

Nexus between Internet Penetration and Financial Inclusion in Nigeria

Michael Chukwunaekwu Nwafor

Department of Accounting and Finance, Godfrey Okoye University, Enugu, Nigeria.

Abstract: This study examined the relationship between internet penetration and financial inclusion in Nigeria. Frequencies, percentages and tables were used to present data while obtained data was tested for empirical evidence using Two-staged regression analysis in E-views 10. Findings revealed that internet penetration has significant impact on financial inclusion in Nigeria within the period under review. It was recommended that there is need for the adoption of highly internet based transactional policies that will ensure that the financially excluded is reached easily.

Keywords: Internet penetration; Financial inclusion; Fintech

I. INTRODUCTION

The tremendous influence exerted by the World Wide Web (www) or the internet on personal and firm financing has become a major topic of discussion throughout the globe. Over the years, internet-based technologies, such as mobile payments, social networks, search engines and cloud computation, have plunged the financial sector into a higher dimension. Internet finance has been rendering earth-shaking changes in our daily living and economic activities, among which changes in individual or firm financing are far-reaching in terms of financial development. It is also very obvious that access to the Internet on its own has made a huge difference on individual and corporate access to finance. The use of digital devices such as internet enabled mobile smartphones for the provision of financial services has become the new way of availing the unbanked population more opportunities of partaking in the formal financial system. Mobile money services have increased the access of financial products and services to rural people at a reasonable cost (Thulani et al, 2014). The Internet can perform well in terms of convenience, transactional efficiency, choice, and access to competitive prices and returns and can also be accessed from anywhere, be it at home or office. It allows greater access to service providers than can be found in the high street or over the telephone.

On the other hand, financial inclusion is one of the unspoken key drivers for building an inclusive society and economy. The levels of financial inclusion and development vary widely among nations of the world. Financial inclusion is on the rise globally and a recent report by the (World Bank, 2018) reveals that this rise has been accelerated by the use of the internet which has not been the case in the past years where formal financial services have been out of reach for a vast number of people. According to the report, gains have been

uneven across countries and people are entering into a new kind of social structure in which mobile banking plays an important role. The report also revealed that men had a higher ratio of owning bank accounts than women. It is Globally recorded that 69% of adults (3.8 billion people) now have a bank account or a mobile money provider which is a crucial step in evading poverty. This is an increase from 62% in 2014 and 51% in 2011. Based on the Global Findex database Between 2014 and 2017, it was revealed that 515 million adults became bank accounts owners adding to the already existing 1.2 recorded since 2011.

Numerous financial technology (Fintech) which refers to innovative financial services or products delivered via technology, are attempting to create greater financial inclusion for the un(der)banked (Tatjana, 2016). Mobile financial services like Mobile Money Services and mobile insurance are expected to enable financial inclusion so as to offer un(der) banked consumers greater access to the benefits of traditional banking institutions and lower cost alternative financial services. The goal of making financial services available via the internet and digital platforms is to effect a reduction in the level of poverty and to also contribute to the financial inclusion objectives of developing economies (United Nations, 2016).

As a pillar in digital technology, the internet is fast becoming a major driving force for financial inclusion around the world, enabling millions of people and businesses to partake in the global economy for the first time (Manyika et al, 2016). Digital financial inclusion has tremendous benefits as it has the capacity to reduce the cost of operation in banks by reducing long queues often encountered in banking halls, thereby reducing the cumbersome manual paperwork and bulky documentation which necessitates a reduction in the number of bank branches. Digital financial inclusion offers large number of depositors the capability of easily switching banks within a short time, compelling banks to deliver quality services or stand the risk of losing customers to rival banks. For financial and monetary system regulators, digital financial inclusion also helps to reduce the amount of physical cash in circulation and is instrumental in reducing high inflation levels in developing and poor countries (GPII, 2016).

