POWER SUPPLY AND THE PERFORMANCE OF SMALL AND MEDIUM SCALE INDUSTRIES IN NIGERIA FROM (1986 – 2010)

BY

IDUU GLORIA
EC/2008/619

DEPARTMENT OF ECONOMICS
FACULTY OF MANAGEMENT AND SOCIAL SCIENCES
CARITAS UNIVERSITY, AMORJI-NIKE ENUGU

AUGUST, 2012

TITLE PAGE

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A   RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLEMENT FOR THE AWARD OF BACHELOR OF SCIENCE (B.SC) DEGREE IN ECONOMICS

DEPARTMENT OF ECONOMICS
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APPROVAL PAGE

This is to certify that, this research project was undertaken by **Iduu Gloria C.** and duly supervised and approved as having met the requirement for the award of Bachelor of science (B.sc) degree in Economics from the Department of Economic, Faculty of Management and Social Sciences Caritas University, Amorji-nike Enugu.

\---------------------------------   Date:----------------------------
Iduu Gloria C.

\---------------------------------   Date:----------------------------
Barr. Onwudinjo P.C
  (SUPERVISOR)

\------------------------------------   Date:----------------------------
Barr. Onwudinjo P.C
     (HOD)

\---------------------------------------   Date:-------------------------------
Dr. Umeh C.C
Dean, Faculty of Management
And social Science

\-------------------------------------   Date:-------------------------------
External Supervisor

DEDICATION

First and foremost, this project is dedicated to God Almighty for his infinite mercies, and the strength he granted to me during my studies. I equally dedicate this to my loving and caring parents who gave me this opportunity to be where I am in life today.

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ABSTRACT

This research work centers on the power supply and the performance of small and medium scale industries in Nigeria from 1986 – 2010. carrying out this study, secondary data were collected and empirical analysis was made to achieve these objectives, multiple regression were used in anglicizing the data. In investigating this problem, the researcher introduces 2 hypotheses that power supply changes has no significant in Nigerian econometric mode were used for evaluation and testing of the hypothesis. The researcher made use of the ordering least square (OLS). The out come of the model shows and confirms that power supply changes has a negative impact on Nigerians. And that a unit change in power supply has a positive impact on both the gross domestic product and balance of payment in Nigeria. Based on the findings, certain recommendations were made which include government increasing its efforts in tackling the issue of corruption and fraud.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The economy is a complex dynamic factor, requiring greater attention in terms of its analysis and efficient management for productivity, stability growth and increased standard of living of people operating   Nigeria.

Since 17th century efforts was made to promoting economic growth and have focused on the small and medium scale industries (SMIS) as the keys and the development of an economy and manufacturing sector in general. The role of small and medium scale industries 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 industries are indeed high potentials for development in term of employment generation and wealth creation in any economy. Empirical studies have shown that the small and medium scale industries (SMIS) have in many state has enhanced greater employment opportunities per unit of capital in vested

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.

Moreover, the potentials of small and medium scale industries in contributing substantially to the economic growth and development of Nigeria has been hampered by various constraints, inducing long term capital inadequate financing unavailability of information for potential investors, poor management practices and low entrepreneurial skill, over bearing regulatory and operational environmental, unfavorable tariff policy and infrastructural deficiencies such as inadequate power supply.

These constraints also limit the performance of small and medium scale industries in Nigeria.

Although, it is a widely held view that the availability of credit as the most critical to the performance of small and medium scale industries (SMIS), but some studies have shown that a large number of small and medium scale industries fail because of non financial reasons such as infrastructural deficiencies (Liedhorm et al 1994). One of the

infrastructual facility affecting the performance of the SMIS in Nigeria is power supply (electricity). Due to inadequate provision of power supply constitutes one of the greatest constraints in SMIS development. The current situation whereby each investor is too provide electricity is, to say the least, tasking to the SMIS investors who generally lacks adequate capital for the business and the result of this is low return on investment due to high operations cost. Therefore, adequate power supply is necessary to ensure cost effectives in vestments in small and medium scale industries (Charles Soludo, 2005).

It is however, noteworthy, there is need to objectivity access the Nigeria and impact of power supply on the performance of the SMIS sub-sector of the Nigeria manufacturing sector.

