

Empirical Investigation of Financial Intermediation and Communication Sector Growth in Nigeria, 1990-2016

Andabai, Priye Werigbelegha¹ & Bina Percy Avery²

¹Department of Finance and Accountancy, Niger Delta University, Bayelsa State. Phone No: 08037046538, E-mail: priyehc@yahoo.com.

²Department of Finance and Accountancy, Niger Delta University, Bayelsa State. Phone No: 08037046538, E-mail: priyehc@yahoo.com

Abstract

The study examined the relationship between financial intermediation and communication sector growth in Nigeria for the period, (1990-2016). Secondary data were employed and obtained from Central Bank of Nigeria Statistical Bulletin. The study proxied Communication Sector Growth by Communication Sector Output as the dependent variable; whereas, Broad Money Supply, Credit to the Private Sector, Interest Rate and Inflation Rate as the explanatory variables. Hypotheses were formulated and tested using time series econometrics techniques. The study revealed that all the variables of the study are stationary at first difference. The study shows the existence of at least one co-integrating relationship at 5% level of significance. The study revealed a short-run equilibrium significant relationship between financial intermediation and communication sector growth in Nigeria. There is no causal relationship between financial intermediation and communication sector growth in Nigeria. The study concluded that had financial intermediation not significantly contributed to communication sector growth in Nigeria. The study recommended that for the economy to grow, the communication sector should be encouraged in form of concessional and reduced interest rate. The study suggests that regulatory authorities should stabilize the interest rate which is capable of ensuring price stability and maintaining inflation to a single digit. This may have built confidence in the financial institutions and will enable them to introduce innovations to boost communication sector growth in the economy. Policy makers should adopt vibrant economic policies such as interest rate stability, flexible exchange rate, indigenization and economic diversification which will encourage the banks in financing the communication sector.

Keywords: Financial, intermediation, communication sector, growth and Nigeria.

1.0 Introduction

Financial intermediation serves as a veritable tool for growth and development of any modern economy (Nzotta, 20140). The communication sector had been identified as one of the fastest growing sectors in the economy; because, the sector has increasingly contributed to the growth and development of the Nigerian economy (CBN, 2016). This is in line with the work of Chidoka, Lambo and Ajunamo (2015), which indicates a positive significant relationship between financial services and communication sector growth in Nigeria. Hence, the study concludes that certain levels of development have been recorded in the communication sector particularly in terms of its contribution to economic and development in Nigeria. This is supported by the work of Bakular (2013) who found that effective and efficient financial intermediation in Nigeria is attributable to high level of investment in information communication technology. Thus, study suggests that banks in Nigeria should encourage their customers by providing regular information which will guarantee customer involvement in information development.

2.0 Theoretical Framework

This study is anchored on the financial intermediation theory by Gurley and Shaw (1967). The theory explains the role of bank credit in an economy. According to the theory, the business of financial intermediation in any modern economy is to provide a mechanism to draw financial flows from financially exceeding agents to those having a financial need in the economy. This means that banking institution can influence communication sector growth by extending credit to the sector. The empirical works of Oladejo and Adereti (2010), Oluwadede (2014) reveal that bank credit also promotes the function of financial intermediation in the communication sector. They conclude that the function of financial services had enhanced communication sector growth and development through an effective capital accumulation and investments in the sector. Their argument further corroborate the work of Babajide and Madabuichi (2013) which state that financial institutions acts as a shock absorber to growth and development of productive sector.

The role of bank credit to communication sector in stimulating economic growth and development cannot be over emphasized Duebgo (2014). As a result, this is one of the most important sources of financing firms; especially, in countries where capital markets are not fully developed. Nzotta (2014) posits that bank credit is one of the important aspects of financial intermediation that provide funds to economic entities that can put them to the most productive investment in an economy. They conclude that credit availability for consumption and investment are capable of raising the level of private sector output and create employment opportunities in the economy. Hence, banks should finance any positive net present value project if the cost of investment is below the expected returns. Based on these contributions, there is a justification for anchoring this study on endogenous growth model and financial intermediation theory.

