

Impact of Global System for Mobile Communication (GSM) on Employment and Earnings in Ilorin, Nigeria

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Abstract

This paper examines the impact of Global System for Mobile Communication (GSM) on employment and earnings generation in Nigeria with a view to establish the theoretical and statistical link between these variables compared to what obtains in the literature. We also evaluate the determinants of earnings from GSM business as well as hindrances to the growth of the business. Primary data were obtained from 345 usable out of the 500 categorical (convertible to secondary data) questionnaire administered on 20 communities in Ilorin metropolis of Nigeria. These data were fixed into Mincers Model while analysis was carried out using p-values, F statistics, t statistics and coefficient of determination (R^2) while income from GSM related businesses (making calls, was established. The study finds that GSM led to creation of employment opportunities as well as earnings in Nigeria but from < ₦ 100,000 invested capital earnings from GSM businesses (₦21657) exceed the approved (₦18000) federal government minimum wage. Education and experience were significant determinants of earnings which justify why repairs of faulty handsets has the highest income generation potential among other GSM businesses. Government should provide affordable funds for GSM business operators for the purpose of expansion in earnings, employment so that poverty will be a thing of the past in Nigeria.

Keywords: GSM, Employment, earnings, and ICT

Introduction

Recently, Information and Communication Technology (ICT) seems to have taken over or complements accounting as the language of business globally. This is because the richest men in the world are all in businesses that influence choice and decisions aided by the deployment of knowledge like publishing, media and communications, among others. However, ICTs provide a viable platform for using sophisticated technologies to provide solutions to many of the human problems everywhere, especially in the face of grinding poverty faced by many nations worldwide (Nigeria inclusive). This fact is the main driver of current calls globally for poor nations to rise up and take advantage of the potentials posed by development tools like that of ICTs to advance their economies and their people.

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As ICTs is increasingly becoming a key factor in driving production and development, a knowledge-based and driven economy is not negotiable and is one in which the generation, adoption and exploitation of knowledge plays a key role in the creation of wealth especially in emerging economies. This is because it releases people's creative potential and knowledge.

Attempts to ensure sustainable economic development and poverty reduction of most nations usually involve the development of agriculture, mining, industrial as well as the service sectors. The Industrial Revolution in Europe, the United States and Canada has been premised on technological breakthroughs through Information and Communication Technology (ICT). Similar trend was observed with the economic development of China, Korea, Taiwan, India, South Africa and other emerging economic powers (Mafe, 2000).

However, the reverse is the case in Nigeria as ICT was at the rear end until the wake of 2000 when the Federal Government embarked on an aggressive drive towards the provision of more efficient services in the nation through its privatisation and deregulation policies. This eventually led to the establishment of National Telecommunication Policy with the aim of using ICTs for Education, Creation of Wealth, Poverty Eradication, Job Creation, and Global competitiveness. The policy objective was to develop globally competitive quality manpower in ICTs and related disciplines. This entails developing a pool of ICT engineers, scientists, technicians and software developers. Consequently, attractive career opportunities will emerge in addition to development of *Made in Nigeria* softwares and computer components that can earn the nation some foreign exchange. The implementation of the ICT policy led to the adoption of Global System for Mobile Communications (GSM) and its related components in Nigeria. The Nigeria economic outlook of 2015 shows that ICT contributes 5.46% of the country's GDP in 2013 and going by the increased investment, a 30% coverage is expected by 2018.

The introduction of GSM in Nigeria was to expand the teledensity (the number of telephone connections for every hundred individuals living within an area) in the country and to make telephone services cheaper and accessible to the common man as it obtains in some African countries like South Africa, Ghana and Benin Republic among others. Before the advent of GSM in 2001, the teledensity was 0.45%. In 2001, it rose to 0.73% and in 2011 it had risen remarkably to 64.17% (NBS, 2010). To date, at least four competitive GSM service providers: Mobile Telephone Network (MTN), Globacom Nigeria Limited (GLO), Etisalat and Airtel have been fully licensed in the country and they have increased the teledensity to roughly 80%.

The other players in the GSM business are the GSM operators whose activities involves sale of handsets/phones, sale of recharge cards, sale of telephone accessories, repair of faulty handsets as well as making telephone calls and charging of mobile handsets, either using car batteries or small generators. These operators are found in every community along the roads or at different corners with stationed kiosks with which they carry out their activities. The mobile phone sector has therefore spawned a wide variety of business and entrepreneurship opportunities in the informal sector.

It could therefore be said, although without academic confirmation that multiplicity of these kiosks and number of participants in these business activities presupposes that these businesses had kept some people busy, keep them away from social vices and perhaps generate some earnings. The lack of the needed academic ingredients to support such believe calls for this study. Thus, it is not an academic futility but rather an academic expediency.

According to Egwaikhide, (2012) however, the transport and communication sectors seem to have succeeded in attracting the interest of foreign investors, while the telecommunication sector has made Nigeria the fastest growing mobile phone market in the world. Since 2001, when the mobile telecommunication operators were licensed, the rate of subscription went up continuously without control not until mid 2014 when the four GSM service providers – MTN, Airtel, Glo and Etisalat engaged in neck to neck competition that has forced the rates down and in the process fostered consumer satisfaction. Notwithstanding the benefits from this competition, it also comes with some hiccups that arise from occasional network congestion, due mainly to excessive promos by these network providers.

