

Research article

A CRITICAL APPRAISAL OF THE TELECOMMUNICATIONS INDUSTRY AND ECONOMIC GROWTH IN NIGERIA.

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ABSTRACT

Presently, telecommunication facilities in Nigeria, first established in 1886 by the colonial administration, is undergoing very rapid change and explosive growth and it has been argued that this has economic growth potentials for the economy. As such, this study tried to investigate the impact of the telecommunications industry on economic growth in Nigeria using official (secondary) data for a sample period of 12 years (2001-2012).

The data collected was analyzed using SPSS and the Regression model was estimated. The findings revealed that Government Expenditure, Number of Telecom Subscribers and Private Investment collectively have significant impact on Economic growth in Nigeria. This significant impact was mainly contributed by Number of Telecom Subscribers. Private Investment as well as Government expenditure had insignificant impacts on the economic growth in Nigeria. It is therefore recommended that adequate budget should be made annually so as to increase telecommunication growth in Nigeria. This provision should be geared towards encouraging rural telecom subscribers, which will also increase the number of Telecom Subscribers thereby increasing Economic growth in Nigeria. **Copyright © WJGTD, all rights reserved.**

Keywords: Teledensity , GDP,NCC, Investment, Telecom Subscribers

INTRODUCTION

1. Background of the Study

Recently, the role of telecommunication industry in enhancing economic growth has been a subject of discuss in the economic literature. Arguments are that the development of a modern nation to its full potential in contemporary world can never be attained without adequate telecommunications infrastructure. This implies that the development of telecommunication industry will significantly boost economic growth and development. In fact, information tools such as telephones, personal computers, and the internet are increasingly critical to economic success and personal advancement. All these help to encourage economic growth.

From time immemorial, information and communications have always formed the basis of human existence. This fact has driven man to continuously seek ways to improve the processing of information and communicating such information to one another, irrespective of distance and on a timely basis. Perhaps the greatest legacy that the 20th century scientists have bequeathed to mankind is the "Information Revolution" made possible by rapid development and advances in telecommunications and computer technology. That no modern economy can be sustained today without an integral telecommunications infrastructure is widely acknowledged. In fact, World Bank studies indicate that for every US\$1 invested in telecommunications infrastructure, more than US\$6 is generated in economic returns by its impact on local employment and general economic growth (Ndukwe, 2000).

Access to telecommunications is therefore critical to the development of all aspects of a nation's economy including manufacturing, banking, education, agriculture and government.

The wireless revolution and the internet phenomenon have recently changed the way people live and transact business, and the telecommunications/information technology industry has taken center stage in world affairs and will continue to be so far into the foreseeable futures (Ndukwe, 2000)

For instance, Ndukwe (2006) argued that in today's world, modern digital telecommunications networks are as necessary to economic growth and to attracting foreign investment as are programs dedicated to promoting healthcare, electricity, transportation and agriculture. Furthermore, a reliable telecommunications networks can improve the productivity and efficiency of other sectors of the economy and enhance the quality of life generally. Ajiboye (2007) also argued that telephone penetration has a positive impact on gross domestic product (GDP) because it provides a stimulant to economic growth and that as economies become more highly developed, they need more communications. This position is supported by Alleman *et al.* (1997) who explained that economic development policies in the developed countries increasingly included telecommunications as an essential component of the economic infrastructure. In the opinion of Ndukwe (2005), the developed world had been able to transform not only their domestic economic growth but also increase their competitiveness in the world market, partly due to economic development policies predicated on telecommunications as an essential component of the economic infrastructure.

1.2 .Statement of the Problem

Most of the values derivable from info-communications development have been concentrated in the developed countries of the world neglecting the developing and less developed countries. For instance, Africa has less than 3%

of the world's main lines although it accounts for more than 12% of the world's population (Ndukwe, 2005) and in Nigeria the telephone density is estimated at around 5 telephones for about 100 people or five per cent. As telephones tend to be concentrated in the cities, access in rural areas is even much more limited and/or non-existent in many parts of the country. This, among others, shows that the potentials of telecommunications infrastructure development in promoting economic growth in Nigeria are being underutilized.

