and Medium Scale enterprises as engine of economic development of an economy in general and manufacturing sector in particular (Adeyemi, 2004). The role of Small and Medium enterprises in the overall growth and development of an economy's manufacturing sector in particular and the economy in general cannot be over emphasized. Small and Medium Scale enterprises are indeed high potentials for development in terms of employment generation and wealth creation in any economy. Empirical studies have shown that the Small and Medium Scale enterprises have in many state enhanced greater per unit of capital invested and supported the employment opportunities. This explains the deep interest which developing nations have shown in the promotion of Small and Medium Scale enterprises since 1970s.

Moreover, the potential of Small and Medium Scale Enterprises in contributing substantially to the economic growth and development of Nigeria has been fraught with various limitations, including lack of access to long term capital, inadequate finance, unavailability of information for potential investors, poor management and low entrepreneurial skill, over bearing regulatory and operational environment, unfavorable tariff policy and infrastructural deficiencies such as stable inadequate electricity supply. These constraints also limit the performance of Small and Medium Scale Enterprises in Adamawa state and Mubi in particular.

Although, it is a widely believed view that availability of credit is the most critical to the performance of Small and Medium Scale Enterprises, some studies have shown that a large number of Small and Medium Scale Enterprises fail because of non-financial reasons such as infrastructural deficiencies (Liedhorm *et al.* 1994). One of the infrastructural facilities affecting the performance of Small and Medium Scale Enterprises in the state and the country in general is inadequate provision of electricity supply. The current situation is that virtually all the players in the Small and Medium Scale Enterprises provide alternative power supply for smooth operation of their businesses despite their weak capital strength. This condition consequently resulted to high cost of production. Therefore, adequate electricity supply is necessary to ensure cost effectives investments in Small and Medium Scale Enterprises (Charles, 2005).

In view of the above therefore, there is a need to objectively assess the performance of and the impact of electricity supply on the performance of the Small and Medium Scale Enterprises in Mubi Local Government Area being one of the most commercial centers in Adamawa State.

Statement of the Research Problem

Small and Medium Scale Enterprises in both developed and underdeveloped nations play an important role in the process of economic development and enterprises. In spite of the relevance of the Small and Medium Scale Enterprises the Nigeria economy and industrial development, on that sector face a lot of problems. Although there are various factors affecting the performance of Small and Medium Scale Enterprises ranging from inadequate capital to unfavorable tariff policy, however, the poor state performance of electricity supply in the state is one of the significance factor militating against the performance of Small and Medium Scale Enterprises.

The quality and quantity of electricity supply determine its ability to create competitive enterprise, since the performance of Small and Medium Scale Enterprises in any state is greatly influenced by the electricity supply. An over view of the performance of the Small and Medium Scale Enterprises in Nigeria shows that the impact of the sector accounted for about 80 percent of the total industries employment in Nigeria, and contribute 15-20 percent of total Manufacturing output (Osuala, 2004) [24].

Power (Electricity) supply remained unreliable and power outage is the order of the day, load shedding and rationing have become very frequent. Electricity supply had been erratic and unreliable that makes many businessmen to purchase private generator at all cost. The substantial investment in private generating plants is estimated to be of capacity of over 250mm, which is almost half of power holding company of Nigeria (PHCN) available capacity (Adeyemo, 2001).

Despite the above aforementioned, no study has been conducted to the best of our knowledge to investigate the impact of electricity supply on the performance of small and medium scale enterprises in Mubi. This study is therefore aimed at filling this gap in the literature by investigating the impact of power supply on the performance of SMEs in Mubi.

Research Questions

In attempt to determine the impact of power (electricity) supply on the performance of Small and Medium Scale Enterprises in Mubi North local government, the following research questions have been put forward to be answered by this study:

1. What is the impact of power (electricity) supply on the performance of Small and Medium Scale Enterprises in Mubi North local government?
2. What is the correlation between power (electricity) supply and performance of Small and Medium Scale Enterprises in Mubi North local government?
3. What is the effect of tax payment on the performance of Small and Medium Scale Enterprises in Mubi North local government?
4. What is the effect of spending on alternative power supply on the performance of Small and Medium Scale Enterprises in Mubi North local government?

Objectives of the Study

The main objective of this research study is to investigate the impact of power (electricity) supply on the performance of Small and Medium Scale Enterprises in Mubi North Local Government. The specific objectives of the study include the following:

1. To examine the correlation between power (electricity) supply and the performance of Small and Medium Scale Enterprises in Mubi North local government.
2. To determine the impact of tax payment of the performance of Small and Medium Scale Enterprises in Mubi North local government.
3. To examine the effect of spending on alternative power supply on the performance of Small and Medium Scale Enterprises in Mubi North local government.