1.2   Statement of Research Problem

Small and medium scales industries in both developed and underdeveloped nations plays an important role in the process of economic development and industries. In spits of the relevance of the

small and medium scale industries to Nigeria economy and industrial development, on that sector faces a lot of problems.

Although there are various factors affecting the performance of small and medium scale industries sub sector ranging from inadequate capital to unfavorable 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 industries.

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

An overview of the performance of the small and medium scale industries in Nigeria shows that past policies made limited impact on the sector for example, it is estimated that SMIS account for about 80

percent of the total industries employment in Nigeria, but only contribute 15-20 percent of total manufacturing output.

Power supply has remained unreliable and power out-age load shedding and rationing have become very frequent. Power supply had been erratic and unreliable that many businesses have resorted to purchasing private generators at prohibi -ost. 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) How does power supply affect the performance of small and medium scale industries in Nigeria?

(2) Are there linkage between power supply and the performance of small and medium scale industries in Nigeria?

(3)	What contributes to failure of power supply and manufacturing sector?

## 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:

(i)	To examine the impact of power supply on the performance of small and medium scale industries in Nigeria

(ii)	Solutions polices options and recommendation

(iii)	To identify the problems of that might be against the effectiveness of small and medium scale industries in Nigeria.

1.5 Hypotheses

The broad objective of this study is to assess the performance of power supply to small and medium scale industries in the state. The specification objectives of the study a

re as follows:

(1) (Ho; No significant dependence) the performance of small and medium scale industries is not dependant on the quality and availability of adequate power supply in Nigeria.

(2) (H1; Have significant dependence) the performance of small and medium scale industries is dependent on the quality and

1.6   Justification of Study

This study is significant of selected growths. It will add to the available literature on the study area. Power supply is a problem to the state government and its citizens. From experiences our various industries, there is no doubt that the small and medium scale industries over the year have been at the receiving end of the economic environment in the state. Infact, the contributions of the sector has been declining over the years. Hence, 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 SMIS in meeting their potentials of the 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 disagreed overall growth and development of the state economy.

The lack of power supply in the state serves as external dis-economics for SMIS adversely affecting their performance, productivity and profitability.

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 industries in the state and will cover those SMIS in state that have electricity as relevant infrastructural for their production process. The analysis covers a period of 1986-2010.

The basic limitation of this study is the completing nature of sources of statistical inputs. The data obtained from the annual bulletin, journal, and statistical data text books, magazines and seminars reports

etc. consequently the information given is extracted from the CBN and others sources of secondary data.

1.8   Plan of the Project

This study will be structured into chapters. Chapter one will cover the introduction of study statement of the problem, objectives of study, hypothesis, justification of the study, scope and limitation of the study.

Chapter two also will be review of the relative literature which will include the conceptualization of terms, the theoretical framework and empirical literature.

Chapter three also is research methodology of the study which includes the sources from which data will be collected and the method of data collection is field survey. This chapter also highlights how the sample will be designed, in terms of the technique questionnaire as an entrustment of data. Chapter four will include the presentation of result and analysis which will follow the objectives of the study and nature of the results obtained and also the testing of hypothesis.

Chapter five also consists of summary, conclusion and recommendation based on the finding of the research.

CHAPTER TWO

INTRODUCTION

Small and medium scale industries (SMIS) have been contributed too much in national development, which may include the socio-economic processes. Which issues of the character, structure, pattern and evolution of desirable impersonal relations of production distribution allocation and utilization of availability resources in any country, wheel in order to maintain the level of development and manage the available resources equally distributed and allocation efficiently utilize them and subsequently put economic development firmly on a way of modern technologies with respect to production distribution allocation and utilization are designed and tried strictly to the use of energy from one to the other (seson Ayodele, 2001).

The importance of small and medium scale industries in their potentials for job creation, innovation and mostly found to be the major sources of technological innovation. It's a fuel to every country's economic progress.

Much of the attention surrounding growth in the small firms has focused on capital structure decisions, and power supply (electricity)and dominant in the small and medium scale industries (Terpstra and Olson 1993).