2.1 Empirical Review

Chidoka, Lambo and Ajunamo (2015) examined the role of bank credit financing and the communication sector development in Nigeria for a period of 29 years 1986-2014. The variables are: Gross Domestic Product, Interest Rate, Exchange Rate, Inflation Rate and Credit to the Private Sector. Multiple regression analysis was used to test the hypotheses. Findings reveal a positive significant relationship between bank credit financing and the communication sector development in Nigeria. The study concludes that certain levels of development have been recorded in the communication sector particularly in terms of its contribution to the Nigerian economy. Oladejo and Adereti (2010) evaluated the effect of information technology on the performance of micro-finance banks in Nigeria for a period of 22 years (1988-2009). Regression analysis was also employed to test whether there is any significant effect of information technology on micro-finance banking services in Nigeria. The study reveals effective and efficient micro-finance banking in Nigeria is attributable to high level investment in information technology. The study concludes that information technology is a very wide area in which new things are being discovered on daily basis. Thus, banking institutions in Nigeria should encourage their customers by providing quality services to them. Bakular (2013) used a multiple regression analysis to examine the role of private sector credit and communication sector performance in Nigeria over the period, 1984-2013. Gross Domestic Product (GDP), Bank Lending (BL), Broad Money (M_2), Interest Rate (INT) and Inflation Rate (INFL) were used as variables for the study. The results show a positive significant relationship between private sector credit and communication sector performance in Nigeria.

Oluwadede (2014) employed Ordinary Least Square (OLS) use a regression model to investigate the role of bank credit and communication sector growth in Nigeria for a period of 34 years (1980-2013). Gross Domestic Product, Total Credit, Exchange Rate, Inflation and Interest Rate were used as variables. The results of the estimation show that there is a positive significant relationship between bank credit and communication sector growth in Nigeria. The study concludes that increased credit to the sector will engender higher growth and development in the economy. Duebgo (2014) adopted Error Correction Model (ECM) to determine the effect of banking institutions on the communication sector growth in Nigeria using time series data for a period of 26 years (1989-2014). Gross Domestic Product (GDP), Credit to the Private Sector (CPS), Broad Money (M_2) and Exchange Rate (EXR) were used as variables for the study. Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) unit root tests were conducted. All the variables were integrated of order one i.e., $I(1)$. The findings show that there is a positive significant effect of banking institutions on the communication sector growth in Nigeria.

Rangger (2014) investigated the contributions of banking sector's credit to communication sector growth of the Italian economy for a period of 33 years (1981-2013). The study used Deposits, Investments Growth, Advances, and Interest Earnings as variables for the study. Augmented Dickey Fuller (ADF) and Philips-Perron (PP) unit root tests, Ordinary Least Square tests were used for the analyses. Unit root test confirms the stationarity of all the variables at first difference. Regression results indicate that deposits, investments growth, advances, and interest earnings have negative effect on communication sector growth in the Italian economy. The Granger-Causality test confirms no causal effect of deposits, advances on communication sector growth. Babajide and Madabuichi (2013) examined the role of banking services and communication sector development in Nigeria for a period of 25 years (1989-2013). Communication Sector Growth, Bank Loans and Interest Rate, Inflation Rate and Exchange Rate were used as variables for the study. Granger-Causality test was detailed for the analysis. The result indicates no causal relationship between financial services and communication sector development in Nigeria. The study concludes that, the non causal relationship between financial services and communication sector development in Nigeria indicates the presents of independent hypothesis in the Nigerian economy.

3.0 Methodology

The study applied *ex-post-facto* research design to source requisite information. An *ex-post-facto* research design is a systematic empirical inquiry that requires the use of variables which the researcher does not have the capacity to change its state or direction in the course of the study. Data for this study were sourced from the Central Bank of Nigeria Statistical Bulletin, 2016. The variables used for this study are stated as follows: CMSO, CPS, INT, M₂ and INFL. Where: CMSO = Communication Sector Output as the dependent variable of the study. Financial intermediation variables (explanatory variables) include: CPS= Credit to the Private Sector. INT=Prime Lending Rate. M₂=Broad Money Supply. INFL= Inflation Rate.

3.1 Model Specifications

Model specification is the determination of the endogenous and exogenous variables to be included in the model as well as the a priori expectation about the sign and size of the parameters of the function (Ibenta, 2012). Multivariate linear regression model is used to test the null hypotheses proposed for the study: There is no long-run equilibrium relationship between financial intermediation and communication sector growth in Nigeria, There is no causality between financial intermediation and communication sector growth in Nigeria. Based on these hypotheses; a model by Bakular (2013) is adopted and stated as:

$$GDP = f(BL, INT, INFR, M_2)$$

Where:

GDP = Gross Domestic Product is proxied for communication sector output as the dependent variable