Access to financial services is critical for global development, as it eases investment in health, education and business thereby offering a powerful way to boost financial access. With the unfolding of Financial Technology, digitally-enabled

financial facilities are radically expanding the ways in which people transact beyond traditional banking by increasingly digitizing traditional channels. The key features of digital financial services which are ease of use, scalability, and customer-centric design, promote affordability and convenience. This, reinforces their adoption and stimulates financial access and inclusion. Regardless of the achievements so far, there is room for much more growth. Existing data points to an array of opportunities to expand digital offerings in developing countries. Globally, almost 90% of people have their own mobile phone, while 58% have access to the internet in addition to owning a mobile phone

Statement of Problem

Regardless of its benefits, digital financing has not adequately permeated vast segments of the world population (G20 Summit, 2013), which suggests an existing gap between the availability of finance, its accessibility and use. This gap is largely hinged on the poor access to internet services which is the mechanism that drives Digital Financial Technology.

Globally, about 1.7 billion people remain unbanked, yet two-thirds of them own a mobile phone that could help them access financial services. Certainly, more than half of these unbanked people live in developing economies like Bangladesh, India, Indonesia, Nigeria, and Pakistan. People who live in urban areas are more likely to benefit from digital financial inclusion due to their higher rate of income than those in the rural areas. In a study using household survey data for transition economies, Beck & Brown (2011) show that banking services and its digital platforms are more likely to be used by households in urban areas, and those with greater income and wealth. This implies that individuals with relatively high income in urban sectors have greater reason to partake in the digital financial system, however, poor individuals in rural areas might not be able to actively partake in the digital financial system due to limited income. Besides, even if the poor partake in the digital finance system, they may lack the incentive to use the digital platform to engage in financial transactions that have little monetary value due to their low income. Therefore, this study seeks to examine the impact of the internet as a tool for accelerating financial inclusion.

Objectives of the Study: To examine if the rate of internet penetration in Nigeria have any significant impact on insurance inclusion.

Hypothesis: Internet penetration has no significant impact on financial inclusion in the Nigeria.

II. THEORETICAL BACKGROUND

Financial technology, as well as digital financial services, alongside with mobile insurance serve as means of achieving economic financial inclusion for the financially excluded. However, these online financial services require Internet access, acceptance and digital literacy. Theories of

information irregularities and cost of transaction help in clarifying the financial limitations encountered by the under banked.

Diniz, Birochi, & Pozzebon (2012) suggest that ICT bridges a financial infrastructural gap for service providers to include new customers who were excluded from a financial substructure. ICT assists the allocation and transfer of financial credit by improving access to credit and deposit facilities thus boosting financial inclusion.

The positive characteristic of telecommunications network is its capability of supporting costless flow of information to market participants (Andrianaivo, & Kpodar, 2012). This certainly aids in solving the problem of information asymmetry and cost of transaction (Norton, 1992), particularly in supplying financial services to the previously underserved. The revolution in ICT implies that cost of financial services will reduce translating into increased consumer surplus thereby fostering financial inclusion for the financially excluded.

III. EMPIRICAL REVIEW

The concept of actualizing financial inclusion through the Internet banking and digital financing has been in existence for a while. Though research with regards to financial inclusion via mobile and Internet banking in African countries has been reasonably extensive, there has not been any thorough literature addressing the concept of financial inclusion with regards to internet penetration. Besides, most of the related studies focused on e-banking or mobile banking have been descriptive in nature.

Sreedevi & Meena (2011) argued that the existence of ICT in the banking industry provided numerous advantages such as easy access to banking products and services, insurance services, financial education, adequate credit, and financial information or consultation and just as we have earlier pointed out, both mobile and Internet banking play a major role in building an inclusive financial system of a country. It is also evident that the widespread use of the internet stimulates economic growth through financial inclusion.

According to Andrianaivo & Kpodar (2012), mobile phone penetration affects economic growth positively. Besides, the relationship between mobile phone penetration rates and financial inclusion is positive and significant. Also, Mago & Chitokwindo (2014) carried out a qualitative survey in Masvingo district in Zimbabwe and established that economically underprivileged people in Zimbabwe have adopted mobile banking because it is easily accessible, fast, cheap, and secure. In a related study, with the use of the Generalized Method of Moment (GMM), Kpodar & Andrianaivo (2011) establish that mobile phone rollout significantly spurs economic growth in Africa, as it fosters financial inclusion. The evolution of Digital financial services in most parts of Africa support growth at both the national level, as well as the firm level supporting a proposition that

sustained growth is achievable through greater financial inclusion. Current research suggests that technological deepening further deepens the financial process and ultimately leads to inclusiveness.

