**IMPACT OF ELECTRICITY POWER SUPPLY ON THE PERFORMANCE OF SMALL AND MEDIUM SCALE ENTERPRISE (SMSs) IN NIGERIA**

**(1980 – 2014)**

**BY**

**EZE NNEKA M.**

**GOU/12/1759**

**DEPARTMENT OF ECONOMICS**

**FACULTY OF MANAGEMENT AND SOCIAL SCIENCES**

**GODFREY OKOYE UNIVERSITY**

**UGGWUOMU NIKE, ENUGU**

**ENUGU STATE**

**JUNE 2016**

**CERTIFICATION**

This project entitled “IMPACT OF ELECTRICITY POWER SUPPLY ON THE PERFORMANCE OF SMALL AND MEDIUM SCALE ENTERPRISE IN NIGERIA. (1980 – 2014)” has been accepted as meeting the regulations governing the award of Bachelor of Science (Economics) of the Department of Economics, Faculty of Management and Social Sciences, Godfrey Okoye University Ugwuomu Nike, Enugu.

(Supervisor)

Mr. Nwanji Micheal

…………………… Date: ………………

(HOD)

Mr. Okorie George

…………………… Date:……………

Dean

Sis. Prof. Gloria Njoku

……………………. Date …………….

External Examiner

…………………… Date……………

**ABSTRACT**

*This study is a critical evaluation of the Impact of Electricity Power Supply on the Performance of Small and Medium Scale Enterprise in Nigeria. The researcher made use of Ordinary Least Square (OLS) regression technique in analysing the Impact of Electricity Power Supply on Small and Medium Scale Enterprise in Nigeria. There are also other variables that determine the performance of Small and Medium Scale Enterprise. Findings from the study shows that all the variables included in the model contributes in explaining the performance of Small and Medium Scale Enterprise in Nigeria which shows R2 0.8899. The contributions of these variables may strongly depend on the circumstances in Nigerian economic environment. The study found out that a unit change in Electricity Power Supply has a positive impact on the output of small and medium scale Enterprise. Based on the findings, certain recommendations were made which include government increasing investment in the power sector, government policies aimed at encouraging SMEs to access public equity capital and also a need for an opening of the market for greater competition in the supply and distribution of electricity.*

**TABLE OF CONTENTS**

Title page ………………………………………………………………………………… i.

Certification ………………………………………………………………………………… ii

Dedication ………………………………………………………………………………… iii

Declaration ………………………………………………………………………………… iv

Acknowledgement ……………………………………………………………………… v

Abstract………………………………………………………………………………… vi

Table of Contents ………………………………………………………………………… vii

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study …………………………………………………………. 1

1.2 Statement of Problem …………………………………………………………….. 2

1.3 Research Question ……………………………………………………………… 3

1.4 Objectives of the Study …………………………………………………………. 3

1.5 Hypothesis …………………………………………………………………….. 3

1.6 Significance of the Study …………………………………………………….. 4

1.7 Scope of the Study ……………………………………………………………. 5

1.8 Definition of terms …………………………………………………………. 5

1.9 Electricity Supply:…………………………………………………………… 5

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introductions …………………………………………………………. ……….. 7

2.2 Conceptual Framework ………………………………………………………… 7

2.2.1 Electricity …………………………………………………………………… 7

2.2.2 Generation ………………………………………………………………… 8

2.2.3 Small and Medium Scale Industries ………………………………………… 10

2.3 Review of Related Theoretical Literature …………………………………… 12

2.4 Review of Theoretical Studies ……………………………………………………… 15

2.5 Empirical Literature …………………………………………………………. 18

2.6 Review of Theories:……………………………………………………………. 21

2.6.1 Big Push Theory …………………………………………………………. 21

2.2.2 Gerschenkron’s Great Spurt Theory ……………………………………… 21

2.6.3 The Theory of Unbalance Growth ………………………………………… 22

CHAPTER THREE METHODOLOGY

3,0 Introduction …………………………………………………………………………. 24

3.1 Theoretical Framework …………………………………………………………. 24

3.2 Methodology of study:……………………………………………………………. 26

3.3 Model Specification …………………………………………………………… 26

3.4 Source of Data Collection ……………………………………………………… 28

3.5. Technique of Estimation …………………………………………………… 28

3.6 Evaluation of Model …………………………………………………………. 28

3.6.1 Evaluation based on Economics priori Criteria ……………………………… 28

3.6.2 Evaluation Bases on Statistical Criteria …………………………………… 29

3.6.3 Evaluation Bases on Econometric Criteria ………………………………… 29

3.7 Estimation and Measurement Technique …………………………………… 29

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF RESULT

4.1 Model Estimation …………………………………………………………… 31

4.2 Interpretation of Result ……………………………………………………… 32

4.3 Tests for goodness of fit:…………………………………………………….. 33

4.4 Result of F test of significance ……………………………………………….. 34

4.5 Results of Econometric test of significance …………………………………… 34

4.5.1 Result of heteroscedasticity test…………………………………………… 34

4.5.2 Result of normality test…………………………………………………… 35

4.5.3 Result of autocorrelation test……………………………………………… 35

4.6 Research Findings …………………………………………………………. 37

CHAPTER FIVE: SUMMARY, CONCLUSSION AND RECOMMENDATION

5.1 Summary ……………………………………………………………………. 39

5.2 Conclusion ………………………………………………………………….. 39

5.3 Recommendation …………………………………………………………… 40

REFERENCES …………………………………………………………………… 43

APPENDIX ……………………………………………………………………… 46.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background of the Study**

Access to a reliable electricity supply is widely considered to be vital to the operations of most small and medium-scale businesses (World Bank Enterprise Surveys, 2013). The analysis of Enterprise Survey data according to Foster and Steinbuks (2008), in middle and lower income countries, firms themselves consider access to electricity to be one of the biggest constraints to their business.

Inadequate electricity services can constrain business operations because a supply of electricity may simply be unavailable and, if it is available, securing a connection may be difficult and the supply unreliable, even before its cost is considered. High quality and accessible infrastructure encourages productivity, business growth and investment, but when it is poor and unreliable, businesses’ productivity and growth suffer.

An unreliable electricity supply can affect several aspects of business operations. The most significant impacts to productivity can be due to forced and unexpected halts in manufacturing processes, including running assembly lines, using machine tools, or producing textiles. Communications, delivery times, lighting and refrigeration are also affected by electricity insecurity, with consequences for the routine operation of businesses and their ability to ensure delivery times (Adenikinju, 2005).

Many small and medium-scale enterprises invest in their own stand-by generators to ensure an electricity supply, but these are often expensive compared to electricity from the grid. Generators also require some technical expertise as well as reliable supplies of fuel and spare parts. Yet, in sub-Saharan Africa and elsewhere own-generation by firms is reported to have increased in recent years.

Empirical studies have shown that the small and medium scale industries (SMEs) have in many state enhanced greater employment opportunities per unit of capital invested and aided the development of local technology. This explains the deep interest which developing nation has shown in the promotion of small and medium scale industries since the 1970s (Moyo, 2012).

**1.2 Statement of Research Problem**

There are various factors affecting the performance of small and medium scale enterprise sub sector ranging from inadequate capital to unfavourable tariff policy, however, the poor state of power supply in Nigeria is one of the significant factors militating against the performance of small and medium scale enterprise.

Despite series of investments made by past government over the years on the power sector to improve the poor state power situation in the country, the entire nation still suffers power shortage and black out (Godwin, 2015). The privatization of the power sector was meant to improve the power insecurity of the country but the national power grid has been on the decline from about 4000 megawatts in 1999 to 1300 megawatts in 2014 (Amadi, 2010).

The equity and quality of a country’s electricity power supply determines its ability to create competitive industries. Since the performance of SMEs In any state is greatly influenced by the electricity supply. Given the pathetic state of electricity power supply in Nigeria it is no wonder that the contribution of the development the state, manufacturing sector and the economy general is very negligible or unsupported by the government.

Power supply has remained unreliable and power out-ages load shedding and rationing has become very frequent. Power supply has been erratic and unreliable that many businesses have resorted to purchasing private generator at a very high 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.

**1.3 Research Questions**

The study would therefore provide answers to the following fundamental questions.

1. What is the impact of electricity power supply on the productivity of SMEs in Nigeria?
2. How does commercial Bank credit impact the productivity of SMEs?