While the impact of the GSM service providers cannot be directly traced to common man in the rural arrears, the GSM operators relate directly to the grassroots. Although performance of these activities is also related to the mission statement of Nigeria government on the use of ICT stated earlier, the extent to which the activities of GSM operators had impacted on employment/ job creation and wealth creation/earnings has not been clearly established in Nigerian literature. This is an academic omission and filling that gap is the focus of this study. This is with a view to determining the extent to which small and medium scale enterprises (SMES) under which GSM operators are categorised, had impacted on job creation/employment generation and earnings/wealth creation at the grassroots. This is more important and timely when poverty is biting high while earning/wealth creation is at low ebb in the country.

Furthermore, as previous studies including (Ndukwe, 2003, 2004; Igwe, 2005) among others concentrate on the challenges and roles of ICTs on Nigerian economy. Specifically, the concept, importance, economic and policy implications of GSM have been discussed by various authors and researchers including Balogun (2000), Tella, (2007), Manuaka, (2008) and Okereocha, (2008) as well as Sridhar and Sridhar (2003), among others. However, it was only Bakare and Gold (2011) that examines the impact of GSM on income, employment and transaction cost in Nigeria but was deficient due to lack of theoretical background and methodological flaws which made its conclusions unsuitable for generalization and for serious policy decisions.

Additionally, this study specifically evaluates the relationship between business capital and GSM earnings/wealth creation as well as the impact age and experience on earnings/wealth creation. The research findings are relevant to the government in the formulation of policies relating to the twin problem of unemployment and poverty as well as to GSM operators in their business management.

Literature Review

GSM (Global System for Mobile Communication) is a digital mobile technology system that is widely used in Europe and other parts of the world and it uses a variation of time division multiple access digital wireless technology. GSM digitalises and compresses data, then sends it down a channel with two other streams of user data in its own time slot.

Unemployment occurs when a person who is actively searching for employment is unable to find work while employment is the opposite of unemployment. The health of an economy is measured by its unemployment rate (i.e number of unemployed persons divided by number of people in the labour force. Job creation which has to do with the number of people employed in each sector is used interchangeably with employment in this study.

CIA (2015) report reveals that unemployment rate in Nigeria was 5.8%, 19.7% and 23.9% in 2008, 2010 and 2012 respectively while (NBS) National Bureau of Statistics, (2015) affirmed that more than 40 million Nigerians are unemployed. This figure is high compared to countries like USA, Kuwait, Malaysia and Ghana with respective highest unemployment rates of 10.8%, 7.18%, 4.5% and 12.9%. More so, about 1.8 million young Nigerians enter the labour market annually which accounts for over 62% of Nigeria's 183 million people that live in extreme poverty. Specifically states with the highest unemployment rates are Yobe, 60.6%; Zamfara, 42.6%; and Niger, 39.4%; while Osun, 3.0%; Kwara, 7.1%; and Lagos, 8.3%, recorded the lowest rates as at 2011.

The grim of this unemployment is manifested in kidnapping, armed robbery, militancy in the Niger Delta and insurgency (Boko- Haram) in the North and other types of civil unrest especially during general elections. Maintenance of these vices also dampens the economic outlook of the country in terms of low per capital income and gross domestic product.

Earnings simply mean money received as wages or gained as profit. It also means the balance of revenue after deducting costs and expenses. Accounting uses earnings while economics uses income but both are interchangeably used to mean the same thing. However, in accounting earnings means income posted on a company's income statement, that is, revenue minus cost of sales, operating expenses and taxes, over a given period of time (usually a year). Thus, income is the amount of money or its equivalent received during a period of time in exchange for labour or services, from the sale of goods or property or profit earned from financial investments.

From the economist point of view, income means the change in the company's wealth during a period of time, from all sources other than injection or withdrawal of investment fund/capital. This is the amount an individual or a company could consume during the period and still have as much real wealth at the end of the period as it had at the beginning of the period.

Thus, the study determines how much income is derivable from GSM business by operators using either accounting earnings or economist concept of income and such income is compared with minimum wage in Nigeria.

Theoretical Framework of Employment and Income

The relevant theories of employment and income/earnings are the Classical theory, Keynesian Theories and Human Capital Theory.

The classical theory owes its origin to the works of David Ricardo (1772 -1823), T. S. Mill, J. B. Say and finally ends with the works of A. C. Pigou (1877-1959) and its believe was that full employment is a normal feature of a capitalist economy such that all those who want to work at the existing wage rates get work without any undue difficulty. The classical theory rules out the possibility of unemployment in a free market economy and the economy would always be in full employment equilibrium (Jhingan, 2002). It is based on the assumption of Say's Law (supply creates its own demand for goods and services (now job seekers and available employment positions); flexibility in interest rates and wage rates.