Specifically, telecommunication facilities in Nigeria, first established in 1886 (Egwu,2012) by the colonial administration, are presently undergoing very rapid change and explosive growth and it has been argued that this has economic growth potentials for the economy. It is as a result of all these that the study tries to investigate the telecommunication industry and economic growth in Nigeria, using econometric method of analysis and secondary data for the period 2001 to 2012.

The telecommunication industry, especially mobile is playing a significant role in the development of the Nigerian economy, despite developing from 30,000 line subscriber base at the beginning of the millennium to 105.2 million connections at the end of 2012 (Oketola, 2012). GSM has contributed in many other ways to the growth of the Nigerian economy especially in the areas of employment generation, foreign Direct Investment and private investment. Recent reforms in Nigerian telecommunications have led to significant capacity investment, which has promoted service expansion and the introduction of new technologies.

1.3. Objective of the Study

The broad objective of the study is to critically appraise telecommunication industry and economic growth in Nigeria with specific reference to periods 2001 and 2012. However, specific objectives are:

- i. To identify the major factors predicting the performance of telecommunication industry.
- ii. To verify the influence of telecommunication on economic growth
- iii. To identify the bottlenecks facing telecommunication industry in Nigeria.
- iv. To identify the various aspects of telecom industry and how they collectively affect the economic growth of Nigeria.
- v. To judge and rank their individual effect on economic growth in Nigeria.

1.4. Research Question

Based on the statement of problems and the objectives of the study, the researcher posed the following questions to herself:

- i. What are the determinants of telecommunication industry growth in Nigeria?
- ii. To what extent does telecommunication industry impact on Economic Growth in Nigeria?
- iii. What are the problems faced by telecommunication operators in Nigeria?
- iv. How does government expenditure on telecommunication affect economic growth in Nigeria?
- v. To what extent does number of telecom Subscribers affect Economic growth in Nigeria?
- vi. To what extent does private investment affect Economic growth in Nigeria?

1.5. Research Hypothesis

Hypothesis is an idea or the explanation of something that is based on a few known facts but that has not yet been proved to be true or correct.

Therefore, based on the nature of this work the researcher formulated the following hypotheses to guide the study.

H_{01} = Government Expenditures on telecommunication has no significant impact on GDP growth in Nigeria.

H_{A1} = Government Expenditures on telecommunication has significant impact on GDP growth in Nigeria

H_{02} = Number of telecom subscribers has no significant impact on GDP growth in Nigeria.

H_{A2} = Number of telecom subscribers has significant impact on GDP growth in Nigeria.

H_{03} = Private investment in telecom has no significant impact on GDP growth in Nigeria.

H_{A3} = Private investment in telecom has significant impact on GDP growth in Nigeria.

H_{04} = Government expenditure on telecom, telecom subscribers and private investment in telecom has no significant impact on GDP growth in Nigeria.

H_{A4} = Government expenditure on telecom, telecom subscribers and private investment in telecom has significant impact on GDP growth in Nigeria.

1.6. Significance of the Study

Rapid innovations in telecommunications and information technology are lowering costs, creating new services and changing the cost structure of many industries. Driven by unrelenting technological and market forces, telecommunications has become one of the world's most dynamic sectors (Wellenius and Stern, 1994; Saunders et al., 1994).

In response to the need to overcome persistent shortfalls in telecommunications investments and performance, telecommunications restructuring has assumed a global dimension and the wave of telecommunication reforms that began in the 1980s in a few highly developed economies quickly spread to several developing countries. By 1993, major reforms had been undertaken in at least 15 developing countries and a comparable number were in preparation (Wellenius and Stern, 1994). The impact of these new policy initiatives has been profound, but if the new pragmatism in telecommunications policy is to succeed, policy initiatives will need to be broadened and deepened.

This research study is therefore significant in the sense that it contributes to the body of knowledge about the relationship between telecommunication and economic growth. It is also significant because it gives the researcher a sense of fulfillment and also serves as a reference point for students writing research projects on related topics.