**1.4 Objective of the Study**

The objectives of this research study are to provide a clear picture on the activities of effects of power on the performance of small and medium scale industries. The specific objectives of the study are:

1. To examine the impact of Electricity power supply on the performance of SMEs in Nigeria.
2. To examine the impact of commercial Bank credit on the performance of SMEs in Nigeria

**1.5 Hypotheses**

1. H0: Electricity Power Supply does not have any significant impact on the productivity of SMEs in Nigeria.

H1: Electricity Power Supply has significant impact on the productivity of SMEs in Nigeria.

2. H0 Commercial Bank credit does not have any significant impact on the productivity of SMEs in Nigeria

H1 Commercial Bank credit does significant impact on impact of SMEs in Nigeria

**1.6 Significance of the Study**

The outcome of this study will assist government parastatals and it agencies like the Ministry of power, who are the policy makers and regulatory bodies and also the electricity distribution company scattered across the country for decision and policy making as regards improving the state of small and medium scale enterprise.

This study will create awareness to the government to see the extent to which neglect of infrastructural facilities such as electricity is hampering the performance of SMEs in meeting the potentials of providing employment per unit investment capital, facilitating the development of indigenous entrepreneurships, enhancing local resources utilization and value added, expanding non-oil exports at competitive prices, improving balance of payment position and bring about overall growth and development of the state economy.

It will add to the available literature on the areas of study while also providing the platform for other researchers to further this study.

**1.7 Scope of the Study**

The research work is concerned basically with the roles to lay emphasis on power supply and the performance of small and medium scale enterprise in the state and will cover those SMEs in state that have electricity as relevant infrastructure for their production process. The analysis covers the period of 1980-2014.

**1.8 Definition of Terms**

**-** Electricity Power Supply

- Small and Medium Scale Enterprises (SMEs)

- Productivity or Performance of SMEs

- Commercial Bank Credit to SMEs

**1.9 Electricity Supply**

According to Energy Networks Association ‘ENA’ (2008), Customer Guide to Electricity Supply (2008),the physical process of electricity supply is divided into three broad stages; generation, transmission, and distribution. Power generation, transmission and distribution involve flow of currents with heat losses in conductors. These losses can be reduced through better design, construction and maintenance. In addition to the physical aspects, there is a commercial overlay involving the trading of electricity between generators and retailers or, in some circumstances, generators and large electricity users.

SMEs: These are non subsidiary independent firms which employs fewer than a given number of employees of not less than 10 employees and not more than 250. Commercial Bank credit to SMEs in the case of SMEs, bank credit or loan is the major alternative of external funding (James & Ashamu 2014) the findings shows that Bank Credit to SMEs have significant effect of Nigeria economic growth.

Performance of SMEs: SMEs all over the world have seen playing a crucial role in promoting economic development as well as industrial production in a developing economy such as Nigerian. SMEs are considered as a living force for a sustainable economic development because of generating employment improving local technology output diversification developing indigenous entrepreneurship and forward integration with large scale industries. (A.O. Adaramola)

**CHAPTER TWO**

**REVIEW OF RELATED LITERATURE**

**2.1 Introduction**

This chapter is aimed at reviewing related literature on the impact of electricity power supply on the performance of small and medium scale enterprise in Nigeria. For this purpose, the views of many scholars and analysts would be taken as references based on their perception and orientation on the subject matter. It comprises the conceptual framework, review of related theoretical literatures, review of empirical studies, review of related theories and theoretical framework. Different theories were propounded to suggest how growth can be stimulated in some sectors of the economy.

**2.2 Conceptual Framework**

**2.2.1 Electricity**

Electricity is the flow of electrical power or charge. It is a secondary energy source which means that we get it from the conversion of other sources of energy, like coal, natural gas, oil, nuclear power and other natural sources, which are called primary sources. The energy sources of electricity can be renewable or non-renewable, but electricity itself is neither renewable nor non-renewable. (McGraw-Hill Encyclopaedia of Science and Technology, 2002) Electricity is a basic part of nature and it is one of our most widely used forms of energy. Many cities and towns were built alongside waterfalls (a primary source of mechanical energy) that turned water wheels to perform work. Before electricity generation began over 100 years ago, houses were lit with kerosene lamps, food was cooled in iceboxes, and rooms were warmed by wood-burning or coal-burning stoves. Beginning with Benjamin Franklin's experiment with a kite one stormy night in Philadelphia, the principles of electricity gradually became understood. (McGraw-Hill Encyclopaedia of Science & Technology, 2002)

Thomas Edison helped change everyone's life, he perfected his invention, the electric light bulb. Prior to 1879, direct current (DC) electricity had been used in arc lights for outdoor lighting. In the late-1800s, Nikola Tesla pioneered the generation, transmission, and use of alternating current (AC) electricity, which can be transmitted over much greater distances than direct current. The household form of electricity is alternating current (AC) where the movement of electric charge periodically reverses direction opposite to direct current (DC) where the flow of electric charge is only occurring in one direction. Tesla's inventions used electricity to bring indoor lighting to our homes and to power industrial machines. Despite its great importance in our daily lives, most of us rarely stop to think what university libraries in provision of e-newspapers services would be like without electricity. Yet like air and water, we tend to take electricity for granted. Every day, we use electricity to do many jobs for us, from lighting and [transport](https://en.wikipedia.org/wiki/Motive_power), [communications](https://en.wikipedia.org/wiki/Telecommunication), [computation](https://en.wikipedia.org/wiki/Computation) cooling our libraries, to powering our computers, library automation cum usage of internet facilities. Electrical power is now the backbone of modern industrial society (Agboola, 2011).

**Generation**

Most electricity is generated at large scale conventional power stations from various natural resources such as coal, natural gas and hydro. In most of Australia, generators can competitively bid to have their output dispatched into a “pool” such as the National Electricity Market in the eastern and southern states, or the Wholesale Electricity Market in Western Australia. These markets are administered by an independent market operator.

In addition to conventional large scale generators, there is increasing use of distributed generation within networks. These generators are typically cogeneration plants located in factories producing and utilizing steam, coal seam methane installations associated with coal mining, wind farms, biogas and solar installations.

**Transmission**

Many large conventional power stations are located at or close to the fuel resource which is often a considerable distance from where the major demand for electricity is located. Large quantities of electricity are therefore transported over the transmission network to major substations located in key areas. Transmission lines typically operate at voltages ranging from 132kV to 500kV, and may link states.

High voltages are needed for the economic transport of large quantities of electricity but are far too high for most customers to use. Terminal or Bulk Supply Substations transform these voltages to lower voltages used in the sub transmission and distribution network. These substations also contain switchgear to control the flow of electricity.

**Distribution**

Distribution is a generic term that usually encompasses both subtransmission and distribution functions. Voltages such as 132kV, 66kV and 33kV are commonly used in the subtransmission system to distribute large blocks of power. Zone substations then transform from subtransmission voltages to medium voltages (MV) such as 22kV or 11kV. Many large industrial and, to a lesser extent, commercial customers take supply at these voltages. Subtransmission and medium voltage feeders could be overhead power lines or underground cables. Distribution transformers transform high voltage to the low voltage (230/400V) that is reticulated for general use within households, shops, businesses, factories, hospitals, schools and other smaller customer installations.

**Retail**

Retailers aggregate the electricity requirements of large numbers of customers and purchase energy from the wholesale market. Due to changes in supply and demand, the price in the wholesale market changes frequently. Retailers enter into contracts with generators to enable stable prices to be offered to customers. As well as performing this function, retailers co-ordinate the billing of network service and market administration charges, and provide a single point of contact for the majority of issues faced by customers. Retailers and Network Service Providers work closely together to ensure that any technical or commercial issues customers may have are dealt with efficiently and promptly.

**2.2.3 Small and Medium Scale Enterprise**

Much of the attention surrounding growth in the concept of small and medium scale enterprise (SMEs) is a very important group including a wide variety of firms (Mazdumar, 1987). Small-scale industries are small in nature either in terms of the number of employee, which are not more than 10 persons at most. It could be also in terms of capital base and or asset or even in the overall turnover of the enterprises (Lawal, 1995) usually this type is small compared to the larger industries.