Power supply (electricity)

Electricity power supply development in Nigeria stated in 1896 in Lagos city. Various generating sets were later installed in different towns as the imperial rule spread across the country. The pattern of electricity development after then was in the form of electricity undertakings set-up at various towns, some by the federal government under the public works department (PWD) and some by the native municipal authorities. In 1950, the colonial government interacted all these isolated power station previously under the electricity corporation of Nigeria (ECN). Thus ECN became the statutory boby responsible for generation transmission, distribution and sales of electricity to all consumers in Nigeria (Adeleye 1977). In 1962 the Niger Dam, Authority (NDA) was established for the construction of Kainji Dam, the first hydro electricity power station was commissioned in 1968 with an ultimate

installed capacity of 760MW, In 1972, the activities of both ECN and the MDA were merged and vested as one authority, the national electric power authority (NEPA), now power holding company of Nigeria (PHCN). According to Adeyemo (1979), electricity is that part of infrastructure which is the basic physical facility upon which all other activities in the system significantly depend on. Development economist under scored the need to building up electricity, as a key stimulus to development. It has been assented that an analysis of electricity is invariably a part of the study economic development (Ukpong, 1980).

The process of electricity generation serve as an out let for the product of other industries like cool, oil natural gas, and diesel, etc.

Therefore, the consolidation linkage between the energy sector and other sector of the economy electricity development and utilization therefore have pervasive in the Nigeria. In this respect adequate power supply and distribution constituted a central core to economic development issue, which cannot be over emphasized.

Small And Medium Scale Industries

Much of the attention surrounding growth in the concept of small and medium scale industries (SMIS) are a very nitrogenous group including a wade variety of firms (Mazdumar et al 1987). Small-scale industries are small in nature either in terms of the number of employee, which not are 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.

Theoretical Issues

Small-scale enterprise is central and critical in every human society. It is through entrepreneurship that societies can attain any level of development. Small scale and medium industries is said to be the secret behind rapid development of countries like Japan, China and Malaysia etc. low entrepreneurship is also said to be the major causes of under development of most countries in Africa, Asia, Latin America and the rest.

In view of the importance and centrality of small scale and medium to human development, there have been many attempts by scholars to explain factors behind the presence of small and medium scale ability in some people and its absence in others. It is these kinds of explanations that are referred to as theoretical issues of small and medium scale industries. There is no single universally accepted theory of small scale. This is because small scale is viewed differently by different scholars from different disciplines such as economies, psychology, and sociology etc.

Economics theory of small and medium scale industries theory

In the economics perspective, small and medium scale enterprises ability in a man is a product of his desire to acquire wealth and the fear of distortion or poverty (virtanem 2001). The desire for wealth and therefore of poverty are positively related. A higher fear of poverty in a man may likely translate into a higher entrepreneurial ability. A lower fear of poverty on the other hand May likely result in a lower desire for wealth and a low entrepreneurial ability. A small and medium scale enterprise to grow or to develop it requires some booster

or challenges. The challenges economist believes include among others, consumer crave for new goods or services, a desire for new methods of production, transportation and emergence of new market, (virtanem, 2001).

According to some economist, the function of the small and medium scale industries is to undertake risk and uncertainty to others the coordination of productive, recourse, to Schumpeter in particular, the introduction of innovation and to still others to provide capital. Schumpeter also the difference dimension to increase the level of the production among the society in general, he provided thus;

Innovation: An innovation may consist of ; (i) the introduction of a new product, (ii) the introduction of a new method of production, (iii) the operating up of a new market; (iv) the conquest of a new sources of supply of raw material. He also assigns the role of innovation not to the capitalist, but to the entrepreneur. The entrepreneur is not a man of ordinary managerial ability, but one who introduce something entirely new.

Empirical 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 SMIs in Nigeria scholars that SMIs account for a about 70 percent of the total industries employment in Nigeria but only contribute 10-15 percent of the total manufacturing output (Charles Soludo, 2005). 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). 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 theses factors is inadequate and epidemic power supply (electricity). This problem occupies over 50 percent of Nigerian's SMIs problem (Femi Kayode, 2005).

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.

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 lead to high importation of foreign good to meet excess domestic demand. This has leaded to wide closure of firms, unemployment and price instability.