Furthermore, researchers considered that the use of Internet and mobile phones establishes a good social network among individuals and with evidences from empirical research, Aker & Mbiti, (2010) established that the use of internet and mobile phones can be beneficial to consumers, as well as producers. Consumers can know the exact price of a product by comparing all prices, and producers can conduct business in new markets and set up new business networks. In line with the above, Ouma et al (2017) conducted a study in a few selected countries of Sub-Saharan Africa and established that the use of mobile phones increases saving among poor and low-income households. This increase in savings and deposits was a sign of increased financial inclusion, which ultimately has a positive impact on the financial health of the country.

IV. METHODOLOGY AND DATA ANALYSIS

In testing for the relationship between internet penetration and financial inclusion, OLS regression method was employed using Stata 13. Simple regression model will be used to reflect the relationship between internet penetration and financial inclusion.

Simple regression technique is illustrated as:

$$y = \beta_0 + \beta_1x + \mu$$

where y – the dependent variable; x – independent variable; β_0 – intercept; β_1 – slope; μ – the error term

In this study, it will be applied as thus

$$BRTD = \beta_0 + \beta_1INTPE + \mu$$

where BRTD – the dependent variable; INTPE – rate of internet penetration in Nigeria; β_0 – intercept; β_1 – slope; μ – the error term

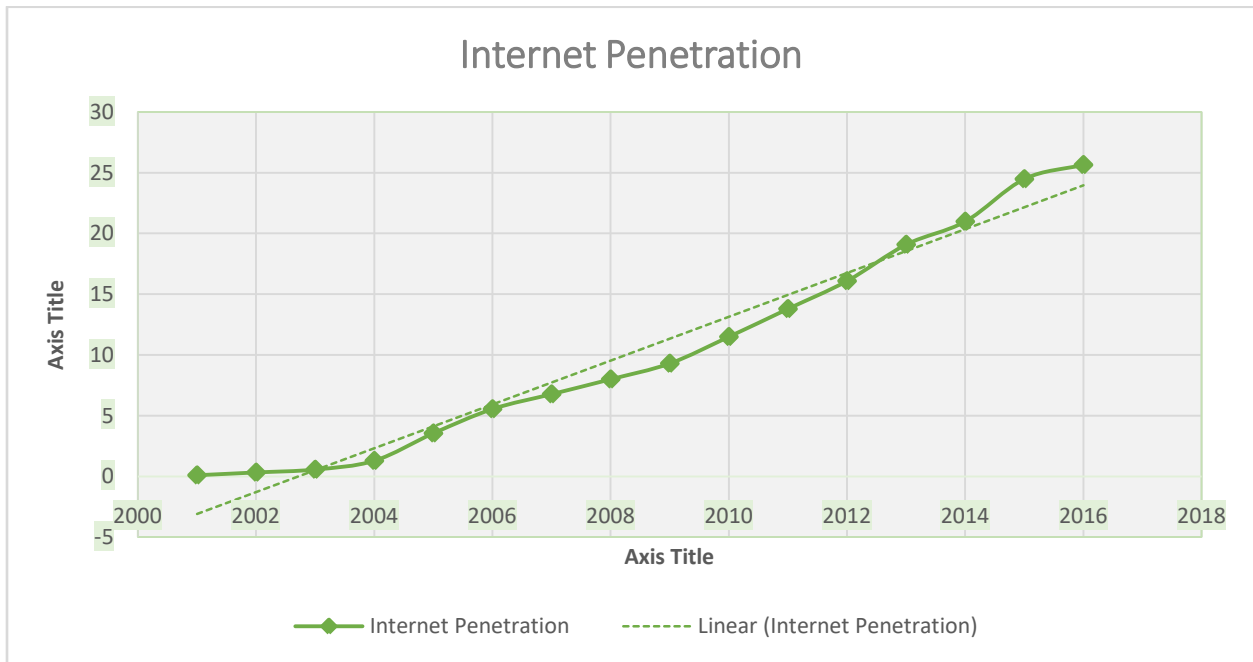
Table 1 Internet Penetration and Bank Deposit from 2001 to 2016