BL= Bank Loan proxied by credit to the private sector as independent variable

INFR = Inflation Rate

M₂= Broad Money Supply

INT= Interest Rate (Prime Lending Rate)

The above model is modified in this study by using communication sector output as proxy for GDP was adopted as dependent variable; whereas, introducing credit to the private sector as explanatory variable. Credit to the private sector is introduced because multicollinearity does not exist. The modified function is stated as:

$$CMSO = f(CPS, INT, M_2, INFL) \dots \dots \dots (1)$$

The equation form for the model is stated as:

$$\ln(CMSO) = \delta_0 + \delta_1 \ln CPS + \delta_2 \ln M_2 + \delta_3 \ln INT + \delta_4 \ln INFL + \mu_t \dots \dots \dots (2)$$

Where:

CMSO = Communication Sector Output proxy for Gross Domestic Product as dependent variable

CPS = Credit to the Private Sector proxy for bank loan.

M₂ = Broad Money Supply

INT = Interest Rate (Prime Lending Rate)

INFL = Inflation Rate

δ_0 = intercept and δ_1 , δ_2 , δ_3 and δ_4 are the coefficients of the regression equation. μ is the stochastic or error term while Ln is the natural log of the variables. Log transformation is necessary to reduce the problem of heteroskedasticity because it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference (Gujarati, 2003).

4.0 Data Analysis and Discussion

An of observations 27 years of time series data for the period, 1990-2016 were collected from CBN Statistical Bulletin and presented as follows: Time series econometrics techniques were used to test the hypotheses: There is no long-run equilibrium relationship between financial intermediation and communication sector growth in Nigeria, There is no causality between financial intermediation and communication sector growth in Nigeria.

4.1 Data Presentation and Analysis

The tests for stationary of the variables were done using the Augmented Dicker Fuller (ADF) Unit Root Tests. The results in **table 1** show that all the variables are integrated at levels i.e. I(1) at the 5% or 1% level of significance.

Table 1: Unit Root Tests Analysis

Variables	ADF test Statistics	Mackinnon critical vale @ 5%	No of the time difference	Remark
CMSO	3.6293645	-2.564879	1(1)	Stationary
INT	-6.1325974	-2.214365	1(1)	Stationary
M ₂	-5.8112004	-2.112398	1(1)	Stationary
INFR	3.7387972	-2.523184	1(1)	Stationary
CPS	2.2062256	3.142653	1(1)	Stationary

Source: Researcher's Estimation using- E-views 3.1.

Notes: (1)1% level of significance, 5% level of significance, 10% level of significance.

(2) The tests accepted at 5% level of significance.

(3) Decision rule -The critical value should be larger than the test statistical value for unit root to exist.

4.1.1 Co-integration Test

Having established that all the variables in the model are stationary, the study then moves on to test for long-run relationship between the dependent and the independent variables using the Johansen Co-integration test (Johansen, 1991).

Table 2: Co-integration Test for CMSO, CPS, M₂, INT, INFL

Hypothesized No. of CE(s)	Max-Eigen		Trace	
	Statistic	Critical Value	Statistic	Critical Value
None	35.38812*	33.87687	73.89599*	69.81889
At most 1	21.50345	27.58434	38.50787	47.85613
At most 2	10.87421	21.13162	17.00442	29.79707
At most 3	6.057300	14.26460	6.130209	15.49471
At most 4	0.072908	3.841466	0.072908	3.841466

Source: Author's computation from E-views 8.0

Trace test indicates 1 co-integrating equation (s) at 5% significant level

Max-eigenvalue test indicates 1 co-integrating equation (s) at 5% significant level

* denotes rejection of the hypothesis at 5% significant level

The result in table 2 examines the presence of long-run relationship among financial intermediation variables (CPS, M₂, INFL and INT) and communication sector growth. The FPE and AIC lag length selection criteria shown in table 2 indicate that the co-integration should be carried out at order 1 to 2. The result in table 2 indicates one co-integrating equation for Trace and Max-eigen value tests.

4.1.2 Vector Error Correction Mechanism

Given the existence of co-integrating equations in the model employed for this study, it becomes ideal to carry out Error Correction Mechanism (ECM) test in order to determine the short-run dynamics of the relationships. Thus, the Vector Error Correction Mechanism (VECM) was conducted to determine the speed of adjustment financial intermediation and communication sector growth relationship in Nigeria. Hence, this is to find out whether short-run disequilibrium can be returned to long-run equilibrium trend.