The Keynesian theory of Employment, Interest and Money published in 1936 made a frontal attack on the Classical postulates, claiming that its assumptions are unrealistic. Keynes's theory of employment is based on the principle of effective demand in a capitalist economy where the level of employment depends on effective demand. Thus unemployment results from a deficiency of effective demand and the level of employment can be raised by increasing the level of effective demand while effective demand means that income is spent in buying consumption and investment goods (IT/GSM)

The applicability is such that most economies are one of underemployment and do not work in line with Says Law since supply of labour (applicants) always exceed its demand (available job opportunities). Hence, in Nigeria, we find millions of workers prepared to work at the current wage rate, and even below it, but were unable to find work. Thus, the operation of Nigerian economy is similar to underemployment equilibrium.

The operation of Nigerian economy laid to rest the applicability of the classical theory but lent itself partially to the Keynesian theory on the following grounds:

- (i) Deficiency of effective demand because not all incomes were spent on these items. In Nigeria a large portion of the government income are being stolen (corruption) while the remaining was spread between investments (IT/GSM), consumption (recurrent expenditure) and savings and contingency spending-catering for insurgency in the Niger Delta (Militants) and in the Northern States (Boko-Haram) as well as control of natural disaster like flood. This situation made available demand [job opportunities to be less than supply (applicants)].
- (ii) Wage cut by both private and public sector windows the gap between supply and demand for labour/employment.

- (iii) A large economy where the interplay of demand and supply forces has insignificant impact on employment and income/earnings does not lend itself to the classical theory.
- (iv) Nigeria economy also defies the applicability of a general wage cut as a cure for unemployment. This is because most wage cuts in the country had reduced aggregate demand for employment as well as goods and services and eventually dampen the employment depression and general income level.

However, when consumption for GSM products/items as well as investment by government and operators increases, earnings automatically increases. This theory therefore explains the relationship between GSM and employment/job opportunities which is expected to be positive. Unfortunately, establishing the net effect of information technology on aggregate employment is difficult for one primary reason: IT is both labour-creating and labour-saving. More so, the impact of computerization on employment is complex and empirical evidence indicates that it acts as a catalyst for economic growth and employment that far exceeds any direct elimination of jobs that may result from substitution of machines for people (Mafe, 2000).

With the advent of the GSM, several wealth and job opportunities (direct and indirect) have been created and routine tasks have been made simpler. Innovative mobile services are now available in fields like education, banking, health, entertainment etc. Like John Keynes rightly pointed out in his General theory of Employment, an increase in effective demand would translate to an increase in the level of employment and earnings. A critical look at the Nigerian Telecommunication Sector lends credence to the theory and as such forms the theoretical foundation of this study. This is because as more and more Nigerians demand for mobile telecommunication services, we observe that more jobs are created every day either directly through the service providers (MTN, GLO, AIRTEL or ETISALT) or indirectly through the manufacture, repair, sale of mobile phones, recharge cards and phone accessories.

The Theory of Human Capital

The human capital theory suggests that education or training raises the productivity of workers by imparting useful knowledge and skills, hence raising workers' future income by increasing their lifetime earnings (Becker, 1993). The human capital theory draws a crucial distinction between general education and firm specific training. Examples of firm-specific human capital include expertise obtained through education and training in management information systems, accounting procedures, or other expertise specific to a particular firm. General-purpose human capital is knowledge gained through education and training in areas of value to a variety of firms such as generic skills in human resource development. Regardless of the application, Becker considers education and training to be most important for human capital formation.

Over the past thirty years or so, hundreds of studies have been conducted to estimate rates of return to education (RORE); most of such studies show that formal schooling is a crucial factor in explaining variations of salary and wages in well developed countries (Cohn and Addison, 1998). Comparative studies have been conducted in some less developed countries, focusing on

investment in formal education (Psacharopoulos, 1985, 1994) and Barro and Sala-i-Martin, 1999). This relationship is put to test empirically by determining if formal education significantly determines the earnings in the GSM business in Nigeria.

Empirical Evidence

The positive relationship between telecommunication and economic growth is evident given the various studies that abound. For instance, Jorgenson (2001) study of the United States showed that investment in information technology (IT) contributed more than one-half of the recent increase in the US economic growth. Kraemer and Dedrick (2001) used data from 43 countries and upheld the view that the growth in IT investment is correlated with the productivity growth. In Belgium, Kegels, Overbeke & Zandweghe, (2002) found that the accumulation of ICT capital has a significant impact on output growth and average labour productivity growth.

In Asia, Seo & Lee, (2000) finds a significant contribution from ICT investment while another study by the Australia National Office of Information in 2003, also confirmed that ICT and services have become pervasive, general-purpose enablers of economic and social transformation. They opined that given the enabling socio-economic environment, ICT would provide the platforms on which the growth in productivity, innovation and social well-being can be constructed.

In the same dimension, Norton (1992) demonstrated that convergence could occur if developing countries could add to their stock of telephones rapidly, since they reduce transaction costs. Garbade & Silber (1978) found that there was statistical evidence that the two innovations in communication technology (the telegraph and Trans-Atlantic cable) led to efficient market places worldwide through significant and rapid narrowing on inter-market price differentials.