The definition of SMEs depends mainly on the level of development of the country. In most developed market economies like the United States of America (USA), U.K. and Canada the definition criterion adopted a mixture of annual turnover and employment levels.

In Nigeria, the Small and Medium Industries Enterprises Investment Scheme (SMIEIS) defines SMIS as any enterprises with a maximum asset based of N200 million excluding land and working capital and with a number of staff employed not less than 10 or more than 300.

Small and medium scale Enterprise (SMEs) are a very heterogeneous group. They include a wide variety of firms, village handicraft makers, small machine shops, restaurants, and computer software firms that possess a wide range of sophistication and skills, and operate in very different markets and social environments. Their owners may or may not be poor. Some are dynamic, innovative, and growth-oriented; others are traditional “lifestyle” enterprises that are satisfied to remain small. In some countries, SMEs owners and workers are (or are perceived to be) dominated by members of particular ethnic groups, such as the native Pribumi in Indonesia or indigenous groups in Bolivia.

Microenterprises are normally family businesses or self-employed persons operating in the semi-formal and informal sectors; most have little chance of growing into larger scale firms, accessing bank finance, or becoming internationally competitive. Serving them often requires distinct institutions and instruments, such as the group-based lending methodologies used by some microfinance institutions. In contrast, SMEs usually operate in the formal sector of the economy, employ mainly wage-earning workers, and participate more fully in organized markets. SME access to formal finance is a desirable possibility, and SMEs are more likely than micro enterprises to grow and become competitive in domestic and international markets.

The statistical definition of small and medium scale enterprise varies by country, and is usually based on the number of employees or the value of assets. The lower limit for small-scale enterprises is usually set at 5 to 10 workers and the upper limit at 50 to 100 workers. The upper limit for “medium-scale” enterprises is usually set between 100 and 250 employees. Since statistical definitions vary, it is very difficult to compare size distributions across countries. However, one should not be overly concerned about the lack of consistency in employment-based small and medium scale enterprise definitions, since the number of employees, viewed in isolation from the size of markets or the economy, may be misleading. For example, a 50-employee firm in the U.S. would be considered “smaller” (relative to the size of the U.S. economy) than a 50-employee firm in Nigeria.

Moreover, other characteristics of the firm, such as the degree of informality or the level of technological sophistication, may matter more than the number of employees as a segmentation factor (Udechukwu, 2003).

**2.3 Review of Related Theoretical Literature**

Power outages affect both developed and developing countries. This is shown in the relatively vast literature that covers firms from both parts of the world. However, the extents of their magnitude, their frequency, as well as their underlying causes differ from one group to the other. Developing countries turn out to be more affected by insufficient provision of electricity power, and within these countries, SMEs appear to suffer the most (Lee and Anas, 1992; Steel and Webster, 1991).

Electricity is a significant component of virtually any production process. As such, limited supply has the potential to, directly and/or indirectly, affect the economic activities of firms. 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 of the analytical frameworks used is a production function in which electricity contributes directly to firms’ output as a separate input, and indirectly as a determinant of the extent to which other direct inputs such as capital equipment is used (Adenikinju, 2005).

An alternative approach, a subjective method, is based on 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 well positioned to provide relatively accurate valuation of how much it cost them to replace more frequently or to repair damaged machinery or equipment, or to assess the lost output due to idled inputs. A simple approach to evaluate the costs of power outages consist of just aggregating the cost amounts provided in the survey. However, many biases can plague the outcome, since firms may have the tendency to overestimate the incurred costs, hence, over-emphasizing 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 own electricity. Such approach offers better insights than the former based on a production function, because it may be impossible to differentiate between electricity-constrained firms that are functioning properly thanks to generators and firms that are not facing power outages. Compared with the self-assessment approach, the values one gets from this proxy method tend to be more accurate, or at least less prone to biases that are associated with firms’ own assessment. However, this proxy method is not immune from problems, in the sense that the amount spent on power generation may not provide clear indication on the true cost of power outages. In fact, some firms, facing financial constraints (which could result from power outages), may not be able to satisfy their whole need of energy. Further, just relying on how much they spend on generators could exclude firms not using generators and thus have a tendency to systematically under estimate the cost associated with electricity outages (Beenstock et al., 1997; Bernstein and Heaney, 1988).

These analytical frameworks have generated different estimates of the cost of electricity shortages to firms. The literature documents a wide range that varies across countries, industries, and firms. For instance, Caves *et al*. (1992) suggest that the costs range between $1.27 and $22.46 per kWh, and that the costs to SMEs were, systematically, higher compared with those of large businesses. These costs also appeared to be higher compared with those incurred by households, for whom the numbers varied between $0.02 and $14.61 per kWh. Other studies suggested even larger numbers. For instance, Matsukawa and Fuji (1994) estimated the cost to Japanese firms at $118 to $149 per kWh.

These large differences appear to be related to the various specificities of countries and industries, as well as the methodological approaches used in the estimation of the costs of power outages. To deal with this apparent sensitivity, we will try to combine various approaches to measuring the incidence of power outages. Both objective and subjective measures of power outages will be used alternatively, that is, the frequency, and the length of electricity outages, and firms’ self-assessment of the extent to which electricity is an obstacle to firms’ activity

Bruderl *et al.* (1992) were the first researchers to fit human capital theory in the entrepreneurial context by arguing that although the general application of human capital is on employees, there is no reason why it should not apply to entrepreneurs as well. Accordingly, entrepreneurs with higher general and specific human capital can be expected to show higher levels of performance than those with lower levels of general and specific human capital. This is termed as entrepreneurial human capital.

According to Hessels and Terjesen (2008), entrepreneurial human capital is the combination of an individual’s knowledge, skills and experiences linked to entrepreneurial activity. Entrepreneurial human capital is substantial and consequential to entrepreneurial growth. Ganotakis (2012) applied the resource based theory (RBT) to develop the value of human capital to entrepreneurship. Accordingly, human capital is examined to be an important source of competitive advantage for entrepreneurial organizations.

Human capital is one of the important dominant forms in the field of intellectual capital. Royal andO'Donnell (2008) said that human resource capital is a really important ingredient of value creation. It is the dimension of intellectual capital which deals with the human knowledge and its experience. It is the employees who offer businesses with experience and expertise, educational qualifications and occupational competencies. Employee knowledge and capabilities are the significant roots of innovation (Wang & Chang, 2005)

**2.4 Review of Theoretical Studies**

In a global context, a general definition of the small and medium scale industries using size and scale of operation is not easy but with the fixed coordinates of national boundaries, it might be relatively easier (Olorushola 2001). This is so because what is considered a small-scale enterprise in one country may be regarded as medium or large-scale enterprise in another (Osuala, 2004, Anigwe 1992). As a result, each country tends to defend these categories of enterprises (i.e. micro small and medium) based on the country level of development (Olorunsola, 2001). Even within a country, definition change over time depending of circumstance and specific objectives of institution (Mmaduako, 1990).

An over view of the performance of the SMEs in Nigeria, shows that SMEs account for a about 70 percent of the total industries employment in Nigeria but only contribute 10-15 percent of the total manufacturing output (Soludo, 2005). In federal government small scale business development plan (SBDP) sees 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). The Central Bank of Nigeria (CBN) for the purpose of credit guideline to financial institution classifies as small and medium scale industries 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 1 million (CBN, 1989). This sector has not experienced any positive performance recent past because the potentials of the sector have not been significantly exploited. Many factors have constrained the growth of the sector and one of these factors is inadequate and epidemic power supply (electricity). This problem occupies over 50 percent of Nigerian’s SMEs problem (Kayode, 2005).

Ezenwe (1988) however observed that privatization entails costs in terms of widening income gap, loss of jobs, price hike of the service, and upward implication for general price level. He called for selective privatization of social services to be pursued only when conditions are favorable to the economy, and at the same time ensuring that public interest is not jeopardized. It is further noted that efficiency to a great extent is determined not only by ownership structure but by competition of an industry.

Onimode (1988) favored public enterprises provided they are operationally autonomous and at least break even to enhance efficiency. However, the Nigerian government will have to outline control measures to regulate the activities of the emerging private power providers so as to avoid unfair distribution of electricity services, inflation and associated problems.