LITERATURE REVIEW

2.1 Contributions of Related Works and Research Gap

Balogun (2000), the emergence of telecommunication, facilitates economic development as it provides easy and effective communication needed to stimulate and promote trade between Nigerian and its foreign partners in the world. Tella et al. (2007) also stated that Telecommunication has emerged as an integral and essential part of the culture and life of Nigerians which had played significant role in communication and encourages investment.

According to Ndukwe (2005) In Nigeria, the Telecommunications Industry has experienced exponential growth in the last four years with close about 113 million telephone lines connected to date; For this, Nigeria has been described as one of the world's fastest growing telecommunications markets. These achievements can be attributed

largely to the goodwill exhibited by the Nigerian government and the enabling and conducive environment with respect to government policy and regulatory regimes.

According to Nwakanma et al (2012), the factors affecting Tele-density growth are as follows: Telecom subscribers, Private investment, Liberalization, Market segmentation, Tariff system, Telecommunication infrastructure, Customer satisfaction, Cultural background, Education, Interconnectivity, Competition and Legislation. However, in this project, focus is made on two factors which he found to be more significant; that is Private investment and number of telecom subscribers in the Telecommunication sector.

Uzor (2009) Executive Vice Chairman of the Nigeria Communications Commission (NCC) has revealed that one of the key drivers for the successes recorded in Nigerian telecommunications landscape was the country's impressive rating as one of the foremost destinations for Foreign Direct Investment (FDI) in sub-Saharan Africa. According to him, between 2005 and 2007, Nigeria was reported as one of the top ten receivers of FDI in Africa, based on the investment in telecoms in Nigeria. He described the success recorded in the telecoms sector as phenomenal. In Nigeria, an average growth of over 8.5 million lines per annum has been recorded from 2001 to 2009. He also said that "Most African countries have progressed to a period of communications boom that has opened up new possibilities and frontiers across business, social and economic landscape. In the record of Wireless Intelligence in 2008, that report puts mobile subscriber base in Africa at 280 million users by the end of March 2008. The African continent has surpassed North America in terms of mobile subscribers with US and Canada holding 277 million users. Wireless Intelligence also reported that Africa was the world's fastest growing mobile market with 38 per cent growth in 2007, putting Africa ahead of middle East 33 per cent and Asia Pacific 10 per cent", he added. In addition to these findings, the researcher considered the effect of telecom subscribers on teldensity growth using official data. Oyeniyi and Abiodun (2008) stated that Nigeria, with a teledensity of 64.70 as at April 2011 is one of the fastest growing telecommunications market in Africa, with subscriber lines of less than 900,000 mobile (GSM) lines in 2001 and growing exponentially to about 103,347,158 million digital mobile lines by end of April 2011. The impetus of these changes is expected to continue, and even at a much faster pace. The telecom sector has experienced a major transformation in terms of growth, technological content, and market structure over the last decade as a result of policy and institutional reforms in the sector. However, the contribution to knowledge in this project is that while the duo only stated the continuous increase in the number of telecom subscribers without considering the factors that contributed to this growth, the researcher shows the effect of two critical factors responsible for the growth in Tele-density in Nigeria. This was made possible after quantitative analysis secondary data collected from the NRA (National Regulatory Agency).

Lee (2003) stated that the recent advances in telecommunications technology have been an important vehicle in permitting information exchange to develop as a valuable commodity for moving the country into post industrial and information based economic growth. In this present world, a modern telecommunication infrastructural development is not only essential for domestic economic growth, but is a prerequisite for participation in increasingly competitive world markets and for attracting new investments.

