

The Effect of M-Commerce on Nigeria's Economic Growth

Okolo, Valentine Chimaobi^{1*}, Ani, Wilson U², Ofoegbu, Grace N³

1. Post Graduate School, Department of Economics, Nnamdi Azikiwe University
2. Department of Banking and Finance, Michael Okpara University of Agriculture
3. Department of Accountancy, University of Nigeria.

* iparconsult@gmail.com

Abstract

This paper seeks to assess the implications of mobile commerce on the economy of Nigeria. Ordinary least square technique, correlation matrix test and Granger –causality test were employed to measure the extent to which the gross domestic product was influenced. The result showed that internet penetration and telecommunication contribution impacted positively on gross domestic product of Nigeria; mobile penetration had negative and statistically insignificant effect on gross domestic product; while mobile penetration aids m-commerce in Nigeria, it negatively affects Nigeria's trade balance and economic growth due to huge imports of mobile phones. It is therefore recommended that government should encourage local production of mobile phones and where she lacks the technology to do so, encourage foreign direct investment inflow of foreign mobile phone producers in Nigeria.

Keywords: economic growth; internet penetration; m-commerce (mobile commerce); mobile penetration.

1. Introduction

Of all the key contributors to economic growth as measured by the GDP, a cursory look at official statistical bulletins indicates that none has experienced phenomenal growth like that accruing from the Telecommunications sector in Nigeria. This discovery is remarkable since it was especially the opposite a decade and half ago. This phenomenon is not restricted to Nigeria, as Zibi (2013) succinctly pointed out that ‘ the impact of the African mobile boom on the larger economy has been far reaching, with the sector accounting for between 5% and 10% of GDP in many African countries’. What has not been sufficiently evaluated however is how Mobile Commerce, a novel component of telecommunications commerce, impacts economic development. This engages the minds of the authors in the research presented in this paper. Mobile Commerce includes all activities, directly or indirectly, that facilitate exchange of goods and services through mobile telephony. M- Commerce is now an alternative and convenient way of conducting business worldwide. This revolutionary method of doing business has broken down the geographical and cultural boundaries of the market, where people originally visited markets to buy or sell.

The phenomenal growth of the Nigeria's telecommunication sector received impetus with the licensing of three GSM operators in 2001 and the fourth in 2002, just only to mention the major four operators as many other minor ones have also been licensed ever since.

GSMA (2011) as reported in Yakub et al. (2013) expressed that lack of access to formal banking in the mass market in Africa has opened the door for mobile operators to build successful mobile payment services. The gap between banking penetration and mobile penetration means that while many people do not have access to financial services, they do have a mobile phone. Capitalizing on the phenomenal growth of mobile telecommunications in Africa, a number of service providers are already active in deploying mobile banking services to tap the demand from the large unbanked population. There is strong evidence that these services can improve access to formal financial services in developing countries most especially in Africa where financial exclusion is rather high.

While mobile penetration continues to increase in Nigeria along with the rapid developments in information and communication technology and increasing foreign direct investment in the telecommunication sector, it avails a wide range of consumers and businesses the ability to engage in m-commerce, mobile banking mobile library (mobile knowledge centre) etc. It is therefore needful to assess the effect of m-commerce on Nigeria's economic growth. The rest of the paper is organized into four sections. Section two is devoted to the review of the related literature. Section three presents the methodological framework while the discussion of results is in section four. The conclusion and recommendations are presented in section five.

2. Literature Review

Over the last few centuries, human beings have experienced two major revolutions—the industrial revolution and the electronic revolution. The former transformed our society from being agricultural based to industrial based, whereas the latter transformed our society from being mechanical based to electronic based (Bhasin, 2005). He explained that m-commerce was born due to new technological advances, such as, GSM networks, WAP protocols, and 3G technologies. By using ‘innovative’ technologies, mobile operators have promised to

consumers more effective ways of communicating and transacting their business. He further opined that one of the areas of e-commerce that is rapidly growing across the globe is mobile (or m-) commerce.

Obe and Balogun (2007) assert that mobile phone has become an essential tool for everyday life, offering voice and data communication. They explained that the mobile handset's use as a universal trusted device makes it the ideal terminal for secure and convenient financial services and benefits from wide familiarity amongst a customer-base.

As reported in Ayo, et al. (2007), The major distinction between the electronic and mobile business transaction prefixed as "e" and "m" is that the electronic medium offers "anytime access", while mobile medium offers "anytime and anywhere access" to business processes respectively (Tiwari et al, 2006). They argued that while an electronic transaction is limited to computer networks that are stationary, mobile transactions refer to computer networks that may support both stationary and wireless connections (Ayo, et al. 2007).

Buse (2002) opined that m-commerce has features that are listed as ubiquity, immediacy, real-time, localization (localized contents using a global positioning system (GPS), having pro-active functionality (through SMS), simple authentication procedure (based on a subscriber identification module (SIM) and personal identification number (PIN).