Bayes, Von Braun, & Akhter (1999) examines village pay phones and poverty reduction: Insights from a Grameen Bank Initiative in Bangladesh found that half of all telephone calls involved economic purposes such as discussing employment opportunities, prices of the commodities, land transactions, remittances and other business items. They also reported that the average prices of agricultural commodities were higher in villages with phones than in villages without phones. Leff (1984) worked on social benefit cost analysis and telecommunications investors in developing countries but argues that firms can also have more physically dispersed activity with increased telecom services (for instance, encourage telecommuting of their employees) and enjoy economy of scale and scope.

Deloitte & Touch (2008) examines the economic impact of mobile communications in some selected countries and found mobile communications to boost economic and social development in terms of increased access to communications, enhance social interaction and improved efficiency in the formal and informal sectors.

Studies relating to GSM and economic growth or employment include Bakare & Gold (2010), Litondo, (2010) Jagun, Heeks & Whalley, (2008) as well as Akanbi(2013) and Chime & Obiora (2014). Akanbi (2013) evaluated customer perceptions of GSM on service delivery of small and

medium enterprises (SMEs) in Nigeria and finds that SMEs customers in Nigeria perceived GSM as tool for improved service delivery. They further point out that GSM is used to order raw materials, to market product and it has saved customer's transactional time.

Chime & Obiora (2014) examines Wireless Communication: the impact of GSM on the economic lives of the Nigerian rural users and finds that wireless communication cum GSM has considerable impact on the economic lives of the Nigerian rural users and is also a major tool for employment creation opportunity thereby diffusing the rate of crime in that area. The study further revealed that Nigeria is rated as one of the fastest growing markets in this field of communication but its impact on the Nigerian rural users is still relatively low. These findings are similar to that of Jagun, Heeks & Whalley (2008) who estimated the impacts of GSM on income, employment and transaction costs in Nigeria to be on the positive side. It is not different from Ajiboye, Tella, Adu & Wojuade, (2007) study on stakeholders' perceptions of the impact of GSM on Nigeria rural economy as they pointed out as promising joy for the emerging communication industry.

Bakare & Gold (2010), estimated the impacts of global system for mobile telecommunication (GSM) on income, employment and transaction cost in Nigeria and found GSM to have contributed positively to the economic situations of Nigeria as well as to income and employment and had led to reduced production cost of doing business in terms of traveling and transaction cost. Their findings are in consonance with that of Litondo (2010) who studied and finds that mobile phones had created employment among informal micro and small enterprises in Nairobi.

The aforementioned studies have succeeded in establishing a positive impact of the mobile telecommunication system on job creation. This present study seeks to find out if truly the Global System for Mobile communication has created more jobs and more income using a combination of approaches categorical scale measurement and use of both primary and secondary data which is novel as cannot be found in any existing study). By so doing, it is believed that the findings of this research would add to the existing body of knowledge and assist the government in formulating policies that would reduce the level of unemployment.

An analysis of the telecommunication sector in Nigeria shows that since the colonial period the country has been managing with 18,724 phone lines and teledensity of about 0.5 telephone lines per 1,000 people (NCC, 2004). At that time, the telephone system was unreliable, congested, expensive and customer unfriendly (NCC, 2005). Unfortunately, the establishment of Nigeria Telecommunication Limited (NITEL) was unable to improve the condition as it was synonymous with very poor services and bad management until some GSM service providers (MTN, GLO, Airtel and Etisalat) were licensed. It has improved the nation's teledensity. Access to modern telecommunication services is now within the reach of more than 80% of the people who live within Nigeria (NCC, 2012).

GSM has emerged as an integral and essential part of the culture and life of Nigerians and it 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. It has also created

countless opportunities for small and medium businesses in franchises, dealerships, retailer-ships and value added services within the GSM market.

Specifically, Nigerian Telecommunication Fact Sheet, (2011) pointed out that GSM had created in the form of the various ICT engineers, scientists, technicians, software developers, accountants, managers and clerks employed by the network operators, and individual small scale related activities.

Although the exact figure is difficult to obtain but no doubt, GSM had created indirect employment and new class of entrepreneurs who might otherwise have been unemployed. These people function as nationwide network of dealers, vendors, sellers of GSM accessories and the ubiquitous “umbrella-stand” operators while the emergence of these large telecom companies, had also led to the return of significant numbers of Nigerians from abroad.

All the aforementioned agrees that ICTs/GSM has opened up new income streams and created additional wealth for the individual households in addition to creating job opportunities but without solid theoretical and empirical underpinnings, especially in Nigeria context. This forms the thrust of this study.

Methodology

Model Specification

This study is an impact assessment of GSM on employment/job creation and of GSM on earnings/income. Thus, the earnings model based on the original work of Jacob Mincer (1974) was adopted in this study with modifications to include age of respondents and years of experience in the GSM business in addition to his two variables model of earnings as a function of education and experience. The Mincer model was adopted to estimate the determinants of earnings in the GSM business since earnings/income from a business determines the magnitude of jobs created. This is because an unprofitable business will fail to engage people and thus, unable to contribute to employment/job creation.