World Bank (1995) stated that Telecommunication infrastructural development should indeed be seen as an indispensable precedent in economic development, which according to Nigerian telecommunications liberalization

was instigated partly through the promotion of reforms by international donor agencies; (Ndukwe 2005). In cases, where policies are transferred from one country or institution to another, this can happen in different ways which include: lesson drawing (involving the rational evaluation of alternative policies), voluntary (but driven by perceived necessity such as international acceptance), and coercive transfer (i.e. direct imposition by an aid agency). Dolowitz, and Marsh (2000). Because several studies have also been conducted which examine the link between Tele-density and economic factors. In particular, the International Telecommunications Union's CCITT (International Consultative Committee on Telephone and Telegraph) has sponsored several studies which establish a strong correlation between Tele-density and variables such as Gross Domestic Product (GDP), as well as a positive relationship between Tele-density and economic development, which Mbarika (1999) also said that in an empirical study on growth of Tele-density, that there is an established or a close relationship between GDP per capita and Tele-density.

This was stated because World Bank has conducted a number of telecommunications studies using structural economic analysis. These studies model Tele-density as input into the production process and postulate that telecommunications services are not equally important to all sectors of the economy.

Manuaka and Okereocha (2008) in respect of employment found that, over 1,000,000 Nigerians have been directly and indirectly employed by the operators. While supportive enterprises and service organizations like banking, haulage, consultancies, insurance etc. have themselves blossomed. This view has been collaborated by the telecommunication sector which has become a major tool for empowering Nigerians, and with the continued inflow of massive investments and the doggedness of the industry regulator, the future look bright.

Though according to Galperin (2004), who stated that many of these frameworks have been applied to policy areas outside of Telecommunication policy. While there are a few studies on the development of telecommunication policy, the processes underlying the development of such policies are generally not well understood.

Ndukwe (2000) stated that to improve telephone density rapidly and introduce modern facilities to meet the demands of the local and international business community an investment of about \$600m US Dollars would be required per annum for network expansion in Nigeria Which will make Nigeria enjoys telecommunications growth which is the fastest growing sectors of the Nigerians economy. This development has been stimulated by a wide of range factors which include the government deregulation policy, worldwide trend of rapid development in telecommunications and information technology and the potential of Nigerian market.

Ayo and Fatudimu (2007) stated that the major sector of the economy that is experiencing a boost is the ICT and Telecoms which had brought about a Tele-density growth of 0.73 to 29.98 from 2001 to 2007 and it shows that there is a relationship between the telecommunications infrastructure and the national economy and that growth in teledensity is a catalyst of resource mobilization and economic development Jussawalla, (1988).

Hardy (2011) in the international Journal of Academic Research 2011 related traffic problems and consequently customer's patronage and which could be extended to affect Tele-density. However, they were quick to add that since operators are fast realizing that they are in a highly competitive environment where subscribers can make or break them. There is now a conscious effort by the operators to do all in their capacity to meet customers need. Thus meeting customers' needs is expected to improve Tele-density growth in Nigeria which means that the success of

GSM operators in Nigeria will be a function of how they meet customers' needs such as value for money, access and ease of use of technology Ndu (2006).

Egwu (2012) holds that Number of Telecom subscribers is a more critical factor for growth in Tele-density in Nigeria than private investment in Nigeria.

3.1 Research Design and Data Sources

A descriptive method of research was used for this study. It is of great importance to identify the method and procedure adopted in this research work, since it gives the reader background information on how to evaluate the findings and conclusion. In adopting any method in research study, it is imperative to put into consideration the approach that will yield the most productive result relevant to the problems at hand. During the research work, data needed for the project was gathered from Central Bank of Nigeria (CBN) and the Nigeria communication commission (NCC) industry data respectively. The major fact-finding technique used in this work is secondary source.

4.1 Data Presentation and Description

The data subjected to multiple regression analysis are presented in Table 4.1. These are data on government expenditure on telecom, number of telecom subscribers and amount of private investment in telecom in dollar value. As shown in Table 4.1, the number of telecom subscribers has also been on the increase since 2001 and the highest number of subscribers was also recorded in 2012. The monetary value of private investment in telecom industry has also been on the increase since 2001 and the highest value was also recorded in 2012.

The data used for this study is presented below:

Table 4.1 : Data on GDP, Government Expenditure on Telecom, Telecom Subscribers and Private Investment.