Significance of the Study

The study will add to the existing body of knowledge, also will create awareness to the government to see the extent to which improving infrastructural facilities such as power (electricity) supply is necessary to the performance of Small and Medium Scale Enterprises in meeting their potentials of indigenous entrepreneurship, enhancing local resource utilization and value added, expanding non-oil export at competitive price, improving balance of payment position of Nigeria.

This research will help the Small and Medium Scale Enterprises owners in decision making against controllable and uncontrollable government policies.

The research will also serve as a reference material to scholars and student that will embark on similar research topic in the future.

Scope of the Study

The research work is concerned basically with the impact of power (electricity) supply on the performance of Small and Medium Scale Enterprises in Adamawa State and will cover some Small and Medium Scale Enterprises in Mubi North Local Government Area, that have relevant infrastructural need for their production process.

Literature review and theoretical frame work

This section gives an insight into various related literature on SMEs and also studies conducted by outstanding researchers, as well as explained terminologies with regards to the impact of power (electricity) on the performance of Small and Medium Scale Enterprises.

Conceptual Clarification

Small and Medium Scale Enterprises (SMEs) as defined by the National Council of Industries (2009) refers to business enterprises whose total costs excluding land is not more than two hundred million naira (N200,000,000.00) only. Although, there exists no consensus among policy makers and scholars concerning the point at which a business firm is deemed to be small or medium. Indeed, there is no universally or even nationally acceptable standard definition except that the scale of business needs to be defined for a specific purpose. The problem of SMES identification is more acute in the developing countries because apart from the fact that, small and medium scale business are difficult to count, they are also difficult to measure individually, hence statistics on the number, size, geographical distribution and activities of enterprises and the SME sub-sectors are partial and highly unreliable (USAID, 2004).

The United Nations Industrial Development Organization (UNIDO) identified fifty definitions of small scale business in seventy-five different countries based on parameters such as installed capacity utilization, output, employment, capital, type of country or other criteria, which have more relevance to the industrial policies of the specific country. However, it has been suggested that the SMEs sub-sector may comprise about 87 per cent of all firms operating in Nigeria, excluding informal - enterprises. This study adopted USAID definition of -enterprises as informal businesses employing five or fewer workers including unpaid family labour; small enterprises as those operating in the formal sector with five to twenty employees; and medium enterprises as those employing 21 to 50 employees (Kayanula & Quartey, 1999).

In spite of its definitional problem, there exists a high level of consensus on the importance of SMES, especially the SMEs

sub-sector to economic growth and development. Oluba (2009) has, however, observed that the importance of SMEs varies with sectors and with the developmental stage of a country. He opined that developing characteristics such as the level of capital allocation /requirements, management size and arrangement as well as limited market access which make SMEs less amenable to the disappointing results of development strategies that focus on large, capital intensive and high import dependent industrial plants as well as failed public enterprises.

The development of Small and Medium Scale Enterprises through effective electricity supply has generated debate and growing interests among researchers, policy makers and entrepreneurs, recognizing the immense contribution of the sub-sector to economic growth. Small and Medium Scale Enterprises constitute the driving force of such industrial growth and development. This is basically due to their great potentials in ensuring diversification and expansion of industrial production as well as attainment of the basic objectives of development. Small and Medium Scale Enterprises utilize local materials and technology thereby aiding the realization of the goal of self-reliance. Also government at various level (local, state and federal levels) have in one way or the other focused on the performance of Small and Medium Scale Enterprises for economic gains. While some governments had formulated policies aimed at facilitating and empowering the growth and development and performance of Small and Medium Scale Enterprises, others had focused on assisting Small and Medium Scale Enterprises to grow through effective electricity supply, soft loans and other fiscal incentives in order to enhance the socio-economic development of the economy by alleviating poverty, employment generation, enhance human development, and improved social welfare of the people (Christopoulos and Tsionas, 2004) [10].

Empirical evidences have shown that prior to late 19th century, cottage industries and mostly Small and Medium Scale Businesses contributed to the economy of the world giant like Europe and America. The industrial revolutions change the status-quo and introduced mass production. The Small and Medium Scale Enterprises development facilitate the mobilization of human and capital resources toward economic development, in general, and rural sector, in particular. They have been identified as a vehicle for employment generation and providing opportunities for entrepreneurial sourcing, training, development and empowerment (Dauda, 1997).

Power Supply (Electricity)

The history of electricity in Nigeria can be traced back to the end of the 19th century when the first generating power plan was installed in the city of Lagos in 1898. From then until 1950, the pattern of electricity power undertaking scattered all over the towns. More of the few undertaking were federal government bodies under the public works department, some by the native authorities and other municipal authorities.