Table 3: VECM Test for Financial Intermediation and CMSO

Error Correction:	D(CMSO)	D(CPS)	D(INFL)	D(M ₂)	D(INT)
CointEq1	0.004199	0.004311	-5.114806	-0.016660	-0.277561
	(0.05420)	(0.01165)	(0.98967)	(0.00737)	(0.29687)
	[0.07748]	[0.37011]	[-5.16820]	[-2.25975]	[-0.93495]

() is standard error and [] are the t-statistics

Source: Author's computation from E-views 8.0

Error correction term coefficient is (0.004199) as shown in table 3. The result of the error correction term coefficient is positive and therefore not rightly signed. This reveals that the short-run adjustment to long-run equilibrium is not statistically significant. Thus, we conclude that financial intermediation has no significant short-run relationship with communication sector growth in Nigeria.

4.1.3 Granger Causality Analysis

The null hypothesis is: Independent variable does not granger cause the dependent variable. The decision rule is to reject the null hypothesis, when the Chi-Square statistics and their corresponding probability values are less than (5%) level of significance. Otherwise, do not reject the null hypothesis.

Table 4: Granger Causality/Block Exogeneity Wald Test for financial intermediation and Communication Sector Growth.

Variable	Chi-sq	df	Prob.
CPS	0.340547	1	0.5595
INFL	0.000342	1	0.9852
M ₂	0.179984	1	0.6714
INT	0.516903	1	0.4722
All	1.682226	4	0.7939

Source: Author's computation from E-views 8.0

Note: Dependent variable: CMSG, * denotes significant at 1%, ** denotes significant at 5%;

*** denote significant at 10%.

This indicates that all the variables do not have causality with communication sector growth in Nigeria. The total Chi-Square values and the causality among all the exogenous variables in the CMSO model, is insignificant as shown in table 4. This implies that all the exogenous variables jointly have no causality with the communication sector growth (CMSO). Hence, the study concludes that financial intermediation variables (CPS, INFL, M₂ and INT) do not granger causes communication sector growth in Nigeria.

5.0 Conclusion

Findings from this study have shown that financial intermediation variables do not granger-cause communication sector growth in Nigeria. This result corroborates the work of Babajide and Madabuichi (2013), who found that there is no causal relationship between financial intermediation and communication sector growth in Nigeria. The non-causal relationship between financial intermediation and communication sector growth in Nigeria indicates the presence of independent hypothesis in the Nigerian economy. Thus, it implies that financial intermediation services have no link with communication sector growth in Nigeria. Hence, the result shows that there is no significant short-run equilibrium relationship between financial intermediation and communication sector growth. This implies that government policies that are made to increase credit to the communication sector have not significantly improved the sector's growth within a short period in Nigeria.

5.1 Policy Implications and Recommendations

The study recommends that government should formulate functional policies such as price stability, full employment, exchange rate stability, economic growth and favourable balance of payment in order to cushion short-run economic problems such as inflation rate, interest rate and exchange rate fluctuations in the communication sector. The monetary authorities should stabilize the interest rate which is capable of ensuring price stability and maintaining inflation to a single digit. This may build confidence in the banking institutions and will enable them to introduce innovations to boost communication sector growth in the economy. The study suggest that CBN and the policy makers should have a common ground in order to establish specialized banking institutions that will be responsible for financing the communication sector investments in the economy. CBN should reduce the legal reserve and liquidity ratios respectively in order to increase the flow of investable funds which may improve the capacity of banks to extend credit to the communication sector.

5.2 Contribution to Knowledge

The study was able to modify the model, expand the existing literature and updated data that will enable researchers and scholars to use it for further studies. The study concludes that financial intermediation has not significantly contributed to the growth and development of the communication sector in Nigeria. The factors responsible for this

can be traceable to inadequate provision of financial services by the financial intermediaries, economic and political instability and inability to implement the formulated policies by the regulatory authorities.