Year	GDP	Govt. expenditure on telecom	Telecom subscribers	Amount of Private investment
2001	47,999,667,360	19241	886,782	1,200,000,000
2002	59,116,868,249	17083.2	2,271,050	2,100,000,000
2003	67,655,840,077	6639.6	4,021,945	4,000,000,000
2004	87,845,403,966	9750.7	10,201,728	6,000,000,000
2005	112,248,324,227	19982.5	19,519,154	7,500,000,000
2006	145,428,171,552	12124.3	33,858,022	8,150,000,000

2007	165,920,723,491	13952.5	41,975,275	11,000,000,000
2008	207,115,995,738	15353.1	64,296,117	12,000,000,000
2009	168,587,267,756	15524.1	74,518,264	18,000,000,000
2010	228,637,855,749	13809.9	88,348,026	21,000,000,000
2011	243,985,812,280	14371.9	95,886,714	27,000,000,000
2012	262,605,908,770	14511.63	113,195,951	30,000,000,000

Source: World bank annual bulletin and NCC industry data (2012)

4.2 Relationship Model and Interpretation

The results obtained from the multiple regression analysis using SPSS version 17 is shown in the following tables below.

- **Correlation Analysis**

Table 4.2.: Correlations

		Y	X1	X2	X3
Pearson Correlation	Y	1.000	.007	.973	.938
	X1	.007	1.000	.042	-.004
	X2	.973	.042	1.000	.977
	X3	.938	-.004	.977	1.000
Sig. (1-tailed)	Y	.	.491	.000	.000
	X1	.491	.	.449	.495
	X2	.000	.449	.	.000
	X3	.000	.495	.000	.

Where Y: Gross domestic product, x_1 : Government expenditure on telecom, x_2 : No of telecom subscribers and x_3 : Amount of private investment

Correlation analysis is a technique used in measuring the closeness or degree of the association between variables or among variables. It helps in ranking the variables based on their level of correlation. From table 4.2 the order of ranking shows that X2 is the highest followed by X3 and X1 as the least meaning that the most important factor is X2.

- **Model Summary of the Multiple Regression Analysis**

The model summary from statistical package for social sciences (SPSS-V17) output is shown below.

Table 4.3.: Model Summary^b

Model					Change Statistics	
	R	R Square	Adjusted R Square	Std. Error of the Estimate	F Change	Sig. F Change
1	.976 ^a	.952	.934	1.92744E7	53.243	.000

a. Predictors: (Constant), X1, X3, X2

b. Dependent Variable: Y.

Since model summary is used to check the reliability of our model, from table 4.3 it can be seen that R^2 is 0.952 meaning that 95.2% of GDP can be accounted for by our model. Also, our model is very reliable for decision making since significant F- change is 0.000 as seen above. The unaccounted factors not covered in this project are 4.8%. Further research into identifying such factors can improve the value of R^2 . The model summary is also used to check the level of contribution of our adjusted R^2 which is given as 0.934, which means that the model is capable of predicting what happens to the economy up to 93.4% prediction.

- **Analysis of Variance (ANOVA)**

Table 4.4.: ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.934E16	3	1.978E16	53.243	.000 ^a
	Residual	2.972E15	8	3.715E14		
	Total	6.231E16	11			

a. Predictors: (Constant), X1, X3, X2

b. Dependent Variable: Y

Table 4.2.2 presents the ANOVA report on the general significance of the model. As the F-value calculated = 53.243 is far greater than the critical value of $F_{0.05}(3, 8) = 4.07$. Thus the combination of the independent variables X_1, X_2, X_3 , significantly predicts the dependent variable Y or when X_1, X_2, X_3 are collectively judged, they have significant impact on Y. This leads to rejecting H_{04} and accepting H_{A4} .

- **Coefficients**

Table 4.5: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	8.418E7	2.567E7			
X1	-.964	1.602	-.048	-.602	.564
X2	2390.390	686.525	1.278	3.482	.008
X3	-2.427	2.872	-.310	-.845	.423

a. Dependent Variable: Y

Table 4.2.3, showed the unstandardized Beta coefficients that present the contributions of each variables to the model. The t and P-values showed the impact of the independent variables on the dependent variable.