Despite his criticism of privatization of public enterprises, Adejumobi (1997) argued that privatization eliminates demand for subsidized services, enhances efficiency to meet up customer’s satisfaction as this is crucial in determining the firm’s market share, production level, sales, and profit margin. Other arguments pointed out are that privatization stimulates choice making and creating new businesses by encouraging entrepreneurial development in the country. Therefore, the privatization processes are desirable for Nigeria given the numerous problems in her power sub-sector. Since the effects of these problems will generally lead to increase in cost of living,

Holtedahl and Joutz (2004) showed electricity consumption in general as a function of the stock of electrical energy using equipment (Kt), and economic factor (Xt). Both variables can have independent and interdependent impacts on electricity demand or consumption. The capital stock of energy using equipment can be divided into two types. The first relates to the demand for daily energy services: lighting, refrigeration, cleaning, and entertainment. The second relates to seasonal weather patterns which can affect the demand for heating and cooling services. The dependence of capital stock on economic factors holds in the medium to long run. This is because in the long-run, the stock of appliance is flexible and can respond to changes in relevant prices. In the short-run, the demand for electricity will be constrained to changes in the utilization rates given the fixed stock of electricity using appliances.

Power supply 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 scale and medium industries to employment in the large -scale and manufacturing complexes. Its factors input in the production process s of small and medium scale industries in particular and the manufacturing sector in general, for operation of plants.

**2.5 Empirical Literature**

Nasser (1989) in his study of the assessment of power failure on the manufacturing sector in Nigeria stated that the high cost by the firms in acquiring alternative power generation because they cannot enjoy the economies of scale advantage by public power. Despite the effect on high price of good product, produced this had led to high importation of foreign good to meet excess domestic demand. This has led to wide closure of firms, unemployment and price instability.

The inability to meet the set targets and to provide adequate electricity to Nigerians has been woven around certain fundamental and structural problems. Among the problems are inadequate gas supplies to the power plants, labor unrest, inadequate power generation capacity, inefficient usage of capacity, lack of capital for investment, high technical losses and sabotaging of power infrastructure, insufficient transmission and distribution facilities, inappropriate industry and market structure (Bureau of Public Enterprises, 2011).

Some of the factors identified had become controversial and imprecise. In 2012, the Minister of Power claimed that shortages of gas supply to the power plants were hindering the realization of 6, 000MW targets. In his reactions, the Group Managing Director of the Nigerian National Petroleum Corporation (NNPC) declared that the corporation had exceeded its target for gas to power aspirations (Alike, 2013).

Similarly, labor unrest in the electricity sector witnessed series of claims and counter claims between the government and the labor unions over the severance package for the workers. While labor activists that there is NGN88billion in the pension account as at June 30, 2004 when the old scheme ceased to operate, the Minister of power claimed that the account has only NGN3billion (Yusuf, 2012).

Chidi and Shadare (2011) investigated the challenges confronting human capital development in small and medium-sized enterprises (SMEs) in Nigeria. It was found that human capital development in Nigerian SMEs leaves much to be desired. They recommended the need to address the issues of human capital development in SMEs and for SMEs to embrace the investor in people criteria if the desired corporate and national goals are to be realized.

Aremu and Adeyemi (2011) claimed that their findings have shown that most SMEs particularly in Nigeria die within their first five years of existence. It was also revealed that smaller percentage goes into extinction between the sixth and tenth year while only about five to ten percent of young companies survive, thrive and grow to maturity. Many factors have been identified as likely contributing factors to the premature death. They include insufficient capital, lack of focus, inadequate market research, over concentration on one or two markets for finished products, lack of succession plan, inexperience, lack of proper book keeping, irregular power supply, infrastructural inadequacies (water, roads etc), lack of proper records or lack of any records at all, inability to separate business and family or personal finances, lack of business strategy, inability to distinguish between revenue and profit, inability to procure the right plant and machinery, inability to engage or employ the right caliber staff, cut-throat competition (Basil, 2005:34).

National Planning Commission (2009); Wafa *et al*. (2005); Decker et al. (2006); and SMEDAN (2007), identified different obstacles faced by SMEs in a world environment. The SMEs should mainly concentrate on defeating the various barriers mitigating against the performance, which includes lack of financing, lack of deterrent from global sourcing, managerial capabilities, low productivity, recession, difficulty in getting access to management, heavy regulatory burden and technology innovation. Chigbo (2006) and Van Aardt *et al.* (2008) identified impediments to entrepreneurship growth as, lack of access to formal business, lack of financing and networking.

According to World Bank Research (1993), the study estimated that adoptive cost of electric failure on the Nigerian economy has equal 310million. US dollars divided between consumers back up capacity (25 million dollars) operating and maintenance cost of diesel auto-generators (90. million US dollars) fuel and lubrication 50 US dollars). Ukpong (1973) he used modified version of the production factor analysis method analysing from 1965 to 1966 cost of power outrage on the industrial and commercial sector of the city of Lagos area in Nigeria. This production function was of this form, Q=F(X1X2X3X4) where Q= industrials, x4 = electricity. Holding other factors constant, he concluded that changes in output were directly related to change in electricity supply from a sample survey of thirty eight (38) firms. He estimated power supply to be equal to 130KW and 172KW in 1965 and 1966 respectively. Also he estimated loss in output as result of reduction in power supply in 1965 as N840, 000.00 the corresponding figure for 1966 was N1, 378,000 he also stated that the loss in output affected national income, increased inflation and unemployment. On a basis, his analysis revealed that the current and concrete industries suffered most from power failure, followed by food, metal product, textiles, and printing industries. And this has led to the slow growth or closure of most of these industries in Nigeria.

Moreover, the impacts of the unreliable electricity have become a regular event in most part of Nigeria. And these contribute with technical logistical failure and organization structure problem (Ukpon 1976 and Iwayemi, 1979). The factors affecting electricity reliability in Nigeria are weather, water level, social texture and fire coal of current and future electricity demand, vandalization and improper maintenance culture (Uchedu, 1993).

**2.6 Review of Theories**

**2.6.1 The Big Push Theory**

The “big push” theory is associated with the name of the Professor Paul N. Rostern-Rodan. This theory of “big push” deal with large comprehensive program is needed in the form of high minimum amount of investment to overcome the obstacles to development in an underdevelopment economy and to launch economic development. Rostern- Rondan talked about three (3) indivisibilities which are pre-requisite for lunching economic development successfully. Among them is the indivisibility in the production function. He added that indivisibilities of input, output will lead to increasing returns. He regards social overhead capital as the most important instance of indivisibility. The services of social overhead capital comprises of infrastructure such as electricity supply, water supply, road, network etc. which are directly productive and have long gestation period.

**2.6.2 The Gerschenksron’s Great Spurt Theory**

Alexander Gerschenksron who pointed out propounded this theory that the great spurt industrialization could take place if 5 prerequisite are fulfilled. Among which he emphasized that there should be provision for material social overhead capitals. Gerchenkron categorized countries into three groups on the basis of the degree of economic backwardness, advance moderately backward, and very for a great spurt of industrialization, he noted that advanced nations start their first stage of development with the factory (or private firm) in the organizational and extreme backward with governments. But it should not be inferred from this that industrialization is dependent upon the creation of these preconditions. In-fact, one precondition can be substituted by another precondition further; preconditions can always be created even during the course of industrialization. Gerschenkron supported his view by citing the example of England that capital was supplement to the early factories in England from previously accumulated wealth or from gradually plugging back of profits. Extremely backward countries which could not have these preconditions for industrialization were compensated by the actions of banks and governments.

Besides, for a great spur in industrialization, Gerschenkron emphasized the adoption of capital intensive techniques. According to him, in an extremely backward country, there would be a very big technological gap between its techniques of production and those of developed countries. It can therefore industrialize but adopting the most advanced capital-intensive techniques of the countries for no reason, first, such techniques help the establishment of import substitution industries, thereby reducing foreign competition. Secondly, backward economy have shortage of skilled labour, they use capital intensive and labour saving techniques. The more backward an economy is, the greater the degree of capital intensive of industrialization. This Gerschenkron considered the induction of capital intensive techniques essential of economic development for historical, borrowed technology was one of the primary factors assuring the high speed of development in a backward country entering the stage of industrialization.