Year	Internet Penetration	Bank Deposit in Rural Areas (₦' Million)	Bank Deposit (₦' Million)	BRTD
2001	0.08990137	16875.9	448021.4	3.766762
2002	0.320461976	14861.6	503870.4	2.949489
2003	0.558576245	20551.8	577663.7	3.557745
2004	1.286137641	64490	728552	8.851805
2005	3.549155718	18461.9	946639.554	1.950257
2006	5.545036083	3118.6	1497903.726	0.208198
2007	6.77	3082.3	2307916.201	0.133553
2008	8	13411.80756	3650643.888	0.367382
2009	9.3	3296.227358	3386526.453	0.097334
2010	11.5	20.79	3830281.955	0.000543
2011	13.8	20.18407291	4920850.243	0.00041
2012	16.1	19.72321704	5069992.021	0.000389
2013	19.1	20.5	5160846.596	0.000397
2014	21	396.4024933	5248874.199	0.007552
2015	24.5	62073.7475	5873453.273	1.056853
2016	25.67	94077.22281	5980935.221	1.572952

Source: Computed from CBN Statistical Bulletin (2017) and World Bank Database

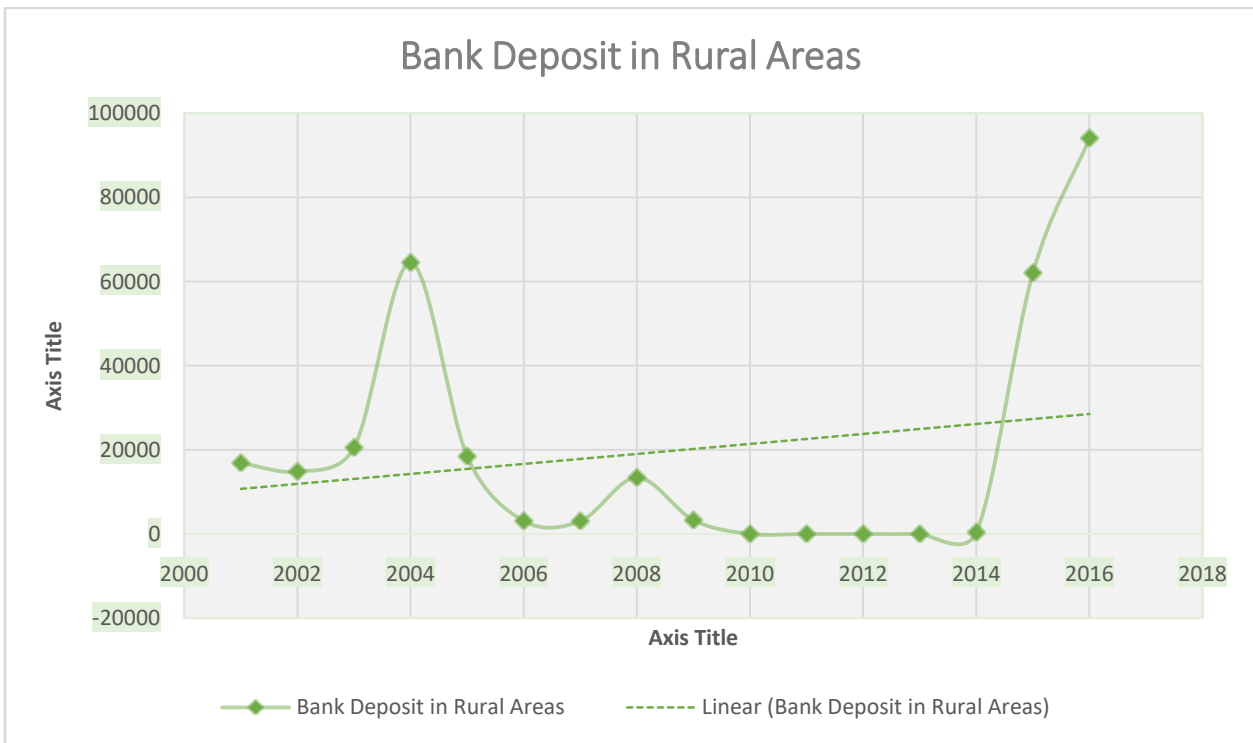
BRTD: Bank Deposit in Rural Areas to Total Bank Deposit