- **T-Test**

From table 4.5 it can be deduced that X_2 (No of telecom subscribers) when judged independently, has a strong significant impact on Y (GDP). This is because it has significant-value of 0.008. X_1 (government expenditure on telecom) which has a significant-value of 0.564, when judged independently has no significant impact at all on Y. X_3 (private investment), when judged alone showed level of significance when 1-tailed test was used, but when the 2- tail test was used, the value of $X_3 = 0.423$ is higher than 0.05 but with 1-tailed test the value was less than 0.05 showing a weak significant impact on Y. The conclusion drawn from here is that while three factors or variables affect the GDP collectively, the main impact is as a result of X_2 .

- **Regression Model Estimation and Interpretation**

Table 4.5.1: Standardized Coefficients (Beta)

Independent Variables	Standardized Coefficients (Beta)
X ₁	-0.048
X ₂	1.278
X ₃	-0.310

Source: Coefficient table (4.5)

With the above table, the model can be generated as:

$$Y = 1.92744 \times 10^7 - 0.048 X_1 + 1.278 X_2 - 0.310 X_3 \dots \dots \dots \text{equation 4.1}$$

The equation can be used to predict GDP. Where, Y = GDP growth; X₁ = Government expenditure X₂ = Number of telecom subscribers; X₃ = Amount of private investment.

Interpretation: this model shows that for every increase in number of subscribers, GDP will increase with 1.278. Without further test, I can say that X₂ has more significant impact on GDP. In taking decision, X₂ should be considered most.

4.3. Hypothesis Testing

Table 4.6.: Test of Hypothesis

variables	t	Significance
X ₁	- 0.602	0.564
X ₂	3.482	0.008
X ₃	- 0.845	0.423

Source: coefficient table (4.2.3)

Using the decision rule stated in chapter three, the research hypotheses of this study are tested below.

H₀₁: Government Expenditures on telecommunication has no significant impact on economic growth in Nigeria. Since the significance-value of 0.564, is greater than 0.05 significance level we accept H₀₁ and reject H_{A1} and conclude that government expenditures on telecommunication has no significant impact on economic growth in Nigeria.

H₀₂: Number of telecom subscribers has no significant impact on economic growth in Nigeria. Since the significance-value is 0.008, is less than 0.05 significance level we reject H₀₂ and accept H_{A2} and conclude that number of telecom subscribers has strong significant impact on economic growth in Nigeria.

H₀₃: Private investment in telecom has no significant impact on economic growth in Nigeria. Since the significance-value of 0.423, is greater than 0.05 significance level we accept H₀₃ and reject H_{A3} and conclude that private investment in telecom has no significant impact on economic growth in Nigeria. Even though X₃ does not

have significant impact on economic growth, its level of insignificance is not as great as X_1 . It showed weak significance when 1 – tailed test was used.

H₀₄: Government expenditure on telecom, telecom subscribers and private investment in telecom has no significant impact on economic growth in Nigeria. Using table 4.2.2 (ANOVA) to test the hypothesis, the significant -value of 0.000 is less than 0.05, hence the null hypothesis (H_{04}) is rejected while (H_{A4}) is accepted and we therefore conclude that Government Expenditure on telecom, Number of Telecom subscribers and Amount of private investment has made significant positive impact on economic growth in Nigeria but the Telecom subscribers is a more critical factor than the government expenditure and Private investment.