However, the National Privatization Council (NPC) reserved bidder for the five generating and eleven distribution companies from Power Holding Company Nigeria (PHCN) Entitles that will be called Local Distribution Companies (LDC) among the regions. As of April 2014 there are:

1. Abuja Distribution Company
2. Benin Distribution Company
3. Eko Distribution Company
4. Enugu Distribution Company
5. Ibadan Distribution Company
6. Ikeja Distribution Company
7. Jos Distribution Company
8. Kaduna Distribution Company
9. Kano Distribution Company
10. Part Harcourt Distribution Company
11. Yola Distribution Company

Electricity is the part of infrastructure which is basic physical facility on which all other activities in the system significantly depend (Adeyemo, 1979). Development economist underscored the need to build up electricity, as a key stimulus to development. It has been assented that an analysis of electricity is invariably a part of the study of economic development (Ukpong, 1980).

Review of Related Literature

Developing nations such as Nigeria characterized as low income earners by the World Bank, value small and medium scale enterprises (SMEs) for several reasons. Viewed in static terms, the main argument is that SMEs, on average achieve decent levels of productivity especially of capital and factors taken together (that is, total productivity factor) while also generating relatively large amount of socio-economic development. In dynamic terms, the SMEs sector is viewed as being populated by firms most of which have considerable growth potential. SMEs in developing countries achieve productivity increases to a great extent simply by borrowing from the shelf of technologies available in the world (Christopoulos & Tsionas, 2004) [10].

National Economic Empowerment and Development Strategy (NEEDS) aside from the SMES possessing the potential for stimulating industrial growth, which are mainly poverty reduction, employment generation, wealth creation and value orientation. SMEs are highly valued, especially in developing economies, for many reasons. One of such is that SMES achieve decent levels of productivity especially of capital and all factors taken together than large firms (Nafakho, 1998). The abundance of capital and the range of technologies available in the world expand, SMEs need productivity increases through adequate financing if they are to maintain or increase their contribution to overall socio-economic development in developing countries like Nigeria. However, this signifies the importance of capital and its cost of sourcing for SMEs development, among other factors like infrastructure and enabling environment, cheap source of funds, availability of production equipment, efficient manpower, disciplined management and availability of markets (both local and international) that enhance their operations in ensuring sustainable socio-economic development. Although, set of factors hinders the performance of SMEs for maximum contribution to the economy. In this regard, Sangosanya (2010) [30] identified ten key factors and variables that have been identified to influence SMEs failure in Nigeria. These include disasters, inefficiency in power supply, competition, infrastructure, taxes, accounting, management, marketing, economic, planning and finance. In Nigeria, poor economic conditions, which also implies poor finance and inadequate infrastructure, have been identified as the most crucial factors (Ihua, 2009) [13]. This position is corroborated by other studies which identified financial support as one of the main factors

responsible for small business failures in Nigeria (Abereijo & Fayomi, 2005; Okpara & Pamela, 2007) [25].

Inference can be drawn from the foregoing that access to finance at relatively cheap cost is one of the most crucial problems hindering SMEs to have significant contribution to national output in Nigeria. Most of them faced with perennial problem of shortage of working capital which hinders their ability to produce efficiently. Consequently, most SMEs resort to external funding which is characterized by short term loan and high interest rate. However, financial institutions are unwilling to lend to them on long-term basis as they are considered highly vulnerable with high credit risk (Akingunola, 1995). Government's attempt at solving this problem by creating specialized agricultural and industrial based financial institutions such as Bank of industry (BOI) to provide subsidized credit while have shown to be just palliative as these institutions are poorly capitalized with very weak linkages with the sector and stifling bureaucratic bottlenecks.

Small and Medium scale Enterprises are central and critical in every human society. It is through entrepreneurship that societies can attain any meaningful development. Small and Medium Enterprises are said to be the secret behind the rapid development of countries like Japan, China, India, and Malaysia etc. Low entrepreneurship is also said to be the major causes of under development of most countries in Africa, Asia and Latin America (Ukopong, 1980).

In view of the importance and centrality of Small and Medium Scale to human development, there have been many attempts by researchers to explain factors behind the presence of small ability in some individuals and its absence in others. In a global context, a general definition of Small and Medium Scale Enterprises using size and scale of operation is not easy but with the fixed coordinate of national boundaries, it might be relatively easier (Olorushola, 2001). This is so because what is considered small scale enterprises in one country may be regarded as medium or large-scale enterprises in another (Osuala, 2004 and Anigwe 1992) [24]. As a result each country tend to define these categories of enterprises (i. e micro and medium) based on the country level of development (Olorunsala, 2001). Even within a country the definition change over a period of time depending of circumstance and specific objectives of institution (Mmaduako, 1990).