The Earnings model used in this study is expressed as:

$$\text{LnY} = \alpha + \beta_1\text{Age} + \beta_2\text{Edu} + \beta_3\text{Exp} + \beta_4\text{Biz} + U \text{-----(i)}$$

Where,

α = the intercept term

$\beta_1 \beta_2 \beta_3 \beta_4$ = the coefficients of the explanatory variables

LnY = Log of the annual earnings made by respondents who are into GSM business;

Age = Age of the respondent (years) which measures experience;

Edu = Educational attainment of respondents (years of formal education);

Exp = Years of experience in the GSM business;

Biz = Type of GSM business engaged in; and

U = Error term

The ‘a priori’ expectation is such that $\beta_1, \beta_2, \beta_3,$ and $\beta_4 > 0$

Research Design and Data

A survey and descriptive method was adopted in this study through the use of primary data that were obtained through questionnaire administration on the selected sample through a multi-stage stratified random sampling procedure. Respondents' communities were selected on the basis of their geographical location (Ilorin East, Ilorin West and Ilorin South Local Government Areas (LGAs)).

These local government areas became the focus of this study due to their high population density, unimpaired telecommunication network coverage and areas where GSM business thrives most in the state. In all, a total of 500 questionnaires were distributed to respondents' (GSM Operators) based on population size. 130 copies of the questionnaires were distributed in Ilorin East (130), 135 in Ilorin South and 325 in Ilorin West. However, of the 500 questionnaires administered, only 404 were returned out of which 59 were invalid, leaving only 345 valid questionnaires used for analysis. The survey was carried over a six months period (July-December, 2015).

The administered questionnaire is divided into two sections in order to capture the specific objectives of the study. The first section requires the respondents' Identification/Bio-Data information such as gender, marital status, age etc. The second section contains a number of response items relating to impact of GSM on employment opportunities and on income/earnings from the business.

The study was carried out in 10 communities within Ilorin, which comprises Ilorin East, Ilorin West and Ilorin South LGAs: Oke-Oyi, Ipata, Sango, Gaa-Akanbi, Oloje, Baboko, Adewole, Oja-Oba, Pakata and Taiwo road due to their strategic locations (in terms of population and high concentration of GSM related businesses).

Summary of dataset (appendix 1) reveals that both scale and categorical types of data were used while the data source was survey type.

Methods of Estimation

The specified model in (equ.1) was estimated by methods of least squares and the estimates were evaluated on four conventional criteria including:

- (i) **Economic "a priori" criteria:-** This method is based on economic theory, which defines the signs and magnitude of the coefficients of the variables of the subject matter and also refers to the signs of the parameter to conform with economic reasoning.
- (ii) **Statistical Criteria (first order tests) :** This is captured by R^2 and standard error test, in addition to the student "t" test. The coefficient of determination (R^2) was used to measure the explanatory power of the regression such that the greater the R^2 , the greater the percentage of variation of the dependent variable explained by the explanatory variables in the regression. Hence, the greater the R^2 , the better the "goodness of fit" of the model, but when the R^2 is closer to zero, the worse the fit.

The standard error test was conducted to measure the reliability of the least square estimate in the regression equation and decide if our estimates are statistically significant.

Better still, the standard error test helps us to know if our estimates are significantly different from zero. In testing the hypothesis that the value of a parameter, say β_1 is not zero, we test

the Null hypothesis $H_0 : \beta_1 = 0$ against the
Alternative hypothesis $H_1 : \beta_1 \neq 0$

Economic Criteria (Second Order Test) was conducted using “F” test and is used to support the validity of the correlation coefficient and as such, to test the overall significance of the model.

Discussion of Results

The result of questionnaire responses as presented in Table 1 shows that 89 respondents representing 25.8% had been using phone for at least 1 – 3 years now while 39.4% had been using cell phone for more than 7 years now. The table also reveals that among the various types of GSM businesses, 35.9% of the respondents are engaged in making phone calls, selling SIM and recharge cards altogether while 3.2% of the respondents make phone calls, sell SIM, Recharge cards, mobile phones, accessories and repair of phones altogether etc. This implies that majority of people combine one form of GSM business and the other instead of limiting themselves to a particular one.

Table 1: Employment Details of the Respondents

Years of using a GSM Phone:	Percentage (%)
Less than a year	0%
1 – 3 years	25.8%
4 – 6 years	34.8%
7 years and above	39.4%
Type of GSM business:	
Making phone calls only	12.5%
Selling SIM and recharge cards only	18.3%
Making phone calls, Selling SIM Cards and recharge cards	25.9%
Sale of Mobile phones and accessories only	9.0%
Repair of Mobile phones only	23.0%
Sale of mobile phone accessories and repairs	8.1%
All of the above	3.2%
Number of years of doing GSM business:	
Less than a year	14.5%
1 – 3 years	45.5%
4 – 6 years	27%
7 years and above	13.0%
Unemployed before engaging in GSM business:	
No	13.0%
Yes	87.0%