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 millions 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 analyzing 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, $Q=F(X_1X_2X_3X_4)$where $Q=$

industrials, x_4 = electricity. Holding other factors constants, he concluded that changes in output was 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 lost in output as result of reduction in power supply in 1965 as N840,000.00 the corresponding figure for 1966 was N1378,000 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 lead 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 (Udhedu, 1993).

2.2   Theoretical Framework

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 over come 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.

The Gerschenksron's Great Spurt Theory

Alexander Gerschenksron who pointed out propounded this theory that the great spurt industrialization could take place if 5 pre-requisite 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. Infacts, 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 tow reason, first, such techniques help the establishment of import substitution industries, thereby reducing foreign competition. Secondly, backward economic have shortage of skilled labour, they use capital intensive and labour saving techniques. The more backward and economy is the greater is 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.

The Theory of Unbalance Growth

This theory has been popularized by Hirschnan. According to this consent investment should be made in selected sector rather than simultaneously in all sectors of the economy. No underdeveloped country possess 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 Hirchmen that deliberate unbalancing the economy according to pre-designed strategies best way to achieve economic growth in an underdeveloped country. According to Hirchman, investments in strategically selected industries or sectors of the economy will lead to new economy investment opportunities and so pave the way to further economic development.

Hircheman 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 in direct productive activities (DPA) will not be encouraged.

As Hirschman puts in investment is 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 required a prerequisite of direct productive activities (DPA) investment.

Overview Of Power Supply And The Performance Of Small And Medium Scale Industries In Nigeria

The power supply (Electricity in Nigeria was established in Nigeria in 1896 Lagos Nigeria. The establishment of Nigerian electricity supply company in Nigeria in 1929 with the construction of a hydro electric station at Kaura Jos in the year 1950 electricity corporation Nigeria (ECN) was established about 132 kilowtt. The Niger DAM authority (NDA) was established in 1962 with a mandate to develop the hydropower potentials of the country. However, ECN and NDA were merged in 1972 to form the National Electricity Power Authority (NEPA) now Power Holding Company of Nigeria (PHCN).

After independent, Nigeria accepted development of electricity from water as the most sensible cause of follow because it does not involved the hauling of fuel from one place to another and because water is a source from which energy could be tapped indefinitely (EDI, 1985, 0.49). This was why the Kainji Dam was initialed in the first development plan. The first phase was completed or scheduled in December 1968. other include the Onitsha hydropower project (50mw),

Zungeru on River Kaduna (500mw), Kastina Ala on the Kastina Ala River (26mw) and the manila plateau on the Don go River base (1250mw). In the 1972, the degree that stipulated the function of PHCN was established the degree, No249, 1972 states the NEPA (now PHCN), would develop and maintain efficient coordinated and economical system of electricity supply for all parts of the country. According to the second national development plan (1981-1985), government policy effort were made by increasing the generating and transmission capacity of PHCN with heavy investment outlay an approximately 6098mw were functional. The thermal power stations are located at Afan, Delta, Egbin, Sapale and Ijora, with a generating capacity of 100mw, 1320mw, 102mw, and 66mw respectively. The hydro station are Iebba (578mw) Kaiji (760mw), and shiroro (600mw) government promise to generate 6000mw or even more power, is achievable this year, given the installed capacity of PHCN and ability of staff of the company to deliver. In fact, Nigeria, though the old electricity corporation of Nigeria, the former Niger Dams authority and the defunct Nigeria Electric Power Authority had the best trained technical and

professional staff backward in Africa. Now the PHCN saddled with a non technical staff and hampered by official power generating transmission and distribution should be a knowledge based integrated and controlled system a technical and economic undertaken devoid of policies failure to use its human and material resources and to nurture and keep an efficient and dedicated workforce, in the power sector, has turned Nigeria into the world biggest importer of generators. Source statistical data's the data obtained from the CBN annual bulletin journal statistical data, text book magazines and seminar report etc. consequently the information given is extracted from the CBN and other sources of secondary data, the information below is real gross domestic product and current expenditure from the years of 1986-2010.

The real gross domestic product and current expenditure from the years of 1986-2010.