Chart 1 Internet Penetration (Individuals using the internet % of total population) in Nigeria from 2001 to 2016



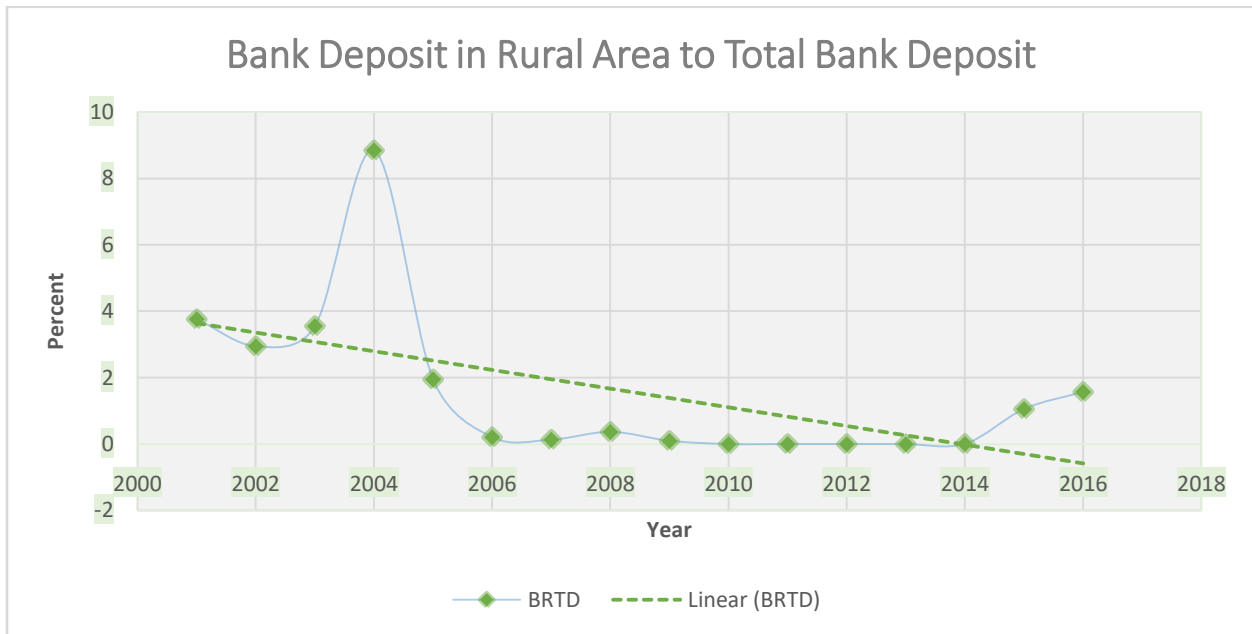
The trend in the above chart shows that internet penetration has been on a stepwise increase.

Chart 2 Bank Deposit in Rural Areas from 2001 to 2016



This shows a sluggish increase in the banking of the rural areas in Nigeria which is a reflection of low financial inclusion.

Chart 3 Financial Inclusion (% of bank deposit in rural areas to Total Bank Deposit) 2001 to 2016



This shows a decline in financial inclusion in Nigeria almost same pace inversely as table 1.

Table 2 OLS Regression from E-views Output

```
. regress BRTD INTPE
```

Source	SS	df	MS			
Model	22.9874055	1	22.9874055	Number of obs =	16	
Residual	60.9310046	14	4.35221462	F(1, 14) =	5.28	
Total	83.9184101	15	5.59456067	Prob > F =	0.0375	
				R-squared =	0.2739	
				Adj R-squared =	0.2221	
				Root MSE =	2.0862	

BRTD	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
INTPE	-.1417699	.0616871	-2.30	0.037	-.2740755	-.0094643
_cons	3.013115	.8288612	3.64	0.003	1.235385	4.790846

Source: Stata 13 OLS Regression Output

The above regression output can be expressed as

$$BRTD = 3.013115 - 0.1417699INTPE + 2.0862$$

The R-squared of 0.2739 shows that only about 27% of the variation in the dependent variable (BRTD) can be explained by the independent variable (INTPE). The model fit is good as shown by the P-value of 0.0375. Internet penetration showed statistical significance in influencing BRTD. The slope of [-

.1417699] shows that at every percentage increase in internet penetration, financial inclusion (proxied by BRTD) will drop by 14%.