Contd. table

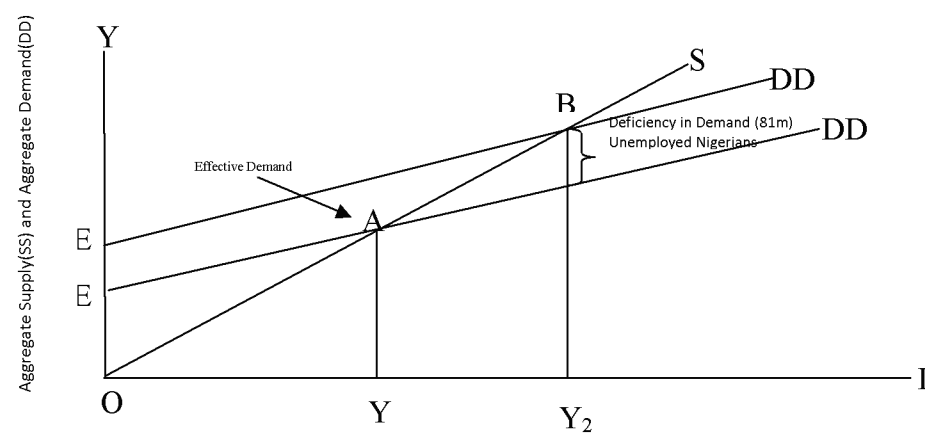
Number of people employed in the business (including the owner):	
Less than 2 employee	12.8%
2 – 4 employee	87.2%
More than 4 employee	0%
Total hours of work per day:	
1 – 6 hours	32.5%
7 – 12 hours	67.5%
Educational Qualification	
No formal Education	5.4%
Primary School (not completed)	3.5%
Primary School (completed)	12.2%
Junior Secondary (not completed)	6.1%
Junior Secondary (completed)	8.4%
Senior Secondary (not completed)	4.1%
Senior Secondary (completed)	26.7%
OND/NCE	25.7%
B.Sc./HND and above	6.9%

Source: Authors' Survey, (2016).

Determination of Level of Employment and Income

Application of Keynes theory to Nigerian case in general, is demonstrated in figure 1. As noted earlier, the equilibrium levels of income and employment are determined by the interaction of aggregate demand curve (AD) and aggregate supply curve (AS).

Figure 1: Equilibrium level unemployment in Nigeria



Source: Authors' Drawing, (2015)

In figure 1, the aggregate demand curve (DD) intersects the aggregate supply curve (OS) at point A which is an effective demand point and the equilibrium of national income generated is OY^1 . At that point, OY^1 is insufficient and as such, out of the 183 million Nigerians 81 million willing

to work were unable to find work. Thus, point E^1 is an underemployment equilibrium and OY^1 is underemployment level of income. This is because a large portion of government revenue is being fraudulently stolen by political office holders as well as civil servant which limits investment/effective demand. This corruption magnitude is evidenced in Nigeria's rating as the 136th most corrupt country out of the 173 rated by Transparency International Corruption Perception Index (2014) while the strength of its suboptimal national income is manifested in inability of about 26 states of the country to pay their staff salaries.

This economic condition of insufficient fund led to the implementation of Single Treasury Account (TSA) which compels the payment of all government revenue into a single account for monitoring the government fund.

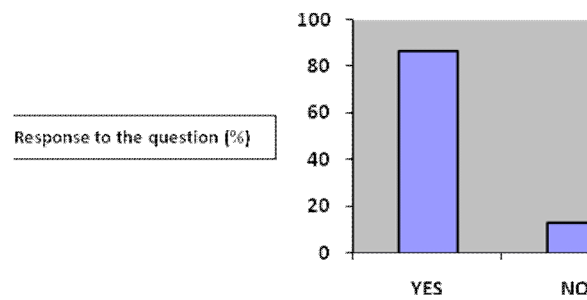
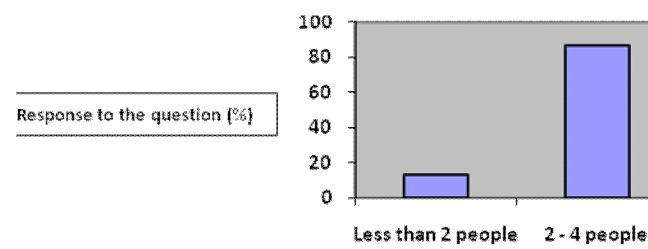
The unemployment situation can only be improved if the level of output can be increased from OY^1 to OY^2 while the equilibrium level of DD and SS moves to point B (full employment level) through increased government spending. Unfortunately, increased government spending is not feasible, as such, the unemployed group has to look elsewhere for survival of which GSM business is one.

Having established the unemployment situation in Nigeria which is in line with Keynesian theory of income and employment, the relationship between GSM business and employment as well as with earnings is thereafter examined in this study. This is because going into a business does not automatically guarantee earning/profit or useful income in theory. However, in practice, the number of entrants into GSM business keeps increasing (although without adequate empirical support); thus, the need to establish the average income from the business compared to what the minimum wage is in Nigeria to justify the rush to the business.