Years	RSMP	RPSP	REIE	REER
1986	10673.1	665.9	4.6	313.3
1987	11217.4	696.6	2.6	120.2
1988	12658.8	702.1	-25.6	120.5
1989	12867.1	759.4	-22.4	107.6
1990	13847.5	828	11	100
1991	15135.4	828	1.2	85
1992	14404	923.5	-27	70.5
1993	13809.1	937.4	-31.2	77.2
1994	13684.8	1006.8	-43.5	142.8
1995	12932.2	990.7	-59.3	122.1
1996	13061.5	1012.5	-15.8	167.1
1997	13100.7	1006.4	5	193.1
1998	12589.7	940.9	4.3	203.6
1999	13030.4	953.2	11.4	78.9

2000	13497.6	972.2	6.6	81
2001	14062.6	11684.9	-4.6	79.95
2002	15607.8	13318.1	3.3	80.48
2003	16476.4	15598.8	4.4	81
2004	18454.3	18252.5	4.2	80.74
2005	20220.5	19439.9	0.05	81.32
2006	22106.6	20344.4	8.69	81.94
2007	24206.8	21301.8	11.54	81.87
2008	26337	22035.9	14.39	82.28
2009	28407.2	2270.3	17.24	82.57
2010	30517.4	23419.2	20.09	82.86

The source of data from the central bank of Nigeria bulletin 50 years special anniversary December 2008. the above table shows the fluctuation of real gross domestic product and current expenditure on total output of power supply and manufacturing sectors in Nigeria economy.

In the year 2001where the ratio of output is 11684.9 has less power supply output and manufacturing good and services is less

contribution to economics development. In the order hand, 2002, which total output of power supply, are increases 13318.1 and has high capacity with the approximation of 80.48. But in 2008, manufacturing sector has larger total output about 22035.9 and total output both approximation and vice versa.

The challenges of power supply in Nigeria

Availability and reliability of electricity supplies have always been vexed issue in Nigeria, its encounter the problem of electricity supply throughout the whole nation. Besides, the main evidence of inadequate supply of electricity is the substantial installed capacity of private generators estimated to be almost half of PHCN total generation capacity comprising numerous large units that are expensive to operate (Sule et al, 1994) the following are challenges of electricity in Nigeria.

(i) Lack of preventive and routine maintenance of PHCNs losses. Energy losses reflect the poor quality of the electrical system, which is in it, dependent on inadequate maintenance of the equipment for generation and distribution.

(ii)   Frequent major breakdown, arising from the use of out-dated and heavily over-loaded equipment.

(iii) Lack of co-ordination between town planning authorities and PHCN resulting in poor over all power system planning and over-loading of PHCN equipment such as transformers by undeclared additional load as well as illegal connections by consumers.

(iv)   Inadequate generation due to operation/technical problems arising from machine breakdown, low gas pressure and low water levels.

(v)   Poor funding of the organization, inadequate budgetary provision and undue delay in releasing of funds to PHCN

(vi)   PHCNs inefficient bilking and collection system. Even where meters are available they are not being installed in sufficient numbers thereby leaving customers unmetered or on estimation. Also there are frequent reports that meters are not being read regularly and bills are left undelivered. In many

cases, payments made by customers are either credited to wrong accounts or not credited at all.

CHAPTER THREE

Methodology of Study

This study will make use of the simple linear regression equation. The ordinary least square (OLS) method is used which would be employed to establish the power supply and the performance of small and medium scales industries in Nigeria and economic growth and development from the year 1986- 2010. it will also enable us ascertain the veracity of our model and will enable us determine the explanatory power of our variables.

3.1   Method of Data Analysis

The method of data analysis that will be used for this study is both descriptive and analytical tool. Regression analysis will also be used to show the relationship that exists between power supply and manufacturing to the economic growth in Nigeria. It enables us to predict unknown variables from know variables. The variable that is estimate is the dependent variables while the variable from which the estimation was done is the independent variables.

3.2   Model of specification

This is the first and most important step in economic research. It involves the determination of the dependent and independent variables. The prior expectation of the signs of the parameters of the functions and the mathematical form of the model.