Table 4.7: Summary of Hypothesis Analysis

	Hypothesis	Result
H_{O1}	Government Expenditures on telecommunication has no significant impact on GDP growth in Nigeria	significant
H_{A1}	Government Expenditures on telecommunication has significant impact on GDP growth in Nigeria	Not Significant
H_{O2}	Number of telecom subscribers has no significant impact on GDP growth in Nigeria.	Not Significant
H_{A2}	Number of telecom subscribers has significant impact on GDP growth in Nigeria.	Significant
H_{O3}	Private investment in telecom has no significant impact on GDP growth in Nigeria.	Significant
H_{A3}	Private investment in telecom has significant impact on GDP growth in Nigeria	Not Significant
H_{O4}	Government expenditure on telecom, telecom subscribers and private investment in telecom has no significant impact on GDP growth in Nigeria.	Not significant
H_{A4}	Government expenditure on telecom, telecom subscribers and private investment in telecom has significant impact on GDP growth in Nigeria.	Significant

4.4 Discussion of Results

The results are discussed here in the context of the research questions:

Research Question One: What are the determinants of telecommunication industry growth in Nigeria?

According to Nwakanma et al (2012), the determinants of telecom industry growth are as follows: Telecom subscribers, Private investment, Liberalization, Market segmentation, Tariff system, Telecommunication infrastructure, Customer satisfaction, Cultural background, Education, Interconnectivity, Government expenditure on telecom, Competition and Legislation. However, in this project, focus is made on three factors which he found to be more significant; that is Private investment number of telecom subscribers and government expenditure in the Telecommunication sector. The reasons for the difficulty associated with non-availability of official statistics in other factors in a study of this nature include:

1. There is an insufficient record of data in this area.
2. Most of these factors cannot be measured because of the inconsistencies of the service providers, the government and also environmental factors.eg interconnectivity, telecom infrastructure and cultural background.
3. Most of the data are conceptual i.e. it cannot be measured eg competition, customer satisfaction and liberalization.
4. Some of the factors are not steady, that is, they fluctuate due to some external factors like competition, tariff system, market segmentation, cultural background and legislation.

Research Question Two: To what extent does Telecom impact on Economic growth in Nigeria?

Our model reveals that 93.4% impact on the GDP can be predicted by the telecom variables such as number of subscribers, private investment and government expenditure. It thus could be argued that Telecommunication have great impact on the Economic growth In Nigeria since GDP is a measure of economic growth.

Research Question Three: What are the problems faced by Telecom Operators in Nigeria?

According to the president, association of telecom companies in Nigeria, Ajayi (2012), the biggest challenge facing the telecom industry is the issue of multiple taxation and multiple regulations. According to him, the main problem is the arbitrariness of the taxation. Other challenges include difficulties in obtaining access to the right of way, which is required to install some infrastructure, vandalism of equipment, poor public electricity supply, non-availability of appropriate spectrum for network roll-out. Also according the chairman Association of Licensed Telecom Operators in Nigeria, Adebayo (2012), the challenges facing telecom operators include: epileptic power supply, inadequate telecoms infrastructure, multiple taxation, and bad network of roads

Research Question Four: How does Government expenditure on Telecom affect economic growth in Nigeria?

The test of Hypothesis one showed that Government Expenditure alone has no significant impact on economic growth in Nigeria. This is not surprising considering that investment in telecommunication cannot guarantee growth if other stakeholders does not support Government policies. It is also a sign that Government expenditure in most developing countries are either in wrong places or without proper fiscal policy. Thus, not translating to meaningful impact on the GDP and lives of the masses.

Research Question Five: To what extent does number of Telecom Subscribers affect Economic growth in Nigeria?

The test of hypothesis two showed that number of Telecom subscribers in Nigeria has made significant positive impact on economic growth in Nigeria. This conclusion is in agreement with Ndukwe (2005) who stated that Telecommunications Industry has experienced exponential growth in the last four years with close about 12 million

telephone lines connected to date. Oyeniyi and Abiodun (2008) stated that Nigeria, with a Tele-density of 64.70 as at April 2011 is one of the fastest growing telecommunications market in Africa, with subscriber lines of less than 900,000 mobile (GSM) lines in 2001 and growing exponentially to about 103,347,158 million digital mobile lines by end of April 2011. Ayo and Fatudimu (2007) stated that the major sector of the economy that is experiencing a boost is the ICT and Telecoms which had brought about a Tele-density growth of 0.73 to 29.98 from 2001 to 2007. Egwu (2012) holds that Number of Telecom subscribers is a more critical factor for growth in Tele-density in Nigeria than private investment in Nigeria.