**2.6.3 The Theory of Unbalance Growth**

This theory has been popularized by Hirschman (1969). According to this, consent investment should be made in selected sector rather than simultaneously in all sectors of the economy. No underdeveloped country possesses capital and other resources in such quantities as to invest simultaneously in all sectors. Therefore, investment should be made in a few selected sectors industries for their rapid development of other sectors. Thus the economy gradually moves the path of unbalance growth to that of balanced growth economist like Signer, kindly Berger, Straten etc, have express their views in favours of unbalanced growth.

It is the contention of Hirschman (1969) that deliberate unbalancing the economy according to pre-designed strategies best way to achieve economic growth in an underdeveloped country. According to Hirschman, investments in strategically selected industries or sectors of the economy will lead to new economic investment opportunities and so pave the way to further economic development.

Hirschman tried to explain growth and development of nation or economy with social overhead capital are included investment, education, public health communications transportations and convention public utilities like electricity, water, irrigation and drainage schemes etc.

He stipulated that a large investment will encourage private investment, later indirect productive activities (DPA). i.e. industrialization. For example, cheap and frequent supply of electric power will encourage the establishment of small industries. Unless social investment provide-cheaper and improved services, in private investment direct productive activities (DPA) will not be encouraged.

As Hirschman puts in investment, social overhead capital (SOC) is advocated not because of its direct effect on final output, but it permit and infact invites direct productive activities (DPA) to come in some social overhead capital (SOC) investment is a required prerequisite of direct productive activities (DPA) investment.

**CHAPTER THREE**

**METHODOLOGY**

**3.0 Introduction**

The study shall follow a linear specification via the partial adjustment approach. At the broadest level of generalization, theories and empirical studies have established strong evidence of a correlation between electricity power supply and small and medium scale output. In view of this, this chapter presents the structural framework, which deals with generation of data. These include, study location, estimation procedure and sources of data.

**3.1 Theoretical Framework**

The theoretical framework for this work will be built on the Theory of Unbalanced Growth by Hirschman (1969) which states that creating imbalances in the system is the best strategy for growth. Owing to the lack of availability of resources in the less developed countries, the little that is available must be used efficiently. Accordingly, strategic sectors in the economy should get priority or precedence over others where income is concerned.

Unbalanced growth according to Prof. Hirschman generates externalities. Further explaining, we could say that the growth of industry A leads to or stimulates the growth of industry B and C and so on, similarly the growth of industry B and C will lead to the subsequent growth of industries E and F. Thus, the growth of a strategic industry apart from providing the benefits belonging to itself also stimulates the growth of other set of industries. The existing externalities are explored, and fresh ones generated.

**Social Overhead Capital or SOC:**

Social overhead capital comprises of those basic devices without which primary, secondary and tertiary activities cannot function. This includes in it the expenditure on roads, irrigation works, power, transport and communications. The investment on these projects creates more economies and this is called divergent series of investment. Such investments are undertaken by Public agencies.

**Direct Productive Activities or DPA:**

These are those activities which are a consequence of some investment; add to the flow of final goods and services. It is called convergent series of investment because these project appropriate more economies than they have created. These series of investments are undertaken by private entrepreneurs. Thus investment in agriculture or industry would be deemed as that belonging to Direct Productive Activities.

Reasons for adopting this theory as my theoretical framework is that

1. The theory propagates that with a view to accelerating the process of growth, investment should be first made in the key sectors of the economy.
2. The theory is based on the principles of inducement and pressures. It is the inducement or pressure generated by some initial investment that calls for subsequent investment in other activities or production.
3. The theory is based on real life observation.
4. The theory recognizes the significance of public sector with regard to SOC activities.
5. Realistic Theory: The theory of unbalanced growth is a realistic theory. The theory suggests appropriate utilization of the scarce resources in less developed countries. The theory considers all aspects of growth planning.
6. More Importance to Basic Industries: The theory underlines the significance of basic industries in the process of growth. This will automatically press for the growth of consumer-goods industries.

**3.2 Methodology of the Study**

This research work employed Ordinary Least Square techniques of econometric method of linear regression to examine the relationship between power supply and the performance of small and medium scales enterprise in Nigeria and to test the validity of the hypothesis. That is, this involves the use of econometric linear regression to estimate the model in order to establish the relationship between power supply and the performance of small and medium scales enterprise in Nigeria and economic growth and development from the year 1980- 2014, and to test the validity of the hypothesis. This estimation technique was aimed at achieving unique parameter estimates that would enable us to interpret the regression co-efficient in terms of elasticity and consequently give a slightly better fit.

**3.3 Model of specification**

This entails the expression of the relationship between the Electricity Power Supply and Small and Medium Scale Enterprise in Nigeria. That is the mathematical and econometrical expression of the independent and dependent variables with the aprior expected signs of the parameters. The model specified in this survey is gotten from the implicit form of stochastic demand function model used by Frederick (2014) in presenting The Effect of Electric Power Fluctuations on the Profitability and Competitiveness of SMEs. The essence of using this model is to show the validity of the model specified in this research. In view of this, the economic variables identified in the literature for this study is expressed in a linear functional model below:

The model specified for study is thus as follows:

The functional form of the model;

SMEQ = f (ESP, BCRT)

Where:

SMEQ = Small and Medium Scale Enterprise Output

ESP = Power Supply Product

BCRT= Commercial Bank Credit to SMEs

µ = an error which cannot capture in the regressive of the model

The relationship of the above variables is therefore expressed in econometric model below with the inclusion of error term denoted as “µ”

SMEQ = βo+β1ESP+β2BCRT +µ

From the above specification, the dependent variable is “SMEQ” Small and Medium Scale Enterprise Output, “ESP,BCRT” are the independent variables which are Electricity Supply Product, Commercial Bank Credit to SMEs, respectively and the “µ” is the error term that is, those variables that are not captured in the model but capable of explaining the dependent variable. β0, is the intercept which represents the autonomous part of the real small scale and medium scale product when the independent variables are zeros. β1 and β2 are the parameters representing the coefficient of the Power Supply Product, Commercial Bank Credit to SMEs.

**3.4 Sources of Data and Collection**

The data employed in this research work mainly consist of secondary data which are relevant to the study, and was obtained from both published and unpublished sources. The secondary data was gotten from various sources like Central Bank of Nigeria annual report and publications (various years), Statistical Bulletin, World Bank Development indicator, CIA World fact index, Power Holding Company, Newspapers Internet, Text Books, Journals, Magazines, and Seminar Reports etc. These data were gathered for a period of 35years (1980-2014).

**3.5 Technique of Estimation**

The estimation techniques to be used in this research work are the Ordinary Least Square (OLS). The computational procedure of OLS is fairly simple as compared with the other economic techniques. It is also considered as one of the most commonly employed techniques in estimating linear relationship in econometric methods.

**3.6 Evaluation of Model**

This entails the evaluation of the model by subjecting the model to the various economic criteria to determine the effectiveness of the model. However, the evaluation of the model used in this research is subject to the following:

**3.6.1 Evaluation Based on Economic Apriori Criteria**

The economic "a priori" expectations will evaluate the parameters whether they meet standard economic theory expectations both in signs and sizes. The 1, and2 coefficients (ESP, BCRT) are expected to have positive sign on Small and Medium Scale Enterprise Output (SMEQ), i.e. β1, andβ2> 0. This implies that increase in Electricity Supply Product and Commercial Bank Credit will bring about increase in the output of Small and Medium Scale Enterprise.

**3.6.2 Evaluation based on Statistical Criteria**

This involves evaluating the model based on the statistical tool to determine how effective the model in explaining the research work is. Thus the statistical criteria used in this research include:

1. R2 is used to explain the total variation in the dependent variable caused by variation in the explanatory variables included in the model.
2. T Statistic is used to test whether the independent variables included in the model are significant in explaining the dependent variables.
3. F- Statistic is used to tests the overall significance of the regression model.

**3.6.3 Evaluation based on Econometric Criteria**

This involves testing for those weaknesses of the regression which include the multicollinearity, heteroscedasticity and autocorrelation. In doing this, the researcher used Durbin -Watson Statistics, for the test of the weaknesses as well as the test of normality of the error term of model to determine if the error term follows normal distribution.