The model specified for study is thus as follows:

The functional form of the model;

RSMP   F(RPSP, REIR, REER)

$RSMP = b_o + b_1 RPSP + b_2 REIR + b_3 REER + u_1$

Where

RSMP = real small scale and medium scale product.

RPSP = Real power supply product

REIR = Real electricity interest rate

REER = Real electricity exchange rate

U = an error which can not capture in the regressive of the model

3.3   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.

3.4   Evaluation of Model

3.4.1 Evaluation based on economic apriori criteria

This test is carried out to check if the signs and magnitudes of the estimated parameters conform to what economic theory postulates.

3.4.2 Evaluation based on statistical criteria

The coefficient of determination (R^2) thus R^2 explains the total variation in the dependent variable (GDP) caused by variation in the explanatory variables included in the model.

The F-Test

This test is used to test whether the variables included in the work are significant or not in determining the level of domestic saving in Nigeria. Each element of β_2 follows the distribution with n-k degree of freedom.

The T-Test

This tests the overall significant of the regression model.

3.4.3 Evaluation based on econometric criteria

Test for auto correlation this is to test whether the errors corresponding to different observations are uncorrelated. The test will adopt the Durbin Watson statistic because of the presence of the lagged dep

endent variables as are of the regressors, which indicates that the model is an autoregressive model.

Test for normality

The test will be carried out to test what the error term follows the normal distribution. The normality test would adopt the Jarque –Baera

(JB) test of normality. The JB test of normality is an asymptotic, or large –sample, test. It will also base on the OLS residuals.

Test for Heteroscedasticity

This test would be conducted to ascertain whether the error, U, in the regression model have a common or constant variance. The white heteroscedasticity test (with no cross term) will be adopted.

3.5 Sources of data and collection

The secondary data was gotten from various sources like central bank of Nigeria, Annual report and statement of accounts (various years) statistical bulletin, federal office of statistic (FOS) the Nigeria Power Holding Company, news papers internet, text books, journals, magazines, seminar reports etc. these data are gathered for a period of 25years (1986-2010). Hence the reliability of the estimates depends on how account the data gather through those sources.

CHAPTER FOUR

4.1 Presentations and Interpretation of Results

Dependent variables

Method: OLS

Period 1986 – 2010

Variance	Coefficient	Std. Error	E-value	E-prob	Part Rý
Constraint	13167	1711.6	7.693	0.0000	0.7381
RPSP	0.50671	0.075736	6.691	0.0000	0.0807
REIR	11.981	31.642	0.379	0.7088	0.0068
REER	-6.1070	10.735	-0.569	0.5755	0.0152
Rý = 0.80979 (F3,21) = 29.801 (0.0000) å = 2590.65 DW = 0.321					
RSS = 140941312.3 for 4 variables and 25 observations.					

From the above the interpretation of the result as regard the coefficient of various regressions is stated as follows:

The value of intercept, which is 13167 shows that the Nigerian economy will experience a 13167 increase when all other variables are held constant.

The estimate coefficient which are 0.50671 (RPSP) show that a unit change in RPSP will result to a 0.50671 increase in RSMP, 11.981 (REIR) shows that a unit change in REIR will cause a 11.981 increase in RSMP. –6.1070 (REER) show that a unit change in REER will cause a 6.1070 decrease in RSMP.

4.2   Economic Aprior Criteria

The test is aimed at determining whether the signs and sizes of the results are in line with what economic theory postulates.

Variable	Expected sign	Estimated	Remark
RPSP	+	+	Conform
REIR	-	+	Do not conform
REER	-	-	Conform

4.3   Statistical Criteria (first order test)

4.3.1 Coefficient of Multiple Determinant (R^2)

The R^2 which measures the overall goodness of fit of the entire regression shows the value as 0.80979 = 80.979% approximately 81%.

This indicates that the independent variables account for about 81% of the variation in the dependent variables.

4.3.2 the student T-Test

The test is carried out, to check for the individual significant of the variables. Statistically, the t-statistics of the variables under consideration is interpreted based on the following statement of hypothesis.

H_0: The individual parameters are not significant

H_1: The individual parameters are significant

Decision Rule

If T- calculated > t-tabulated, we reject the null hypothesis (H_o) and accept the alternative hypothesis (H_1) and if otherwise, we select the null hypothesis (H_O).