Research Question Six: To what extent does Private Investment affect economic growth in Nigeria?

The test of hypothesis three showed that Private Investment in Nigeria has not made a significant positive impact on economic growth in Nigeria. Private investment is not a serious factor for the growth of economy in Nigeria. According to Ndukwe (2000), who stated that to improve telephone density rapidly and introduce modern facilities to meet the demands of the local and international business community an investment of about \$600m US Dollars would be required per annum for network expansion In Nigeria. What Ndukwe said in the year 2000 has not been implemented since the year he said it, but the Tele-density of Nigeria has been at increase since 2001 till date, which supports the hypothesis (H₀₃), which states that private investment has not made a significant impact on the growth of economy in Nigeria.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Discussions and Summary

From the result of our analysis of the secondary data we summarize our findings as follows:

1. The level of relationship existing between GDP and the three explanatory variables (X_1 =government expenditure, X_2 =number of telecom subscribers and X_3 =amount of private investment) is the coefficient of correlation ($r=0.976$) which indicates that 97.6% correlation exists between GDP; Government Expenditure, Number of Telecom Subscribers and Amount of Private Investment.
2. The coefficient of the determination ($R^2 =95.2$) shows that 95.2% of the annual variation in GDP can be explained by the cumulative variation in the three independent variables (government expenditure, number of telecom Subscribers and amount of private investment) when all possible error in estimation is taken into consideration.
3. Equation 4.1 is considered a significant predictor of GDP as the F- significance of 0.000 is less than 0.05
4. In testing hypothesis one, the result showed that government expenditure has no significant impact on economic growth in Nigeria when considered alone.
5. In testing hypothesis two, the result showed that number of telecom subscribers has significant impact on economic growth in Nigeria.
6. In testing hypothesis three, the result showed that Private investment alone has no significant impact on economic growth in Nigeria.

5.2. Conclusion

Based on our findings, the following conclusions can be drawn.

1. Investment in telecommunication alone by Government of Private Investors cannot translate to economic growth of the economy.
2. It took the combination of investment in telecom and willingness of subscribers to use the telecommunication facilities for meaningful growth in economy to be achieved.
3. That the collective factor of number of telecommunication subscribers, Government investment and private investment in telecom is needed for growth in Nigeria's economy.
4. The result of R-Square drawn as a result of this study account for 95.2% of economic growth. The unaccounted factors not covered in this research work are 4.8%. Further research into identifying such factors can improve the value of R-Square.

5.3. Recommendations

Based on the findings and conclusions of this study, the following recommendations are made:

1. Since number of telecom subscribers has made significant impact on economic growth in Nigeria, so to demonstrate its commitment towards seriously addressing this factor in telecommunication, government should make adequate provision annually in the budget to increase telecommunication growth in Nigeria. This provision should be geared towards encouraging rural telecom subscribers and consequently improving economic growth in Nigeria.
2. Since private investment has made no significant on economic growth, it is recommended that what Ndukwe said in the year 2000 (that to improve telephone density rapidly and introduce modern facilities to meet the demands of the local and international business community an investment of about \$600m US Dollars would be required per annum for network expansion in Nigeria which will make Nigeria enjoy telecomm growth which is the fastest growing sector of the economy) be implemented.
3. It is also recommended that steady power supply be provided by the Nigerian government since that is the major problem facing telecom operators, which in turn will reduce operating cost for the telecom operators as well as reduce the cost of using the services offered by the telecom industry.
4. Also, considering the relevance of the telecommunication industry to economic growth and development, policy makers should ensure that telecommunication policies are transparent and stable. Policies and regulations should be made to promote a conducive and competitive climate for foreign investment so that the capital required for building telecom infrastructure can be met.

5.3.1. Suggestion for Further Studies

This study accounts for 95.2% of economic growth (GDP), the unaccounted factors that are not covered in this project are 4.8%. It is suggested that further research be carried out to ascertain other factors that affect economic growth in Nigeria.

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