## **3.7 Estimation and Measurement Instrument**

This research uses Statistical Software (STATA) as the basis for data analysis. In essence, the Statistical Software package version 10 was used to run the test. This software is used mainly for time-series oriented econometric analysis and it can also be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis and time series estimation and forecasting. STATA combine [spreadsheet](https://en.wikipedia.org/wiki/Spreadsheet) and relational database technology designed for the usage by command line, but it also offers a Graphical User Interface (GUI) that allows for the working with the menus.

**CHAPTER FOUR**

**DESCRIPTION, ANALYSIS AND INTERPRETATION OF RESULT**

**4.1 Model Estimation**

The model is estimated using ordinary least square technique by filling the data into computer software called STATA 10.0 and the results are presented in the table 1 showing the variables that were included in the model with their estimated coefficients as well as the standard error, t- statistic, probability and the variance inflation factors. Thus, this is seen in the table below:

**Table 1: Results of Regression Analysis**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| VARIABLES | COEFFICIENTS | STANDARD ERROR | T-STATISTIC | PROBABILITY |
| ESP | 5.450702 | 0.4738167 | 11.50 | 0.000 |
| BCRT | -0.0003139 | 0.2817611 | -0.00 | 0.999 |

Source: Author’s Computation.

From the above result, the model specified therefore become:

SMEQ = -9.282044+ 5.450702 (ESP) -0.0003139 (BCRT)

SE (2.18407) (0.4738167) (0.2817611)   
t\* (-4.25) (11.50) (-0.00)   
R2 =0.8899Adjusted R2 =0.8830  
F\*= 129.30  
Durbin-Watson statistic= 0.5432913

Where; SE= Standard error.  
t\*= Computed value of t statistic.  
F\*= Computed value of f statistic.  
N= Number of observations.

**4.2 Interpretation of Result**.

From the regression results, 1% increase in Electricity Supply Product leads to approximately 5% increase in SMEs output in Nigeria within the period of study. Furthermore, 1% increase in bank credit to SMEs leads to approximately 0.0003% increase in SMEs growth in Nigeria within the period of study. In addition, it follows here that though Electricity Supply Product contributes significantly to the Small and Medium Enterprises Output. The result also shows that bank credit to SMEs shows negative relationship with the Small and Medium Enterprises Output.

The result also shows that Electricity Supply Product shows positive relationship with the Small and Medium Enterprises Output. This implies that an increase in the Electricity Supply Product would cause an increase in the Small and Medium Enterprises Output. In view of this, it is clearly seen that the sign of the Electricity Supply Product of the model conforms to economic theory postulate of the expected a priori criteria. This can be seen in the table 2 below:

**4.2 Evaluation of Estimated Signs of Variables:**

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLE | EXPECTED SIGNS | ESTIMATED SIGNS | REMARKS |
| ESP | + | + | Conform |
| BCRT | + | \_ | Do not conform |

The estimated sign of bank credit to SMEs did not conform to a priori expectation because most times, the credits obtained are not invested in the business.

**4.3 Test for Goodness of Fit:   
 Result of coefficient of determination:** R-squared (R2)= 0.8899 x 100   
 = 89%

It shows that approximately 89% of variation in Small and Medium Enterprises Output is caused by variations in the explanatory variables (Electricity Supply Product and Bank Credit to Small and Medium Scale Enterprise), whereas, approximately 11% of the variations in the model is captured by other variables not included in the model. Therefore, the regression function is highly fitted to the data. This is affirmed with the adjusted R2 result of 88 percent, making it a “Goodness fit” of the estimates. Thus, Goodness fit of the estimates is at 89 percent.

**4.4 Results of Statistical Test of Significance:**

**Table 4.3: Result of t-test of significance:**

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLE** | **COMPUTED T-VALUE** | **CRITICAL T-VALUE** | **CONCLUSION** |
| **LogESP** | **11.50** | **2.042** | **SS** |
| **logBCRT** | **-0.00** | **2.042** | **NSS** |

**NOTE:** SS- Statistically Significant.  
 NSS- Not Statistically Significant.

From the table above, the calculated t-statistic is greater than the t tabulated (t0.025) for electricity power supply (ESP), whereas, the calculated t-statistic is less than the tabulated (t0.025) for Commercial bank credit (BCRT). This implies that the individual regression coefficient is found to be significant in ESP. Therefore we reject Ho and conclude that ESP has significant impact on SMEs output in Nigeria. Since the calculated t-statistic is less than the tabulated (t0.025) for BCRT, it implies that the individual regression coefficient is found to be insignificant in BCRT. Therefore we accept H0 and conclude that BCRT have no significant impact on SMEs output in Nigeria.

**Table 4.4 Results of F-test of significance:**

|  |  |  |
| --- | --- | --- |
| **F-calculated (f\*)** | **F-tabulated (f0.025)** | **Conclusion** |
| 129.30 | 3.32 | Statistically Significant |

From the table above, the fcal is greater than the ftab. This implies that the variables are significant on the entire regression plane.

**4.5 Results of Econometric Test of Significance:**

**4.5.1 Results of Heteroscedasticity Test:**The white general heteroscedasticity test will be used. Firstly, we obtain X2cal.  
X2cal = R2 \*n   
 X2cal = 0.8899 x 35 = 31.1465  
X2tab = 47.400  
Since X2cal < X2tab, we accept H0 and conclude that there is no heteroscedasticity.

**4.5.2 Results of Normality Test:**

The normality test of the residuals will be carried out to ascertain if the residuals of the model follow a normal distribution. The normality test follows chi-square distribution with 2 degree of freedom at 5% level of significance. If the ­X2 from the skewness test is greater than the X2tab, we reject the null hypothesis and conclude that the residuals of the model does not follow a normal distribution and accept null hypothesis if otherwise.

X2 (skewness) = 0.5750

X2(2)tab = 0.68

The ­X2 from the skewness test is less than the X2tab, we reject the null hypothesis and conclude that the residuals of the model follow a normal distribution.

**4.5.3 Results of Autocorrelation Test:**

This test is aimed at ascertaining it auto correlation occurred in the model to achieve this we assume that the values of the random variables (u) are temporarily independent by employing of Durbin Waston d-statistics (d\*)

**Decision Rule**

|  |  |  |
| --- | --- | --- |
| Null Hypothesis | Decision | If |
| No + autocorrelation | Reject | 0 < d\* < dl |
| No + autocorrelation | No decision | Dl ≤ d\* ≤ du |
| No - autocorrelation | Reject | 4 – dl < d\* < 4 |
| No – autocorrelation | No decision | 4 – du ≤ d\* ≤ 4-dl |
| No autocorrelation (=) | Do no reject | Du < d\* <4 - du |

Where:

Dl = Lower limit

Du = Upper limit

D\* = Durbin Watson

Obtained n = 35 (no of observations)

K = 3 No of variables

Dl = 1.229

Du = 1.650

D\* = 0.5432913

Computation: 0 < d\* < dl

0 ≤ 0.5432913 ≤ 1.229

Conclusion:

We conclude that there is no autocorrelation in the model.

The Durbin-Watson d-statistic (3, 35) = 0.5432913 result was used to test for autocorrelation with the aim of determining if the errors corresponding to various observations uncorrelated. The decision rule for this test is that if the value of the Durbin Waston is less than 0.05, the errors for the corresponding observations are correlated. However, considering the result of the Durbin Waston from the analysis, this shows there is no autocorrelation. Thus, the errors of the various observations are not autocorrelated.

**4.3 Research Findings**

The result of the Ordinary Least Square (OLS) regression depicts a strong positive linear correlation between Small and Medium Enterprises Output and Electricity Supply Product. This implies that when there is a positive improvement in the Electricity Supply Product there will also be a positive improvement in Small and Medium Enterprises Output. More so, the negative correlation between Small and Medium Enterprises Output and Bank Credit to Small and Medium Enterprises indicates that policies toward improving the Small and Medium Enterprises Output through Bank Credit to Small and Medium Enterprises will result to decrease in the Small and Medium Enterprises Output. This is because, most credit obtain by Nigerians are not usually use for investment purposes.

Aside from the strong positive linear relationship, there is also a strong variance of (that is R2 =0.8899), implying that 89 percent of the changes that occurs in Small and Medium Enterprises Output, are caused by Electricity Supply Product and Bank Credit to Small and Medium Enterprises.

By implication, only 11 percent of the changes in Small and Medium Enterprises are attributed to other factors not captured in the model. Thus, the test of goodness fit is proved to be valid.