An overview of the performance of the Small and Medium Scale Enterprises in Nigeria account for an about 70 percent of the industries employment in Nigeria but only contribute 10-15 percent of the total manufacturing output (Soludo, 2005) [34]. In federal government, Small Scale Business Development Plan (SBDP) seeks a small scale enterprises as any manufacturing process or services industry with a capital investment not exceeding N150, 000.00 in machinery and equipment and employing not more than 50 workers (Osuala, 2004) [24]. The Central Bank of Nigeria (CBN) for the purposes of credit guideline to financial institution classifies as Small and Medium Scale Enterprises those enterprises with an annual turnover between the range of N100, 000.00 to N150,000.00 with less than 50 employees with asset base (excluding real estate) of not less than 1million (CBN, 1989). This sector has not been experienced any positive performance in recent time because the potentials of the sector has not been significantly exploited. Many factors have constrained the growth of the sector and one of these factors is inadequate electricity supply. This problem occupies over 50percent of Nigeria's Small and Medium Scale Enterprises problem (Kayode, 2005).

Electricity is the most important commodity for national development. With electrical energy the people are empowered to work from the domestic level and the cottage industries, through the Small and Medium industries to employment in the large-scale and manufacturing complexes. Its factors input in the production process of Small and Medium Scale Enterprises in particular and the manufacturing sector in general, for operation of plants.

According to Word Bank research (1993), the study estimated that adoptive cost of electric failure on the Nigerian economy has equal 310 million. US dollars divided between consumer back up capacity (25 million dollars) operating and maintenance cost of diesel auto-generator (90 million US dollars) fuel and lubrication 50 US dollars).

Development strategists have advocated the aggressive use of small and medium scale Enterprises (SM Es) to accelerate economic growth, especially in developing countries of the world (Daodu,1997). Most African countries are basically agricultural societies, and as observed by Osinowo (1997), with little capital to invest, it seems obvious that the process of industrialization should be based on c the development of the SM Es to link agricultural production with manufacturing activities. According to Arewu and Adeyemi (2011) [5, 7], Small and Medium Enterprises have been considered as the engine of economic growth, and that the major benefit of the SMEs is their employment potential at low capital cost. This is due to fact that the SMEs are relatively more labor-intensive than large enterprises. Similarly, Aremu (2004) argues that the role SMEs play in any country is always in line with the country's level of development. Adeyemi and Badmus (2001) [2], in agreement with Aremu (2004) that there is high incidence of poverty in Nigeria, argued that only adequate financing of small and medium scale enterprises will reduce Nigeria's unemployment level. On the belief that jobs can be massively created through the development of SM Es, Gunu (2004) and Aremu (2010) posit that finance to small and Medium Scale Enterprises will provide more income, savings and employment. The need to promote the industrial sector has continued to be a major concern of most governments worldwide, especially developing countries like Nigeria. With the growth of SMEs, Olorunshore (2002) and Egban (2004), believed that the Nigerian economy will have the potential of being competitive in the global market. In recognition of these potential roles of SM Es, successive governments in Nigeria have continued to express policy measures and programme to achieve industrial growth and development. In recognition of SM Es contribution to Nigerian economy, the strategies and initiatives to promote SM E development featured prominently in most of the government's economic development plans with a view to nurturing further growth of the sector.

Review of Empirical Studies

Using empirical evidence from three years of detailed primary sourced data on one hundred and fifty new business start-ups in Scotland. The investigation tested the dynamic theory of small firms with emphasis on debt and equity relationships, and their modification, as the small firm goes through various stage of growth. The research concluded that predicted

trajectories for key financial variables depend largely on both debt and equity.

Carls and Bruno (2001) [8] study on the survival and growth among and micro-enterprises in Africa and Latin America revealed that businesses that have survived in the first three years or that have grown even slightly appear to be more likely candidates for assistance. God friend and Song (2000) investigated into the mode of financing small scale manufacturing firms in Ghana. Panel data was use for the analysis and applied econometric model (linear regression and probit models) to inquire into access to the various forms of finance and ownership characteristics. In respect of finance, he found that a greater proportion of SMEs utilized informal loans than formal loans. A considerable proportion used overdraft while formal credit is the least form of external capital employed. Importantly, the study revealed that a great number of SMEs in the survey used international sources of finance, mainly personal savings and retained earnings in the financing of capital equipment. The econometric results further indicated that high profit small firms are more likely to have access to loans from the formal financial institutions and government credit scheme. Personal savings and retained earnings in the financing of capital equipment. The econometric results further indicated that high profit small firms are more likely to have access to loans from the formal financial institutions and government credit scheme.