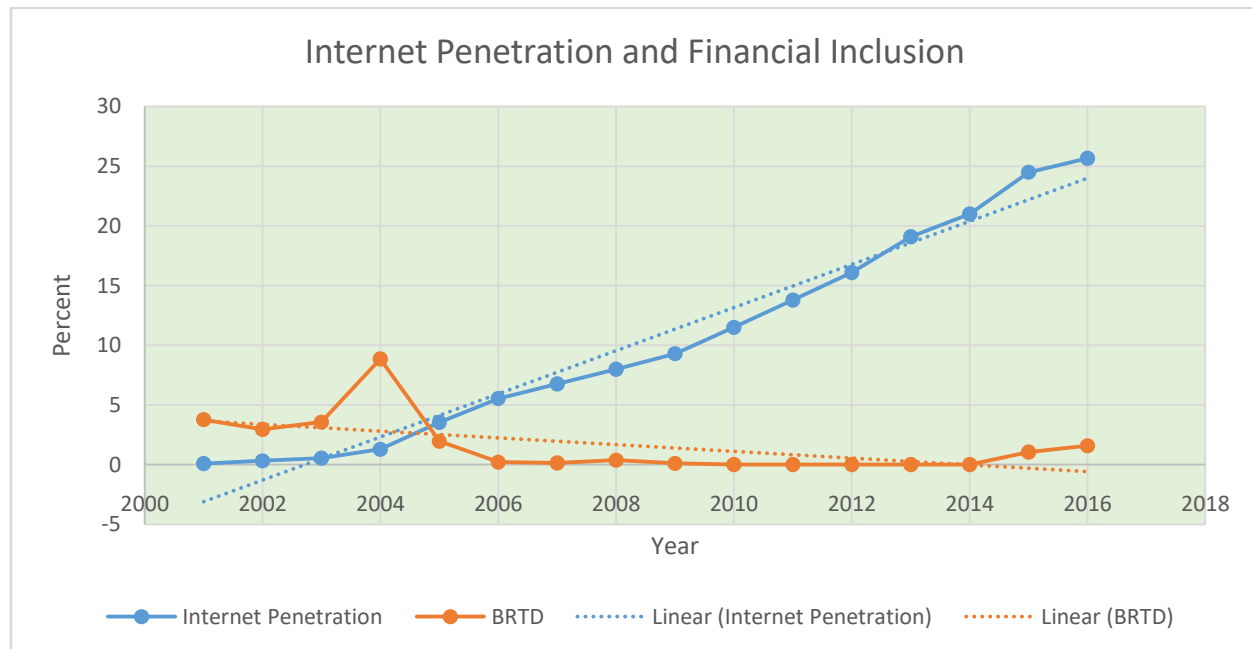
Hypothesis: Internet penetration has no significant impact on financial inclusion in the Nigeria

The null hypothesis will be rejected if level of significance in the above Stata output is higher than [.05].

The level of statistical significance of the variable [INTPE] in influencing [BRTD] is [.0375]. Hence, the null hypothesis is rejected and it is established that internet penetration has significant impact on financial inclusion. To further make our finding more specific, the slope will be considered as well. The slope reveals the nature and type of relationship existing between these duos. The slope of [-.1417699] shows that an

inverse relationship exists between internet penetration and financial inclusion [This should be taken applicable only in Nigeria within the specified time and dataset scope in this research]. This points to the fact that internet penetration and its associative financial development in Nigeria has not been fully maximized. The dataset also reflects that as shown in chart 4 below

Chart 4 Internet Penetration and Financial Inclusion (BRTD) from 2001 to 2016



This shows a disproportional inverse relationship between internet penetration and financial inclusion in Nigeria.