References

- Andabai, P. W. (2016). Empirical investigation on the relationship between bank credit and private sector growth in Nigeria. An unpublished PhD thesis submitted to the department of banking and finance. School of postgraduate studies, Anambra State University, Nigeria.
- Akpanlung, A. O. & Babalola, S. J. (2012). Banking sector credit and private sector growth in Nigeria: An empirical investigation. *CBN Journal of Applied Statistics*, 2(2), 52-62. Retrieved from <http://www.cenbank.org> on 11/03/15.
- Andabai, P. W. & Bingilar, Paymaster .F. (2015). Deposit mobilization and lending behaviour of banks in Nigeria. *International Journal of Advanced Studies in Business Strategies and Management*, 3(1), 243-255. Retrieved from <http://www.internationalpolic.org/Journals> on 23/10/15.
- Aniekan, O. A & Babalola, S. J. (2009). Banking sector credit and economic growth in Nigeria. *CBN Journal of Applied Statistics*, 2(2), 34-45.
- Ayeni, R. K. (2014). Macroeconomic determinants of bank credit and private sector investment; An ARDL approach: Evidence from Nigeria. *Global Advanced Journal of Management Business Studies*, 3(2), 82-89. Retrieved from <http://gerij.org/full-articles.ng.on> 24/03/14.
- Babajide, J. K. & Madabuichi, D. R. (2013). Banking services and communication sector development in Nigeria. *Journal of Research in Economics and Management Studies*, 6(1&3), 22-36. Retrieved from www.info/aejournals/eejorind.org on 21/04/15.
- Bakular, S. (2013). The role of financial development and communication sector performance in Nigeria. *Journal of Sustainable Development*, 4(6), 32-44.
- Busari, D. & Olayiwola, S. A. (2001). Unleashing the private sector in Nigeria. *Journal of Political Economy*, 10(46), 1006-1038.
- Chidoka, A., Lambo, G. & Ajunamo, S. (2015). Financial development and communication sector development in Nigeria. *Research Journal of Interdisciplinary Studies*, 2(1&2), 53-65. Retrieved from <http://.rjdi.edu.ng> on 16/10/15.
- Duebgo, G. (2014). The importance of banking institutions and the communication sector growth in Nigeria. *Journal of Economic and Development Studies*, 6(3), 73-84.
- Ibenta, S. N. O. (2012). *Research Monograph: Guidelines for Seminar Papers, Theses Project Reports*. 22-28 Regina Caeli Road, Awka, Anambra State.
- Nzotta, S. M. (2014). *Money, Banking and Finance: Theory and Practice*. Revised Edition, Hudson-Jude. Owerri, Nigeria.
- Oladejo, M. O. & Adereti, A. S. (2010). Impact of information technology on the performance of micro-finance institutions in Nigeria. *International Journal of Economic Development Research and Investment*, 1(1), 105-122. Retrieved from <http://www.icidr.org> on 11/05/15.
- Oluwadede, A. (2014). The role of bank credit and communication sector growth in Nigeria. *Journal of Business and Development Research*, 3(5), 34-46.

Appendix 1

Financial Intermediation and Communication Sector growth in Nigeria (1990-2016)

Year	Communication Sector Growth (N' Billions)	Lending Rates (Prime)%	Broad Money Supply (N' Billions)	Inflation Rate (%)	Credit to the Private Sector (N' Billions)
1990	1.3	25.50	52.86	3.6	33.55
1992	2.2	29.80	111.11	48.8	58.12
1993	2.6	18.32	165.34	61.3	127.12
1994	3.1	21.00	230.29	76.8	143.42
1995	3.3	20.18	289.09	51.6	180.00
1996	3.9	19.74	345.85	14.3	238.60
1997	4.6	13.54	413.28	10.2	316.21
1998	5.2	18.29	488.15	11.9	351.96
1999	5.7	21.32	628.95	0.2	431.17
2000	6.4	17.98	878.46	14.5	530.37
2001	7.2	18.29	1,269.32	16.5	764.96
2002	9.3	24.85	1,505.96	12.2	930.49
2003	12.9	20.71	1,952.92	23.8	1,096.54
2004	17.1	19.18	2,131.82	10	1,421.66
2005	21.6	17.95	2,637.91	11.6	1,838.39
2006	27.9	17.26	3,797.91	8.5	2,290.62
2007	165.5	16.94	5,127.40	6.6	3,668.66
2008	243.6	15.14	8,008.20	15.1	6,920.50
2009	249.9	18.99	9,419.92	13.9	9,110.86
2010	256.0	17.59	11,034.94	11.8	10,157.02
2011	262.6	16.02	12,172.49	10.3	10,660.07
2012	294.5	16.79	13,895.39	12	14,649.28
2013	333.7	16.72	15, 158.62	8.0	15,778.31
2014	366.9	16.55	17, 680.52	8	17,128.98
2015	274.7	17.02	15, 158.62	18.4	15,778.31
2016	253.4	17.54	17, 680.52	19.9	17,128.98

Source: Central Bank of Nigeria Statistical Bulletin 2016.