Godfried and Song's (2000) result is consistent with Ojo (1995) [20] findings in his investigation into the role of informal finance in the development of SMEs. From the response to the questionnaire administered in 1993 to various small business firms in Lagos State owner's savings/retained earnings, friends and relatives, clubs, and money lenders the informal sources, constituted about sixty per cent of the total.

Daodu (2006) investigated financial intermediation and real sector growth in Nigeria from 1986 to 2003. Using Pearson Correlation Analysis and Pair-wise Granger Causality test, it was found that financial sector reforms positively impacted on the performance of the real sector form the secondary data of variables between 1986 and 2003. The Pair wise Granger Causality test revealed that bank loans and advances granger-cause real sector growth in general. Impliedly, for profitably operating firms, banks loans and advances determine real sector output growth performance in the Nigerian economy. This is indicative of the fact that term-loans and advances meet working capital needs of efficiently operated manufacturing firms.

Using the descriptive research method, Adoyi and Agbo (2009) [4] employed both primary and secondary data to determine the extent to which small business firms have developed Adamawa state of Nigeria, and found that 86.3 percent of the small business firms pay their taxes regularly. These taxes increase the revenue base of the state which is used for development purposes. Akingunola (2011) assessed the specific financing options available to SMEs in Nigeria and their contribution to economic growth performance. The Spearman's Rho correlation was employed to determine the relationship between SMEs financing and investment level. At 10 percent level of significance, the Rho value of 0.643 indicated a significant and positive relationship between SM Es financing and economic growth in Nigeria.

Azende (2011) used Benue and Nassarawa states as case studies in an empirical assessment of the performance of small and medium scale Enterprises, Equity Investment Scheme (SMEEIS) in Nigeria. Using total credit to SMEs as a percentage of Banks' total credit for the period 1993 to 2008, the T-test was used to determine the extent of relationship between bank loans before and after the introduction of SMEEIS and there was no significant difference between loans disbursed by banks to SMEs. Butter and Linter (1945) found that growth of firms, especially small and young firms, is constraint theory is complemented by a recent study which indicated how access to finance affects firm formation, survival and growth. In this regard, Oliveira and Fortunata (2005) investigation, which utilized unbalanced panel data in Portuguese manufacturing (surviving) firms over the period 1990-200 1 to estimate a dynamic panel data model of firm growth that include serial correlation and financing constraint using the pooled OLS and GMM-system techniques, reported an overall result which suggests that the growth of Portuguese manufacturing firms is finance constrained.

Theoretical Framework

Small and Medium business constitute the very foundation upon which the large businesses were built, however, small and medium have been identified differently by various individuals and organization such that an enterprise that is considered small and medium in one place is seen differently in another. Even within a country, the definition changes over time. Some common indicators employed in the various definitions include total assets, size of labor employed, values of annual turnover and capital investment (Baenol, 1994).

The small scale industries of Federal Ministry of Industries defined as 1979. The Central Bank's monetary and credit guidelines, small-scale industries were regarded as establishment whose annual turnover is less than N6million and capital not exceeding N10million. According to Brown, Medott and Hamitton (1990), Many Small firms are created as a last resort rather than as first choice and have therefore invited growth potential.

Therefore, in country like Nigeria where both private and public sectors are highly complementary, the lack of government intervention in an economic activities will always constitute an impediment to Small and Medium Scale Enterprises growth. Therefore, government intervention is crucial determinant factor in the growth of SMEs. This is serious issue when viewed from the perspective of this study.

Therefore, Keynesian theory is considered to be more appropriate in this study. This theory offers useful insight to the understanding of the effect of government intervention in term of regulating the supply of electricity to the SMEs. The major advantage of this theory is its ability to provide the important of government involvement in the economic activities. The Keynesian economics argue that private sector decisions sometimes lead to inefficient macroeconomics outcomes and therefore advocate mixed economy, predominantly private sector, but with a large role of government and public sector.

Methodology

This section presents the design and methodology employed by the researchers for the purpose of conducting the research. This study uses multiple linear regression model. The ordinary least squares (OLS) method is used to establish the impact of electricity supply on the performance of Small and Medium

Scale Enterprises in Adamawa state and the economic growth and development. It also used correlation analysis to determine the linear relationship between power supply and the performance of small and medium scale enterprises.

Sources and Method of Data Collection

This study used primary data sourced through administering of questionnaire. 120 questionnaires were distributed to owners of small and medium scale businesses in Mubi. Other sources of information used include newspapers, internet, text books, journals, magazines, seminars, report, etc.