In addition, the correlation coefficient Electricity Supply Product which is a positive sign supported the a priori theoretical expectation of an expected positive relationship between Small and Medium Output and Electricity Supply Product. This indicates that the higher the Electricity Supply Product, the higher the Small and Medium Enterprises Output and vice versa. In view of this, it is clear that when there is an improvement in the power supply, more people will be encourage to start up a small scale enterprises because the cost of operation will be very low as a result of improve power supply. Hence, to realize a sustainable increase of the Small and Medium Enterprises Output, there is need for the level of power supply in the country to be improved and sustain at a very high level.

Finally, based on the research findings presented above, we therefore reject the null hypothesis denoted by H0: which state that the performance of Small and Medium Enterprises is not dependent on the quality and availability of adequate electricity supply in Nigeria “and uphold or accept the alternative hypothesis denoted by H1: concluding that” the performance of Small and Medium Scale Enterprise is dependent on the quality and availability of adequate Electricity Supply in Nigeria. This is because the availability of adequate power supply will improve the performance of the Small and Medium Enterprises in Nigeria thereby reducing their cost of production while improving their productivities, Competitiveness as well as employment in the country.

**CHAPTER FIVE**

**SUMMARY, CONCLUSION AND RECOMMENDATION**

**5.1 Summary**

This study is an empirical analysis of the impact of electricity power supply and the performance of Small and Medium Scale Enterprise in Nigeria. The study explores simple regression models with the adoption of Ordinary Least Square (OLS) method of estimation in examining these variables.

This work, amongst other things, found out that all the variables included in the models contributes in explaining the role of electricity power supply on Small and Medium Scale Enterprise in Nigeria. The contributions of these variables may strongly depend on the circumstances in the Nigerian economic environment. Major empirical studies have investigated the relationship between Electricity Power Supply and Small and Medium Scale Enterprise and how they affect the growth of the economy. This study further believed that for the actual development to take place in Small and Medium Scale Enterprise in Nigeria, Electricity Power Supply will have to be increased i.e., investment in the power sector.

**5.2 Conclusion**

The conclusion of this research work is drawn based on the findings which carefully examined the contribution of Electricity Power Supply to Small and Medium Enterprise in Nigeria towards the growth and development of the economy.

The major problem of ESP is inadequacy and unreliability which has constrained the performance of SMEs in terms of growth productivity and competitiveness. One of the major contributing factors to economic growth via productivity happens to be ESP.

The challenges before Nigeria therefore is to improve ESP to promote not only SMEs but other sectors that contribute to Economic development.

The existing public source of power supply provided by the government through various power distributing companies in Nigeria are forced to provide alternative source of power supply s as to meet up with their demands for electricity which is required to continue running their operations

The policy implications that could be drawn from these results go first towards promoting a better quality electricity service. Therefore adeau7te financing of these sectors is important if any meaningful results are to be achieved if not, their performance productivity and profitability is greatly constrained. Hence the performance of Small and Medium Scale Enterprise is dependent on the quality and availability of adequate electricity power supply in Nigeria.

**5.3 Recommendations**

Based on the result obtained from the research work and conclusion drawn, the following recommendations will put more emphases on increasing the level of power supply in Nigeria.

(i) Government should increase its funding of the electricity sector to at least 15-25 percent on annual budget. This is also in recognition of the fact that government expenditure are constrained by scarce resources available to its executing budget. But the upward review of funds to the power supply and small scale enterprise sectors has the capacity of generating a great impact in terms of economic growth. Therefore, priority should also be given to power supply sector.

(ii) For small and medium scale enterprise survive in the Nigeria business environment that is becoming more and more competitive, it has to apply the result of scientific and technological revolution in its production. In other to progress, there is the need for investors to acquire technology know how, in Nigeria for instance, the national office of industrial property (NOIP)

(iii) There is also a need for an opening of the market for greater competition in the supply and distribution of power. Increase in the levels of competition would yield quality and efficiency in supply and service delivery. Since 1962 till date, the electricity supply market has not been opened up to competition. It has been dominated by a state monopoly,

Electricity Distribution Companies of various states. However, a more competitive environment, where features such as price, efficiency and service quality would characterize the criteria for operation would contribute to the reliability in power supply.

(iv) After looking through the problems and all the inefficacies of Electricity Distribution Companies, we draw conclusion that because of these set back in the power sector, it has a negative effect on productivity. This is because of the cost of doing business when there is power outage. The challenges for policy options towards attainment of sustainable thus including putting in place measures that will successfully address the demand and supply constraints. The measures should also facilitate the adoption and implementation of specific renewable energy resource such as solar for areas where the national grip system could not reach or not economically viable.

1. The study recommends that regulatory bodies responsible for the energy sector must set some standards for the generation, distribution and costing of electric power where preference would be given to key sectors of the economy such as SMEs since they are known to provide jobs for a large number of people and contribute significantly to the economic growth of the country. Standards in the distribution of power are also critical to ensure continuous supply of power to industries. Two approaches for setting standards are recommended. Firstly, there is a need for the setting of a penalty for each standard power distributor that does not meet the required supply level agreed. Such penalties would be effective if they are compulsory and automatic (Waddams et al., 2002). Secondly, it is essential to create incentive scheme to reward power distribution companies’ that ensures the standards are being maintained and also eliminate the waste in energy supply (Bowdery, 1994).
2. The government and other policy makers would have to place greater emphasis on facilitating equity capital. Equity capital provides a base for further borrowing, reduces businesses’ sensitivity to economic cycles, and provides SMEs with access to syndicates of private and institutional venture capital suppliers. There could also be policies aimed at encouraging SMEs to access public equity capital through the reduction of listing requirements and subsidizing flotation cost. These policy prescriptions could go a long way to improve Nigerian SMEs’ access to long-term financing to spur up growth.

**REFERENCE**

Adenikinju, A., (2005). Analysis of the cost of infrastructure failures in a developing economy: The case of the electricity sector in Nigeria. African Economic Research Consortium, Research Paper 148.

Adenikinju, A. F. (2005). ‘African Imperatives in the New World Order: Country Case Study ofthe Manufacturing Sector in Nigeria’, in O.E. Ogunkola A. and Bankole (eds.), *Nigeria’sImperatives in the New World Trade Order*. Nairobi. African Economic Research Consortium and Ibadan: Trade Policy Research and Training Programme.

Akinlo, A.E, (2009), *Electricity Consumption and Economic growth in Nigeria: Evidence from Co-integration and Co-feature Analysis*, Journal of Policy

Modeling 31(5), pp.681-693.

Ahmad N; Hayat M.F: Hamad N &Iugman M, (2012), *Energy Consumption and Economic growth*: *Evidence from Pakistan,* Australian Journal of Businessand management research.

Anigwe N.O. (1992). A study on the effect of government financial policies on small scale industries in Enugu.

Anyanwu, J.C.C (1977). The Structure of the Nigeria Economy. London: Joane Educational publishers Ltd.

Ayodele, A.S. (1999). Improving and Sustaining Power Supper for Socio-Economic Development in Nigeria.

Asafu-Adjaye, J, (2002). *The Relationship between Energy Consumption, Energy Prices and Economic Growth: Time Series Evidence from Asian Developing Countries*, Energy Economies.

Adepoju, B.A, and Abubakar, Y. (2009), State of Infrastructural Facilities and Operational Efficiency of Manufacturing Industries in Kano Metropolis.

Ajanaku, L. and Alade, O.S (2007), Power Paralysis Impact on Small and Medium Scale Industries in Nigeria: Constraints and the Way Forward…pp. 131-140.

Baklini, Adol I, (2002), Administration in Developing Countries and the Democratic Challenge in Governance and Developing Countries.

Beenstock, M., E. Goldin, and Y. Haitovsky, 1997. The cost of power outages in the business and public sectors in Israel: Revealed preference vs. subjective valuations. *The Energy Journal*, 8: 39–61.

Binn, T. and Nel, E. (1999). The Role of Local Economic Development and Community self-reliance in Rural South Africa, The Journal of Modern African Studies, Vol. 37, No.3, Pp.389-408, Cambridge University Press.

Bureau of Public Enterprises, 2013. Overview of the Nigerian Electricity Industry (Roles, Responsibilities, Structure, Expectations).

Bowdery, (1994).