Level of significance α at 5% = 0.05/2

= 0.025

Degree of freedom: n-k

Where n = sample size

k: number of parameter

The t-test is summarized in the table below;

Variables (t-value)	t-tab	Remark
RPSP (6.691)	2.080	Significant
REIR (0.379)	2.080	Insignificant
REER (-0.56%)	2.080	Insignificant

From the table above, we can deduce that only RPSP is significant, while REIR and REER are insignificant, (going by absolute values).

4.3.3 F-statistics

The F- statistics is used to test for simultaneous significance of all the estimated parameters.

The hypothesis is stated;

H_o: $B_1 - B_2 = B_3$

H_1: $B_1 \neq B_2 \neq B_3$

Decision rule

If the Fcal > Ftab reject H_o that the overall estimate is not significant and conclude that the overall estimate is statistically significant. From the

result, Fcal (29.801) > Ftab (3.07) hence, we reject H_o and accept H_1 that the overall estimate has a good fit which implies that our independent variables are simultaneous significant.

4.4   Econometric Criteria

4.4.1 Test for Autocorrelation

The Durbin- Watson's test compares the empirical d* and due in d-u table to their transforms $(4-d_L)$.

Decision rule

1.   If d* < d_L, we reject H_o of no correlation and accept that there is positive autocorrelation of first order.

2.   If d* > $(4-d_v)$, we reject the null hypothesis and accept that there is negative autocorrelation of first order.

3.   If d_u < d* <$(4-d_u)$ we accept Ho of no autocorrelation.

4.   If d_l < d* < d_u or if $(4-d_u)$ < d* < $4-d_v$ that test is inconclusive

Where : d_v = lower limit

d_u = upper limit

d+ = Durbin Watson

From our regression result, we have:

d* = 0.321

d_v = 1.123

d_u = 1.654

4-d_v = 2.877

4-d_u = 2.346

Conclusion

Since d* (0.321) < d_v (1.123), we reject Ho and accept that there is positive auto correction of first order.

4.4.2 Normality test for residual

The Jarque -Bera test for normality is an asymptotic or large sample test. It is also based on the OLS residuals. This test first computes the skewners and Kurtosis measures of the OLS residuals and uses the chi- square distribution (Gujarat, 2004).

The Ho: bi = 0 (the error term follows a normal distribution) at 5% significance level with 2 degree of freedom.

$JB = n (5^2/6) + (k-5/24)^2 = 1.7532$

While critical JB > ($x^2_{(2)}$ of) = 5.99147.

Conclusion

Since 107532 < 5.99147 at 5% level of significance, we accept Ho and conclude that the error term follows a normal distribution.

4.4.3 Test for Heteroscedasticity

Heleroscedasticity has never been reason to throw out an otherwise good model, but is should not be ignored either (mankw Na 1990).

This test is carried out using white's general Heteroscedasticity, test (with gross terms). The test asymptotically follows a chi-square distribution with degree of freedom equal to the number of regressors (excluding the constraint term). The auxiliary model can be stated thus;

$Ut: B_O + B_1RsP + B_2REIR + B_3REER + B_4RSP^2 + REER^2 + VC$

Where vi = pure white noise error.

This model is non and in auxiliary R^2 from it is obtained.

This hypothesis to the test is

H_0: B_1 =B_2 =B_3 = B_4 = B_5 = B_6 = O (Heteroscedasticity)

H_1: $B_1 \neq B_2 \neq B_3 \neq B_4 \neq B_5 \neq B_6 \neq$ O (Heteroscedasticity)

Note: the sample size (n) multiplied by the R^2 obtained from the auxiliary regression asymptotically follows the chi-square distribution with degree of freedom equal to the number of regressive (including constant term) in the auxiliary regression.

Using P.C give software package saves as the above regression by calculating the chi-square value.

Decision rule

Reject Ho if x^2 cal > x^2 at 5% level of significance if otherwise accept the null hypothesis from the obtained result.

X^2 0.05(6) = 12.6 and x^2 cal = 11.385.