Model of Specification

To estimate the impact of power supply on the performance of small and medium scale enterprises in Mubi, the following model is being specified. However, the variables used are monthly turnover which is used to proxy performance of SMEs in Mubi, KV which is used to proxy power supply, and other control variables such as the number of employees, wages and salaries, tax, expenditure on alternative power supply as well as the years of business.

The functional form of the model is given as;

$$MTO = F (KV, NE, WS, TAX, EAPS, YB)$$

The linear relationship is specified as:

$$MTO_i = b_0+b_1KV_i + b_2NE_i + b_3WS_i+ b_4Tax_i + b_5EAPS_i + b_3YB_i + U_i$$

Where;

MTO = Monthly torn over
KV = Power (electricity) supply
NE= Number of Employees
WS = Wages and Salaries
U_t = an error term.

Techniques of Analysis

The techniques analysis used in this research work are the descriptive statistics technique, correlation technique as well as the ordinary least squares technique. The reason for adopting OLS technique is because the computational procedure of OLS is fairly simple as compared to other econometric techniques. It is also considered as one of the most commonly employed techniques in estimating linear relationship in econometric method.

Data Analysis

The data in this study have been analyzed using descriptive statistics, correlation technique as well as ordinary least squares regression technique.

Descriptive Statistics

Descriptive statistics have been analyzed in the form of mean, median, maximum value, minimum value, standard deviation, skewness, kurtosis and the Jarque – Bera statistics. The result of the descriptive statistics is presented in table 1.

Table 1: Descriptive Statistics

	MTO	KV	NE	TAX	WS	YB	EAPS
Mean	226084.1	103.6037	2.512195	4129.268	19242.68	7.390244	18761.9
Median	70000.00	115.0000	2.000000	1850.000	11500.00	6.000000	15000.0
Maximum	1500000.	200.0000	15.00000	25000.00	150000.0	20.00000	75000.0
Minimum	1400.000	0.000000	0.000000	500.0000	0.000000	2.000000	400.000
Std. Dev.	343832.2	42.40274	2.331978	5591.473	28140.19	4.336910	17253.67
Skewness	2.2632	-1.6670	2.911217	2.093173	3.406721	0.859992	1.32912
Kurtosis	7.591733	5.045240	14.14824	6.127709	15.28724	3.203790	4.22245
Jarque-Bera	142.0423	52.27451	540.4617	93.30251	674.4477	10.24958	29.2490
Probability	0.00000	0.0000	0.000000	0.000000	0.000000	0.005947	0.00000
Sum	18538900	8495.500	206.0000	338600.0	1577900.	606.0000	153848
Sum Sq. Dev.	9.58E+12	145637.4	440.4878	2.53E+09	6.41E+10	1523.5	2.41E+1
Observations	82	82	82	82	82	82	82

Source: Authors' computation using Eviews 8.1

The descriptive statistics given in table 1 show that the mean values of monthly turnover, KV, number of employees, tax paid, wages & salaries, YB and EAPS are 226, 103, 2.512, 413,192 and 7.390 respectively. The median values of these variables are given as 700, 115, 2.00, 185, 115, 6.00 and 1500 respectively.

The maximum value of monthly turnover of small and medium scale businesses in Mubi is given as 1,500,000 while the minimum value is 1,400. The maximum value of the KV supplied to the small and medium scale businesses per month is 200KV while the minimum value is 0.000. The minimum value of 0.00 indicates that some businesses do not even get electricity from the power distribution company in Mubi. The maximum number of employees own by small and medium scale businesses in Mubi is 15.000 while the minimum is 0.000. This indicates that there are some businesses that do not hire any worker. The maximum tax paid per annum by the small and medium scale businesses in Mubi is 25,000 while the minimum is 500. This means that based on the sample in this study, all the small and medium scale businesses in Mubi do pay tax to the government. The maximum wages and salaries paid to workers per month is 150,000 while the minimum is 0.000. This indicates that those without employees do not pay wages and salaries. The maximum value of YB is 20.000 while the minimum is 2.000. The maximum expenditure on alternative power supply is 75, 000 while the minimum is 400.

Almost all the variables appear to be skewed to the right with the exception of KV which appears to be left-skewed. The variables also appear to have fat tails. Both the skewness and kurtosis indicates that the variables are not normally distributed as confirmed by the Jarque– Bera and its probability values.

Correlation Analysis

Correlation analysis is used to determine the correlation between monthly turnovers, KV, number of employees, tax, wages and salaries, years of business as well as expenditure on alternative power supply. The result of the correlation analysis is presented in the correlation matrix in table 2.