Central Bank (2012). Annual Report and Statement of Accounts. Abuja: Central Bank of Nigeria Publication.

Central Bank of Nigeria (2015). *Statistical Bulletin for year 2014*.volume 24.http://statistics.cbn.gov.ng/cbn-onlinestats

Caven B. (2009) “Optimization of the Reliability of Electricity Power supply In Nigeria” A working paper presented in NEPA Headquarters. Vol. 1 Pp39-41.

C. O. A. Awosope; Power Demanded but not supplied: The agonizing roles of Emergency power supply on the Growth of the Nigerian Economy, University of Lagos Inaugural Lecture Series, 10th September 2011.

Ebiojuomore O. Elias; Electric Power Sector and Sustenance, Environment, Nigerian Society of Engineers Conference and Report 2006.

Energy National Association (ENA) (2008) Guide To Electricity Customer Supply

Engr R. I. Odiah; Challenges Surrounding Power Investment in Nigeria: Insights and perspectives from owners and developers, Paper presented at the Summit on Energy and Sustainable Economic Growth, Energy Commission of Nigeria.

Ezenwe, U. (1988) “The Limits of Privatization in a Developing Economy” Privatization of Public Enterprises in Nigeria. Ibadan: Nigerian Economic Society Seminar Series

Kayode MO 2002. Focusing Economic Development: The Holy Grail of Economics and Economists? *Faculty of the Social Sciences Lecture Series* No.10.

Lawal A. A. et al (1998) Entrepreneurship Development in Small Scale Business (Lagos –Labson resource Nigeria Ltd)

Lee, K.S., and A. Anas, 1992. *Impacts of Infrastructure Deficiencies on Nigerian Manufacturing: Private Alternatives and Policy Options*. Infrastructure and Urban Development Department Report No. 98. World Bank, Infrastructure and Urban Development Department, Washington, D.C.

Matsukawa, I., and Y. Fuji, 1994. Customer Preferences for Reliable Power Supply: Using data on actual choices of back-up equipment. *Review of Economics and Statistics,* 74: 434–46.

McGraw-Hill Encyclopaedia of Science and Technology 2002

Moyo, B. (2012) Do Power Cuts Affect Productivity? A Case Study Of Nigerian Manufacturing Firms, *International Business & Economics Research Journal*, Vol 11, Number 10.

Nasar, Sylvia. 1994. “Myth: Small Business as Job Engine.” The New York Times,

March 25.

National Bureau of Statistics (NBS) (various years). National Accounts Statistics of Nigeria.

Abuja: National Bureau of Statistics.

Olorunshola, J. A. (2003). *Problems and Prospects of Small and Medium-Scale Industries inNigeria*. Central Bank of Nigeria Seminar on Small and Medium Industries Equity Investments Scheme (SMIEIS), Publication of CBN Training Centre, Lagos (No. 4).

Osuala, E.C (2004). *The Principles and Practice of Small Business Management in Nigeria*. Cheston agency Enugu.

Sam amadi (2010), Electricity Tariff and Consumption in Nigeria. The Nigerian Electricity Regulatory Commission

Soludo C.C. (2008). *Making Finance Work for the Poor*.At the Federal University of Technology, Owerri, Imo State

Steel, W.F. and Webster, L.M. (1991), “Small Enterprises in Ghana: Responses to Adjustment”, Industry Series Paper, No. 33, the World Bank Industry and Energy Department, Washington.

Steinbuks, J. and V. Foster (2010) When Do Firms Generate? Evidence on in-house electricity supply in Africa, *Energy Economics* 32 (2010) 505–514.

Uchendu, O.A., 1993. The economic cost of electricity outages: Evidence from a sample study of industrial and commercial firms in the Lagos area of Nigeria. CBN *Economic and Financial Review*, 31.

Udechukwu, F.N. 2003*. Survey of Small And Medium Scale Industries and Their Potentials in Nigeria*. Proc. Seminar on Small and Medium Industries Equity Investment Scheme (SMIEIS), Central Bank of Nigeria (CBN) training Centre, Lagos, Nigeria, pp. 6-18.

W. A. Waddams et al (2002).

World Bank (2012). ‘World Development Indicators’. Washington, DC: World Bank.

World Bank. (2013). Enterprises Survey in Nigeria.

**APPENDIX**

**Data Presentation**

**Data used for the Regression**

|  |  |  |  |
| --- | --- | --- | --- |
| **YEAR** | **SMEQ** | **ESP** | **BCRT** |
| **1980** | 6.90 | 6.87 | 6344.00 |
| 1981 | 7.40 | 7.84 | 8604.80 |
| 1982 | 7.58 | 8.14 | 10277.00 |
| 1983 | 9.52 | 8.28 | 11100.00 |
| 1984 | 9.85 | 8.57 | 11550.00 |
| 1985 | 10.55 | 9.93 | 12170.30 |
| 1986 | 10.87 | 11.40 | 15701.00 |
| 1987 | 16.97 | 10.75 | 17531.00 |
| 1988 | 23.76 | 11.16 | 24602.30 |
| 1989 | 37.07 | 12.25 | 28108.80 |
| 1990 | 42.41 | 12.03 | 28640.80 |
| 1991 | 47.95 | 13.61 | 32919.40 |
| 1992 | 72.28 | 14.25 | 20400.0 |
| 1993 | 118.12 | 13.91 | 15462.9 |
| 1994 | 186.62 | 14.88 | 20552.5 |
| 1995 | 324.10 | 13.89 | 32374.5 |
| 1996 | 423.02 | 14.37 | 42302.1 |
| 1997 | 464.95 | 14.70 | 40844.3 |
| 1998 | 526.96 | 14.73 | 42260.7 |
| 1999 | 575.91 | 15.43 | 46824.0 |
| 2000 | 625.62 | 14.13 | 44542.3 |
| 2001 | 762.74 | 14.83 | 52428.4 |
| 2002 | 916.83 | 20.66 | 82368.4 |
| 2003 | 1094.64 | 19.35 | 90176.5 |
| 2004 | 1484.42 | 23.22 | 54981.2 |
| 2005 | 1930.78 | 22.52 | 50672.6 |
| 2006 | 2741.79 | 22.04 | 25713.7 |
| 2007 | 3044.77 | 21.91 | 41100.4 |
| 2008 | 3503.18 | 20.13 | 13512.2 |
| 2009 | 4082.35 | 18.82 | 16366.5 |
| 2010 | 4648.70 | 24.87 | 12550.3 |
| 2011 | 5385.82 | 25.71u | 34588.4 |
| 2012 | 6284.92 | 27.27 | 58798.8 |
| 2013 | 7287.99 | 31.74 | 64356.1 |
| 2014 | 7947.55 | 37.68 | 75485.3 |

Source: CBN Statistical Bulletin for various

**APPENDIX TWO- REGRESSION RESULTS**

**. reg logsmeq logesp logbcrt**

**Source | SS df MS Number of obs = 35**

**-------------+------------------------------ F( 2, 32) = 129.30**

**Model | 174.9605 2 87.4802501 Prob > F = 0.0000**

**Residual | 21.6495747 32 .67654921 R-squared = 0.8899**

**-------------+------------------------------ Adj R-squared = 0.8830**

**Total | 196.610075 34 5.78264926 Root MSE = .82253**

**------------------------------------------------------------------------------**

**logsmeq | Coef. Std. Err. t P>|t| [95% Conf. Interval]**

**-------------+----------------------------------------------------------------**

**logesp | 5.450702 .4738167 11.50 0.000 4.485569 6.415835**

**logbcrt | -.0003139 .2817611 -0.00 0.999 -.5742426 .5736147**

**\_cons | -9.282044 2.18407 -4.25 0.000 -13.73085 -4.833239**

**------------------------------------------------------------------------------  
  
. tset year,yearly**

**time variable: year, 1980 to 2014**

**delta: 1 year**

**. estat dwatson**

**Durbin-Watson d-statistic( 3, 35) = .5432913**

**APPENDIX THREE: NORMALITY TEST**

****

**. sktest error**

**Skewness/Kurtosis tests for Normality**

**------- joint ------**

**Variable | Obs Pr(Skewness) Pr(Kurtosis) adj chi2(2) Prob>chi2**

**-------------+---------------------------------------------------------------**

**error | 35 0.5750 0.4202 0.68 0.7129**