V. CONCLUSION AND RECOMMENDATION

The spread of innovative mobile and online financial services like e-banking, money transfers, and processing of payment have the capacity to provide access to basic financial products and services to financially excluded people and entities. These online financial services, however, require Internet access, adoption, and digital literacy.

The finding in this study has very significant policy implications. First, it highlighted the importance of internet in achieving a greater financial inclusion in Nigeria which calls for the adoption of highly internet based transactional policies that will ensure that the financially excluded is reached easily. Banks and other financial institutions should design products that will reach the financially excluded. This will not just improve the financial system of Nigeria; it will also improve the personal development of the people. Also, the deduction from the regression output which reflect the inverse relationship between internet penetration and financial inclusion shows that the financial industries in Nigeria has been underperforming when compared with similar developing economies.

REFERENCES

- [1]. Aker, J., & Mbiti, I. (2010). Mobile phones and economic development in Africa. *J Econ Perspect*, 207–232.
- [2]. Andrianaivo, M., & Kpodar, K. (2012). *Mobile phones, financial inclusion, and growth*. Review of Economics and Institutions.
- [3]. Andrianaivo, M., & Kpodar, K. (2012). Mobile phones, financial inclusion, and growth. *Review of Economics and Institutions*, 3(2), 30.
- [4]. Bank, W. (2018). World Bank Projects 2.5% Growth for Nigeria in 2018. *BUSINESS & ECONOMY COVER NEWSLETTER*.
- [5]. Beck, T., & Brown, M. (2011). Use of banking services in emerging market household-level evidence. *CEPR Discussion Papers 8475*.
- [6]. Diniz, E., Birochi, R., & Pozzebon, M. (2012). Triggers and barriers to financial inclusion: The use of ICT-based branchless banking in an Amazon county. *Electronic Commerce Research and Applications*, 484-494.
- [7]. GPFI. (2016). *High-level principles for digital financial inclusion*. : <https://www.gpfi.org/sites/default/files/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion.pdf>.
- [8]. India, R. B. (2015). *Report of the Committee on Medium-term Path on Financial Inclusion*.
- [9]. Kpodar, K., & Andrianaivo, M. (2011). ICT, financial inclusion, and growth evidence from African countries. . *USA. International Monetary Fund*.
- [10]. Kumar, N. (2011). *Financial Inclusion and its determinants: Evidence from the state level empirical analysis in India*. India: Indira Gandhi Institute of Development Research, Mumbai.

- [11]. Mago , S., & Chitokwindo , S. (2014). The impact of mobile banking on financial inclusion in Zimbabwe: a case for Masvingo Province. 5(9):. *Mediterranean Journal of Social Sciences*, 221.
- [12]. Manyika, J. L. (2016). *Digital finance for all: Powering inclusive growth in emerging economies*. McKinsey Global Institute USA.
- [13]. Nations, U. (2016). *Digital financial inclusion. international telecommunication union (itu), issue brief series, inter-agency task force on financing for development.* : http://www.un.org/esa/ffd/wp-content/uploads/2016/01/Digital-Financial-Inclusion_ITU_IATFIssue-Brief.pdf.
- [14]. Norton, S. (1992). Transaction costs, telecommunications, and the microeconomics of macroeconomic growth. *Economic Development and Cultural Change Journal*, 41(1), 175-196.
- [15]. Ouma , S. A., Odongo , T. M., & Were , M. (2017). Mobile financial services and financial inclusion: is it a boon for savings mobilization? *Review of Development Finance*, 29–35.
- [16]. Sarma , M., & Pais , J. (2011). Financial inclusion and development. 613–628.
- [17]. Sreedevi , V., & Meena , K. (2011). ICT and financial inclusion. . *International Journal of BusinessManagement, Economics and Information Technology* , 331–334.
- [18]. Summit, G. (2013). *G20 Leaders' Declaration. September.*. St Petersburg, Russia: <http://www.g20.utoronto.ca/2013/2013-0906-declaration.html> .
- [19]. Tatjana, V. (2016). Commercial Banks and Fintech Companies in the Digital Transformation: Challenges for the Future. *Journal of Business Management*, 26.
- [20]. Thulani M, C. P. (2014). Mobile money as a strategy for financial inclusion in rural communities. *Mediterranean Journal of Social* , 216–224.