Table 2: Correlation Matrix

	MTO	KV	NE	TAX	WS	YB	EAPS
MTO	1						
KV	-0.1818	1					
NE	0.5820	-0.3482	1				
TAX	0.4012	-0.3687	0.7092	1			
WS	0.6960	-0.3426	0.8366	0.7107	1		
YB	0.5008	-0.0258	0.3816	0.2371	0.3169	1	
EAPS	0.6623	-0.2744	0.4488	0.5461	0.6193	0.4653	1

Source: Authors' computation using Eviews 8.1

The correlation result in table 2 shows that monthly turnover and KV are negatively correlated with the correlation coefficient of -0.1818. The correlation between number of employees and monthly turnover is positive as suggested by the correlation coefficient of 0.5820. Similarly, the correlation between tax and monthly turnover is positive as shown by the correlation coefficient of 0.4012. Wages and salaries are positively related to monthly turnover as indicated by the coefficient of 0.6960. In the same vein, YB and expenditure on alternative power supply are equally positively correlated with monthly turnover as indicated by the coefficients 0.5008 and 0.6623 respectively.

However, KV is negatively correlated with number of employees, tax, wages & salaries, YB as well as expenditure on alternative power supply with the correlation coefficients of -0.3482, -0.3687,-0.3426, -0.0258 and -0.2744 respectively. The correlation between number of employees, tax, wages & salaries, YB as well as expenditure on alternative power supply is positive as shown by the coefficients 0.7092, 0.8366, 0.3816 and 0.4488 respectively.

Similarly, tax is positively correlated with wages and salaries, YB as well as expenditure on alternative power supply as shown by the correlation coefficients 0.7107, 0.2371 and 0.5461 respectively. Wages and salaries are related positively with YB and expenditure on alternative power supply with the coefficients 0.3169 and 0.6193 respectively. There is a positive correlation between YB and expenditure on alternative power supply with the correlation coefficient of 0.4653.

Regression Analysis

Ordinary Least Squares technique is used to determine the impact of power supply on the performance of small and medium scale enterprises in Mubi. The reviews output of the OLS regression result is presented in table 3.

Table 3: Eviews Output of the Regression Result

Dependent Variable: MTO				
Method: Least Squares				
Date: 09/18/16 Time: 20:32				
Sample: 1 82				
Included observations: 82				
White heteroskedasticity-consistent standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-149763.1	104415.2	-1.434304	0.1556
KV	324.6052	677.3835	0.479205	0.6332
TAX	-17.87707	8.500192	-2.103137	0.0388
YB	14797.17	9894.605	1.495478	0.1390
NE	19052.11	26605.53	0.716096	0.4762
EAPS	7.217938	2.495819	2.892012	0.0050
WS	6.412635	2.639445	2.429539	0.0175
R-squared	0.649971	Mean dependent var		226084.1
Adjusted R-squared	0.621969	S.D. dependent var		343832.2
S.E. of regression	211402.7	Akaike info criterion		27.44242
Sum squared resid	3.35E+12	Schwarz criterion		27.64787
Log likelihood	-1118.139	Hannan-Quinn criter.		27.52490
F-statistic	23.21133	Durbin-Watson stat		0.965809
Prob(F-statistic)	0.000000	Wald F-statistic		13.38326
Prob(Wald F-statistic)	0.000000			

Source: Author's computation using Eviews 8.1

The OLS regression result in table 3 reveals that the intercept is -149763.1 meaning that when KV, tax, years of business, number of employees, expenditure on alternative power supply as well as wages and salaries are zero, monthly turnover will go down by about N14, 9763.

KV appears to have a positive impact on monthly turnover as indicated by the coefficient 324.605. This indicates that for every 1 unit increase in KV, on the average, monthly turnover

increases by about N324.605 holding other factors in the model constant. However, this value is not statistically significant at the 5% level of significance suggesting that KV is not an important determinant of monthly turnover of the small and medium scale businesses in Mubi.

Tax on the other hand, appears to impact negatively on monthly turnover as suggested by its coefficient -17.877. It further means that for every N1 increase in tax, on the average, on the average, monthly turnover decreases by about N17.877 holding other variables in the model constant. This value is statistically significant at the 5% level. This means that tax is an important determinant of monthly turnover of small and medium scale businesses in Mubi.

The years of existence of business has a positive impact on monthly turnover as shown by the coefficient 14797.17. It means that for every 1 year increase in the age of the business, on the average, monthly turnover increases by about N14797.17 holding other variables in this model constant. However, the value is not statistically significant at the 5% level of significance. According to this result, old businesses tend to have large turnover than the newly established businesses although it is not important in determining the monthly turnover as suggested by the insignificant coefficient.