We therefore accept H_1 of interoscedasticity showing that the error term do not have a constant variance.

4.4.4 test for multicollinearity

The term multicollinearity is due to ragnar frisch, originally, it meant the existence of a perfect or enact, linear relationship, among some or all explanatory variable of a regression model. The tests were carried out using correlation matric. According to Barry and Feldman (1985) criteria "multicollinearity" is not a problem if not correction exceed 080.

	RSMP	RPSP	REIR	REER	Remark
RSMP	1.000				-
RPSP	0.8979	1.000			M
REIR	0.4960	0.5281	1.000		NM NM
REER	-0.4352	-0.4368	-0.07766	1.000	NM, NM, NM

Where M = Presence of multicollinearity

NM = No multicollinearity

From the above table, we can conclude that multicollinearity exists only between RPSP and RSMP.

CHAPTER FIVE

Summary, conclusion and recommendation

Introduction

This chapter deals with the summary of analysis and findings together with the recommendation and the conclusion of the study.

5.1 Summary

This study is an empirical analysis of the impact of power supply and the performance of small and medium scale industries in Nigeria, examine the impact of electricity supply on the manufacturing sectors in Nigeria. However, most literatures confirm that there is a positive relationship between power supply and small and medium scale industries in terms of total output produce.

The research reveals that most power supply data are still very poor relative to other underdeveloped countries than developed countries. They also explain that from the single regression analysis of the data on power supply and small-scale industries, that there is correlation between the two variables and they both have significant influence in the same direction.

5.2   Conclusion

The conclusion is drawn from the findings of this research work, which significantly examine the contribution of power supply to small scale industries toward the economics growth and development in the Nigeria, and major power supply problem of inadequacy and unreliability which has constrained their performance of these industries in terms of their growth, productivity and competitiveness.

One of the major contributing factors to economic growth via labour productivity of population is availability of power supply that improved capacity of output goods and services.

The challenges before Nigeria therefore, as to improve the power supply to promote not only manufacturing sectors and other social amenities in the state.

The existing public source of power supply provided by the government through the power holding company of Nigeria (PHCN) this public sources of electricity is cost effective, but is reliability and adequacy is not encouraging as such these SMIs in Nigeria are forced to provide alternative source of power supply so as to meet up with their

demand for electricity which require to continue running their operations.

Therefore, adequate financing of these sectors is important if any meaningful results are to be achieved their performance productivity and profitability is greatly constrained. Hence the performance of small and medium scale industry is dependent on the quality and availability of adequate power supply in Nigeria.

5.3   Recommendations

Based on the result obtained from the research work and conclusion drawn the following recommendations where put more impress on increase the level of power supply in Nigeria.

(1)   Government should increase its funding of the electricity sector to at least 15-25% on annual budge. This is also in recognition of the fact that government expenditures are constrained by scarce resources available to its in executing it budge. But the upward review of funds to the power supply and small scale industries   sectors has the capacity of generating a great

impact in terms of economic growth. Therefore, the priority should also be given to power supply sector and manufacturing sectors.

(2) The small and medium scale survived 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 if such industry is producing or manufacturing small medium scale industries. In other to progress, there is need for the investor to acquire technology know how, in Nigeria for instance, the national office of industrial property (NOIP)

(3) Government should intensify its efforts in tackling the issues of corruption and fraud. This is particularly important because in a society like ours the issue of official corruption is properly utilized for the purpose for which it is meant, the corruption and fraud will have to be do away with.

(4) After looking through the problems and all the inefficiencies of PHCN we can drawn a conclusion that because of these set

backs 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 challenge for policy options towards attainment of sustainable thus include 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 resources such as solar energy for areas where the national grip system could not reach or not economically viable.

In the spirit of new improvement economic order for which the United Nations on economic summit is working, Nigeria should make consented effort to increase the capacity generating of power supply into the country. Funds provided for power and small scale industries related activities by external agencies, bilateral or international agreement between developing and under developing countries they even exceed the government's own public services to private individual organization on power sector and small scale industries in Nigeria.

The present administration reform of power sector in order to attracts private investment as clear the most sustainable option there is no doubt that a private led power sector is surest way to the attainment of stable power supply in Nigeria.

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