Ayo, et al. (2007) in the study of m-commerce implementation in Nigeria revealed that m-Commerce is predominantly a function of the available telecommunications facilities. In their words, "there are three major mobile telecoms operators, namely, MTN, Celtel (now Airtel) and Globacom. The operations have a total subscription base of about 38 million". They argue that the types of m-Commerce services available in Nigeria are m-Banking and SMS banking and concluded that there are enormous opportunities for m-Commerce implementation in Nigeria based on the rate of growth and the diffusion of mobile devices.

Nigeria represents the largest share with over 95million subscribers with Ghana and Cote d'Ivoire representing the next two largest markets at 21million and 17million respectively. Over the past five years, mobile penetration in each of the countries has grown from an approximate 30% of the population to well over the half population mark. In particular, by the end of 2011, Nigeria reported a 61% penetration rate, Ghana 87%, while Ivory Coast's mobile penetration rate stood, as at 2011, at 71% (iHub research and Twinpine, 2012).

Jagun, et al. (2007) in a study of 'mobile telephony and developing country micro-enterprise: A Nigerian case study' found that there are ways in which costs and risks are being reduced and time saved, often by substitution of journeys. They also found a continuing need for journeys and physical meetings due to issues of trust, design intensity, physical inspection and exchange, and interaction complexity. They concluded that an economizing effect of mobile phones on supply chain processes may therefore co-exist with the entrenchment of supply chain structures and a growing "competitive divide" between those with and without access to telephony.

Ayo, et al. (2004) analyzed and described a conceptual framework for monitoring and controlling cases of m-commerce frauds. They observed that implementation of m-commerce model to control fraud in Nigeria the acclaimed giant of Africa with a population of over 120 million (now over 160million) definitely has lot of economic, social and political gains. Hence, control-oriented m-commerce framework is proposed to solve the problem of telemarketing fraud.

Ayo, et al. (2011) observed that a sizeable number of people in developing nations, particularly African countries are rural dwellers who seldom have access to banking services despite their heavy reliance on remittances from economic migrants for social protection and poverty alleviation. They further buttress that there is a dire need for the development of an effective mechanism for funds remittance especially for the rural dwellers. In their words, "The development of mobile money (m-Money) will facilitate access to finance through the mobile platform, which has the largest rate of adoption all over the world (two-thirds of the world population has access) among other information and communication technology (ICT) facilities".

Bankole, et al. (2011) in a study of mobile banking adoption in Nigeria, explored the factors that influence adoption of mobile banking in Nigeria and showed that culture is the most important factor influencing the adoption behaviour of users of mobile banking in Nigeria.

Observing that mobile money service in Nigeria is relatively new compared to some African countries like Kenya, Uganda and Tanzania. Orji (2013), recommends that for the Nigerian model to work effectively, the cooperation of the two regulatory bodies, the Central Bank of Nigeria, (CBN) and the Nigeria Communication Commission, (NCC) would be needed especially in the areas of ICT technology and transaction security.

There exist little or no literature on m-commerce and its effect on economic growth of Nigeria. Having observed the rate of mobile penetration and m-commerce in Nigeria, this paper seeks to assess its implication on the Nigerian economy. Mobile phones come into Nigeria as imports. The increase in mobile penetration implies that increased funds are spent importing these mobile phones. While Nigerian government becomes aware of the implication of mobile penetration on the economy, local and foreign investors are exposed to the huge mobile market in the country.

3. Methodology

Data was sourced from Central Bank of Nigeria (CBN) Statistical Bulletin and United Nation (UN) Statistical Division. Specifically, Mobile phone penetration (Mpen) and Internet Penetration (Ipen) were sourced from United Nation Statistical Division while the rest were sourced from CBN Statistical Bulletin. The data are attached in Appendix 1. The study employed econometric analysis. The econometric analysis used is the ordinary least square regression method. This was specified to help examine the influence of the m-commerce on economic growth of Nigeria. Furthermore, a correlation matrix test was done to show the strength or weakness of the relationship between variables. Granger causality test revealed the direction of causation.

The paper hypothesizes that m-commerce has not significantly affected economic growth of Nigeria.

Following established economic theories, previous studies, as well as availability of data, the research adopts the model below:

$$GDP = f(Mpen, Ipen, Telcon, Immpr)$$

Therefore;

$$GDP = B_0 + B_1Mpen + B_2Ipen + B_3Telcon + B_4Immpr + \mu \dots \dots \dots (1)$$

Where,

- GDP = Gross Domestic Product
- Mpen = Mobile penetration/usage
- Ipen = Internet penetration/usage
- Telcon = Telecommunication contribution
- Immpr = Import of miscellaneous manufactured products
- μ = error term
- $B_0, B_1, B_2 \dots$ = denotes unknown parameters to be estimated.