The number of employees also has positive impact on monthly turnover as shown by the coefficient 19052.11. It means that for every 1 increase in the number of employees, on the average, monthly turnover increases by about N19052.11 holding other factors in the model constant. This value is also not statistically significant at the 5% level as indicated by the low t-statistic and high p-value. Hence, number of employees is not an important determinant of monthly turnover of the small and medium scale businesses in Mubi.

Similarly, expenditure on alternative power supply has a positive impact on monthly turnover as suggested by the coefficient 7.218. It means that increasing expenditure on alternative power supply by N1, on the average, leads to increase in monthly turnover by about N7.218 holding other variables in the model constant. This value is statistically significant at the 5% level indicating that expenditure on alternative power supply is strong determinant of monthly turnover of small and medium scale businesses in Mubi. In the same vein, wages and salaries has a positive impact on monthly turnover as suggested by its coefficient 6.413 indicating that for every N1 increase in wages and salaries, on the average, monthly turnover increases by about N6.413 holding other variables in the model constant. Hence, wages and salaries is an important determinant of monthly turnover of the small and medium scale businesses in Mubi.

The coefficient of determination shows that about 65% of the variations in monthly turnover is explained by the variations in KV, tax, number of employees, years of business, expenditure on alternative power supply as well as wages and salaries. The remaining 35% is explained by other factors outside this model. The F – statistic 23.211 with the p – value 0.000 indicates that all the explanatory variables are important at influencing monthly turnover. However, there is evidence of positive serial correlation of the first order although it is of less importance in this case.

Discussion of Findings

Based on the findings from the analysis in this study, it has been discovered that the average value of monthly turnover of small and medium enterprises in Mubi is about N22684.2. The maximum value being N1, 500,000 and the minimum value being N1, 400. The maximum KV supplied is 200KV while the minimum is 115KV. Expenditure on alternative power supply is about N75, 000 while the minimum is about N400. The performance of small and medium scale businesses is found to be negatively correlated with KV. On the other hand, performance of small and medium scale businesses is positively related to tax paid, years of business, number of employees, expenditure on alternative power supply as well as wages and salaries. The regression result however shows that KV, years of business, number of employees, expenditure on alternative power supply, as well as wages and salaries have positive impact on the performance of small and medium scale businesses in Mubi. Tax appears to have a negative impact on the performance of small and medium scale enterprises in Mubi.

Summary

This study analyses the impact of power supply (electricity) on the performance of small and medium scale enterprises in Mubi using primary data generated through the use of questionnaire. Monthly turnover has been used as proxy to performance while KV has been used as proxy to power supply (electricity). The correlation result shows that power supply and the performance of small and medium scale enterprises in Mubi are negatively correlated. On the other hand, performance of small and medium scale enterprises is positively correlated with the number of employees, tax, wages and salaries, years of business as well as expenditure on alternative power supply. The regression result on the other hand indicates that power supply has a positive impact on the performance of small and medium scale enterprises in Mubi. It has also been established that tax, expenditure on alternative power supply as well as wages and salaries are significant determinants of the performance of small and medium scale enterprises in Mubi Local Government Area of Adamawa State.

Conclusion

In a country like Nigeria where majority of youths are unemployed, it is expected that availability of electricity will encourage the establishment of many small and medium scale businesses. Constant or stable power supply will ensure good return on investment. Hence, this study is timely in investigating the impact of power supply on the performance of small and medium scale enterprises in Mubi.

Although the correlation result shows a negative relationship between power supply and the performance of small and medium scale enterprises in Mubi, there is evidence from the regression result that power supply has a positive impact on the performance of small and medium scale enterprises in Mubi.

Recommendations

The study conducted reveals some interesting results and based on the results, the following policy recommendations have been offered as a guide to both the government and the private individuals.

1. The authority should make power supply i.e. electricity very stable because many lives depend on it for survival and it is the life-wire of businesses especially the small and medium scale businesses in Nigeria, in general and

Mubi in particular.

2. Since tax paid is an important determinant of the performance of small and medium scale businesses in Mubi, the tax collected from businesses should be judiciously used for the betterment of the masses because that will encourage the tax payers to continue with their civic responsibility.
3. Government should provide soft loans to unemployed youths to engage in small and medium scale businesses in order to reduce unemployment and generate more tax revenue which can be used for developmental projects.
4. The well-to-do in Mubi community should make funds available to the needy potential business men and women so as to supplement government effort in reducing unemployment.
5. Businesses without workers should try to employ one or two since it has now been established that employees contribute positively towards the growth of small and medium scale businesses in Mubi.

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