Results on the Impact of GSM on Employment

With respect to employment generation, majority of the businesses, no matter how small they are have employed between 2-4 people including the owner. The percentage in this category is 87.2% while the remaining 12.8% have employed less than 2 people. This implies that GSM has contributed to employment generation over the years especially that 13% had been in the business for a period of 7 years and above, 27% had been doing the business for 4-6 years while 14% are yet to celebrate their first year anniversary in GSM business (Table 1).

More investigations as revealed in Table 1 show that a very good number of people (87% precisely) were unemployed before engaging in GSM business while 13% were doing one form of business or the other (trading, craftwork or farming among others) before the advent of GSM in Nigeria. However, the advent of GSM compels this 13% respondents to abandon their previous businesses and take up GSM business due to its rewarding and promising nature. No wonder why most respondents (67.5%) work long hours (7-12) hours daily while only 32.5% work for 1 – 6 hours daily. By comparison, therefore, people in GSM businesses works for longer hours than the government workers who work for only 8 hours a day. This may be because civil servants (government workers) are rewarded on monthly basis while GSM operators / business men/women are rewarded based on the number of hours put in. This employment analysis is shown in figures 1 and 2.

Figure 1: Were you unemployed before the advent of GSM?**Figure 2: How many Employee are in your GSM business ?”**

Source: Authors' Drawing, (2015).

Figure 1 shows pictorially that GSM has created a positive impact on employment/ job creation in Ilorin metropolis as evidenced in Table 1 that 87% of the respondents (300 in number) that were actually unemployed before going into GSM business but became gainfully employed afterwards due to various opportunities created by GSM. More so, the same Table 1 also reveals that the remaining 13% (45 respondents), who were formerly underemployed, decided to cross over to the GSM business. Furthermore, 301 respondents pointed out that they had employed between 2-4 people while 44 respondents agreed they had 1-2 employees in their respective businesses (Table 1).

Summarily therefore, it will not be mistaken going by the spiral effect of these employment pyramid, to conclude that GSM business has succeeded in creating employment opportunities for the people of Ilorin metropolis, and by extension for the whole Kwara State and Nigeria in general. This is because this little contribution goes into the calculation of National Income and has effect on the standard of living of the people concerned and the country as a whole.

Table 1 shows that only 5.4% of the respondents who are into GSM business have no form of education at all while 79.9% (275 respondents) have one form of formal education or the other. Specifically, 6.9% are graduates of tertiary institutions (University/polytechnic). This finding brings out the relevance of the theory of human capital which emphasises on training for any business success.

Impact of GSM on Earnings (Estimated Earnings Model)**Table 2. Linear Regression Estimate of the Earnings Model**

Variables	Coefficient	t – statistic	P-values
Age	0.015	4.062	0.234
Edu	0.040	3.711	0.132
Exp	0.053	3.480	0.001
Biz	0.125	7.568	0.112
Dependent variable = LnY R ² = 0.50 F = 85.06 Intercept = 10.950			

Source: Authors' Computation, (2015).

Table 2 shows the result of the estimated earnings model with positively and statistically significant intercept ($\alpha = 10.95$) while the coefficient for age (Age) is statistically significant and it has a positive relationship with the earnings (p-value= 0.234) made from the GSM business. This is because if there is continuity business, age is synonymous with years of experience (p-value=0.004) in business and this comes along with more link and more customers. This is true since income is directly associated with magnitude of customer base that is built up by experience. Thus, experience in business is a significant determinant of earnings/income in GSM business. In line with apriori expectations, years of formal schooling (Edu) has a positive statistically significant relationship with earnings/income. P-value=0.132). Thus, education is one of the major determinants of earnings/income in the GSM market.

The coefficient of determination (R^2) of 0.50 indicating that 50% of the variation in earnings made from GSM business is explained jointly by the independent variables. The remaining 50% is explained by the disturbance term while the "F" statistics of 85.06 shows that the model is a good fit.

Table 3: Income Earning Details of the Respondents

Monthly Income from GSM Business	Percentage/ respondents	No. of	Average Total Income
0 – ₦10,000	17.7%	(61)	₦305,000
₦10,001 – ₦20,000	46.8%	(162)	₦2,430,000
₦20,001 – ₦30,000	14.8%	(51)	₦1,275,000
₦30,001 – ₦40,000	8.4%	(29)	₦1,015,000
₦40,001 – ₦50,000	7.9%	(27)	₦1,215,000
₦50,001 – ₦100,000	2.4%	(8)	₦600,000
₦100,001 – ₦500,000	2.0%	(7)	₦600,000
Above ₦500,000	NIL		-
TOTAL			₦7,440,000/345 = ₦ 21,565

Contd. table

GSM Network positively affects my income	-	
Yes	70.1%	
No	29.9%	
Any additional Source of Income	-	
No	71.0%	
Yes	29.0%	

Source: Author's Survey, (2015)

Table 3 reveals that 17.7% of the respondents had a monthly income that fall below ₦ 10,000, 46.8% had a monthly income of between ₦10,001 – ₦20,000 while 14.8% had a monthly income that is well above ₦20,000. Although none of the respondents has income that exceeds ₦500,000 per month (that is, income that can only be earned by professors, political office holders, Central Bank of Nigeria staff and senior employees in the banking and oil sectors of Nigeria) but on an average GSM business pays a monthly salary/wage of ₦21,565 which exceeds minimum standard wage of ₦18000 of Nigerian government.