4. Discussion Of Results

4.1 Empirical result:

INSERT E-VIEW RESULTS AS IN TABLE 1

The E view result captured in Table 1 indicates result of the test carried out at 5% level of significance. It shows that internet penetration and telecommunication contribution impact positively on gross domestic product in Nigeria. Import of miscellaneous manufactured products and mobile penetration had statistically insignificant effect on gross domestic product of Nigeria. Mobile penetration however, has an inverse relationship with GDP. This is in line with the a priori expectation because Nigeria does not produce mobile phones; therefore increase in mobile penetration implies increase in import of mobile phones. The empirical results show the coefficient of multiple determinations (R^2) to be 99.7% which implies that variation in the gross domestic product is attributable to variations in independent variables.

A further investigation on the strength of the relationship and direction of causation reveals that all variables are highly correlated, having positive and strong relationship. Granger causality test showed that all dependent variables cause GDP and GDP causes Mobile penetration more than it causes other independent variables.

The graph in the Appendix below shows the trend of the variables (log of variables) for the period under study. While GDP move on a slow and steady increase, mobile penetration and internet penetration moved above GDP between the year 2001 and 2002. Import of miscellaneous manufactured products and telecom contribution to GDP moved up but remained below GDP for the period under study.

4.2 Test of hypothesis:

H_0 : Mobile commerce has not significantly affected economic growth in Nigeria.

H_1 : Mobile commerce has significantly affected economic growth in Nigeria.

The t-test showed that the coefficient of internet penetration and telecommunication contribution to GDP had statistically significant effect on GDP. H_0 is therefore rejected. The researcher concludes that mobile commerce has significantly affected economic growth in Nigeria.

5. Conclusion and Recommendation

Mobile penetration in Nigeria ranks top in Africa. Licensing of telecommunication operators in Nigeria has since opened the door of m-commerce to Nigeria, having boosted interconnectivity and increased mobile penetration in Nigeria. Now the rate of transaction and security of transaction has improved, boosting economic activities and in turn economic growth of Nigeria.

Mobile penetration aids m-commerce in Nigeria but negatively affect Nigeria's trade balance and economic growth due to huge imports of mobile phones. Therefore the researcher recommends that government should encourage local production of mobile phones and where she lacks the technology to do so, encourage foreign mobile phone producers to setup mobile phone factories in Nigeria. When this is achieved, import of mobile phones would have reduced and the increase in mobile penetration will better boost m-commerce and economic growth.

Having observed from the results that internet penetration and telecommunication contribution to GDP significantly affect the economy positively, the researcher also recommend that Nigerian government and Nigerian telecom regulators encourage more foreign direct investment in the sector and ensure that quality services is given by telecommunication operators so that internet penetration and m-commerce will continue to increase.

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Appendix

Table 1. Regression result

Dependent Variable: LNGDP
 Method: Least Squares
 Sample: 1996 2010
 Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.33121	0.096494	117.4296	0.0000
LNIMMP	0.013136	0.012754	1.030013	0.3273
LNIPEN	0.031774	0.010575	3.004631	0.0132
LNMPEN	-0.010188	0.005349	-1.904662	0.0860
LNTELCON	0.160332	0.020319	7.890635	0.0000
R-squared	0.997968	Mean dependent var		13.13237
Adjusted R-squared	0.997155	S.D. dependent var		0.250684
S.E. of regression	0.013372	Akaike info criterion		-5.530104
Sum squared resid	0.001788	Schwarz criterion		-5.294087
Log likelihood	46.47578	F-statistic		1227.561
Durbin-Watson stat	2.320904	Prob(F-statistic)		0.000000

Source: Authors' E-view computations

Table 2. Data Used for analysis

Years	GDP (N'm)	Mpen	Ipen	Telcon (N'm)	Immp (N'm)
1996	367,218.09	14,000	9,947	1,366.93	21,379.80
1997	377,830.80	15,000	19,869	1,448.84	35,127.80
1998	388,468.12	20,000	29,768	1,521.26	32,659.40
1999	393,107.17	25,000	49,568	1,600.35	35,359.00
2000	412,332.01	30,000	79,260	1,697.99	38,518.80
2001	431,783.18	266,461	113,909	2,207.36	54,308.15
2002	451,785.67	1,569,050	416,063	3,236.10	82,229.32
2003	495,007.17	3,149,473	743,281	4,627.60	115,481.16
2004	527,576.03	9,147,209	1,754,284	6,015.91	117,210.18
2005	561,931.39	18,587,000	4,962,548	7,851.66	84,025.69
2006	595,821.61	32,322,202	7,948,195	10,567.90	93,255.59
2007	634,251.14	40,395,611	9,948,614	14,226.75	117,358.59
2008	672,202.55	62,988,492	23,895,584	19,159.16	155,694.08
2009	718,977.33	74,518,264	43,920,958	25,812.44	242,152.36
2010	776,332.21	87,297,789	45,039,710	34,803.41	455,640.31

Source: CBN Statistical Bulletin, UN Statistical Division

Figure 1. Graphic trend of logged variables.