Furthermore, the same table 3 shows that 71% of the respondents had no additional source of income apart from the income they made from the GSM business. By implication therefore, GSM business has consistent income that can be relied upon in comparison with government job that pays lesser and is unreliable with regards to time and/amount to be paid.

In view of such income generated, the study went further to investigate the structure of the sources and amount of such start up capital which goes into income generation. This is because the higher the business capital, the higher the expected income. Table 4 shows the venture capital and the revenue generated accordingly.

Table 4: Relationship between Sources and Amount of GSM Venture Capital

Sources	Percentage (%)
Personal savings	48.5%
Loan from friends and relatives	15.0%
Co-operatives and Ajo (group contributions)	33.3%
Government Agencies like NAPEP, NDE	2.1%
Loan from bank	1.1%
Start-Up Capital	-
Less than ₦ 50,000	11.3%
₦ 50,000 – ₦ 100,000	29.0%
Above ₦ 100,000	59.7%

Source: Author's Survey, (2015).

Table 4 reveals that 48.5% of the respondents started their GSM business through funds raised from personal savings while 33.3% finance their businesses with loans from co-operative societies and only 1.1% of the respondents started their business through loans obtained from banks. By classification, formal sources of finance include loan from bank and government agencies like NAPEP (National Poverty Eradication Programme) and NDE (National Directorate

of Employment) while the informal sources include personal savings, loan from friends and co-operatives.

Hence, 3.2% of the respondents got their capital through formal sources while 96.8% got theirs through informal sources. This was as a result of stringent conditions attached to funds from the formal sectors: ranging from provision of collateral security and guarantor. No wonder why 11.3% of the respondents had a start-up capital of less than ₦50,000 while 29.0% had a start-up capital of between ₦50,000 – ₦100,000 and majority (59.7%) of the respondents had a start-up capital that barely exceeds ₦100,000. This highly insufficient capital base exposes those in GSM businesses to liquidity problem and thus limits their expansion propensities. Unfortunately, government financial assistance (capital provision) is highly insufficient.

In terms of the determinants of income, it was observed that age, education, years of experience and type of GSM business all have significant impacts on the level of income made in the GSM business.

Summary and Conclusion

Summary from the analysis carried out, theories reviewed and literature examined include:

- (i) GSM business has led to enhanced job creation in terms of quantity and quality. Quantity wise, it has led increase in number of employed people across rank (young and old). With respect to quality, it has led to increase in monthly earnings / income of ₦21,565 which exceeds the minimum national wage of ₦18,000 in Nigeria.
- (ii) GSM business operators were able to generate this income with very low capital that never exceeded ₦100,000. This indicated that, out of the revenue generating activities of GSM (sale of phone, sim cards and accessories, making phone calls and repair of faulty phones), repairs which requires no capital outlay takes a considerable percentage (23%).
- (iii) Most of the GSM business operators raise their capital from informal sources including personal savings, cooperative societies, loan from friends while capital raised from formal sources (government and loan from bank) were extremely little 3.2%. This is due to stringent conditions (collateral security) that must be met before obtaining loans from formal sources.
- (iv) In generating GSM income, the study finds that age, education and experience of the operator play significant role.
- (v) If employment rate and quality has increased while earnings/income has also changed positively, then; Nigeria economy through multiplier effect has benefitted immensely. Thus, GSM had impacted on the economy positively.

Recommendations

From the summary and conclusions presented above, the following recommendations are put forward which if followed will improve the deplorable unemployment situation in the country as well as enhance the earning strength of its citizenry:

- (i) Nigerian government (through its fund providers: NAPEP and NDE) should make fund/capital available to Small and Medium Scale Entrepreneurs at cheaper rates and with painless borrowing conditions. This will go a long way in raising the venture/capital with which GSM business operators do business and subsequently enhance earning strength and ability to employ more people (employment/job creation);
- (ii) GSM operators should put more attention to phone repairs as this activity generates more income than other GSM activities. This will enhance their earning capacity and propensity to increase employment opportunities since the more the earnings/reinvested capital in any business, the more the ability to expand;
- (iii) Nigerian government should expand the tele-density and directly make telecommunication cheaper and accessible. To achieve this goal, more licenses should be given to GSM network providers in order to allow healthy competition, improved quality of service and product, and consequently increased employment creation in the country;
- (iv) The present condition of the relevant infrastructural facility (power supply) should be improved upon to facilitate smooth functioning of the GSM business. This will help in reducing maintenance cost and by inference tariff (cost of making calls). Perhaps, this will also assist the operators in delivering efficient services at reduced charges; and
- (v) Policies to encourage innovation should be formulated so as to create more job opportunities. For instance, those operators with adequate experience in phone repair may be sponsored overseas to acquire technologies in phone making. By this, hence, the country will be better in terms of export earnings, employment generation and improved standard of living while entrepreneurial skill will be boosted and industrialisation will be enhanced. Thus, the monoculture economy of Nigeria will be reversed while the negative impact of vagaries in petroleum income on the economy will be a thing of the past.

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