

*Full Length Research Paper*

# Estimating the impacts of global system for mobile telecommunication (gsm) on income, employment and transaction cost in Nigeria

Bakare A. S.<sup>1\*</sup> and Gold Kafilah 'Lola'<sup>2</sup>

<sup>1</sup>Department of Economics, Adekunle Ajasin University, P. M. B. 001, Akungba Akoko Ondo State, Nigeria.

<sup>2</sup>Department of Economics, Kwara State College of Education, P. M. B. 1627 Ilorin, Nigeria.

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**This study investigated the impact the Global System for Mobile Telecommunication (GSM) has made on the provision of employment opportunities; income of the masses and transaction cost of various economic activities of the masses. Linear regression analytical techniques were used for data analysis. The study made use of primary data obtained from 1,000 respondents' from 20 selected communities in Ilorin metropolis in Kwara State, Nigeria, through the administration of questionnaires. The purposive sampling method was also employed in the study with a sample unit. The outcome of the empirical investigations shows that Global System for Mobile Communication has contributed positively to the economic situations of Nigeria and has served as source of income and employment to many Nigerian youths. The study found that GSM business had reduced production cost of doing business in terms of traveling and transaction cost. The findings of the study suggested the need for Nigerian Communication Commission (NCC) and, the Federal Government of Nigeria to provide the necessary economic infrastructure (particularly power supply) to the GSM operators in order for them to deliver efficient services and to be able to reduce their charges. The government should also create atmosphere for the expansion of tele-density and directly make telephone communications accessible. To achieve this goal, more licenses should be given to GSM operators in order to allow for healthy competition among the GSM operators.**

**Key words:** Global system for mobile communication, tele-density, economic growth, deregulation Zain, MTN and M-tel, Globalcom, Etisalat, GSM connected lines.

## INTRODUCTION

The development of telecommunication in the world began in the 1830s. The first commercial electrical telegraphy was constructed by Sir Charles Wheatstone and Sir William Forthergill Cooke (Ajayi et al., 2008), and they both viewed their device as "improvement to the existing electromagnetic telegraphy" (International Telecommunication Union ITU). Samuel Morse on the other side of the Atlantic Ocean independently developed another version of electrical telegraphy that he unsuccessfully demonstrated on 2nd September, 1837.

There after, Alfred Vail developed another version of the technology and this was successfully demonstrated on 6th January, 1938. The first transatlantic telegraphy label allowing transatlantic telecommunication for the first time was successfully completed on 27th July, 1866. Alexander Bell invented the conventional telephone in 1876 and the first commercial telephone services were set-up in 1878 and 1879 in both Haven and London (ITU, 1999).

Further development of telecoms in the world was prompted by the need to provide seamless tele-communications throughout Europe. In the early 1980s, analogue mobile telephony grew rapidly and operators found it increasingly difficult to interconnect the various networks in Europe. On the basis of this, a study group

\*Corresponding author. E-mail: [stevebakare@yahoo.com](mailto:stevebakare@yahoo.com). Tel: +2348033529188.

called "Group Special Mobile" was formed and was tasked to provide a standardized system for mobile telephony, which was realized seven years later. In the year 1990, there were only 11 million subscribers world wide, but the introduction of digital services in the early 1990s, combined with competitive service provision and a shift to prepaid billing, spurred rapid growth in demand.

However, Nigeria has not been left out of this race for rapid development of telecommunication, although the journey to success in the milieu had been long and tortuous. The development of telecommunications facilities in Nigeria began in 1886 when a cable connection was established between Lagos and London by the colonial administration (Adegboyega, 2008). From the very beginning, it was clear that the introduction of telephone services in the country was not induced by economic or commercial motives. It was not meant to enhance economic growth, but it was originally developed as a tool for colonial subjugation (Mazango, 1998). For this reason, by 1893, government offices in Lagos were provided with telephone service, which were later extended to Ilorin and Jebba in the hinterland.

A slow but steady process of development in the years that followed led to the gradual formation of the nucleus of a national telecommunication networks (Ajayi et al., 2008:1). However, as the European mercantile activities gained foothold in the country, the first commercial trunk telephone service was established to link Idu and Calabar in 1923. Between 1946 and 1952, a three channel line carrier system was commissioned between Lagos and Ibadan and was later extended to Oshogbo, Kaduna, Kano, Benin and Enugu; Thus, connecting the colonial office in London with the commercial centers in Nigeria (Adegboyega, 2008; Ajayi et al., 2008). In those early days, services were primitive and the coordinated pegboard switching system was used. This later progressed to manual switchboards of different sizes, shapes, and capacities until stronger exchanges were installed into the national network at Lagos Island, Ikeja, Ebute Meta, Apapa and Port Harcourt between 1955 and 1960. The telegraphy service also witnessed a parallel development, from telegraph delivery by way of manual coordinated pegboard switching to the use of Morse code for telex switching. As at 1960, a manual telex exchange of sixty subscriber lines were in service in Lagos. All the above efforts were essentially aimed at improving internal telephone services in Nigeria.

At independence in 1960, with a population of roughly 45 million people, the country only had about 18,724 phone lines for use. This translated to a Tele-density of about 0.5 telephone lines per 1000 people. The telephone network consisted of 121 exchanges of which 116 were of the manual (magneto) type and only 5 were automatic. Between independence in 1960 and 1985, telecoms services become commercialized. The old department of Post and Telecommunications (P & T) under the Ministry of Communications became separated

and Nigeria External Telecommunications Limited (N.E.T) was created to take care of external telecoms services while the old P&T handled internal network (Salawu, 2008). By January 1985, the erstwhile (P & T) Post and Telecommunications divisions merged with NET to form Nigeria Telecommunication Limited (NITEL) a government owned Limited Liability Company. The objective of establishing NITEL was to harmonize the planning and coordination of the internal and external communications services, rationalize investments in telecoms development and provide accessible, efficient and affordably services. NITEL, the only national monopoly operator in the sector, was synonymous with epileptic services and bad management which made telephone then to be unreliable, congested, and expensive and customer unfriendly. According to Ajayi et al. (2008), the years 1992 to 1999 was tagged as the partial liberalization era, when government embarked on market – oriented, partially liberalizing the Nigerian telecommunication sector via NCC Decree 75 of 1992. The reforms include separation of the policy – making body from industry regulator and networks operators/service providers, and licensing of network operator service providers which began in 1996. Despite the huge potentials offered by the Nigerian telecom market, progress was slow due to political uncertainties and perceived policy inconsistencies as NITEL still continued to retain monopoly power over voice telephony in both national and long distance international calls (Ajayi et al., 2008). Adegboyega (2008), and Ndukwe (2008), both argued that this period was dominated by chaotic, hopeless and frustrating circumstances. The Network was bad, there was weak infrastructural base, huge unmet demand, concentration of lines in selected urban centers, slow growth of subscriber base as well as limited investment".

The Nigeria's telecom sector witnessed a major revolution in 2001 with the granting of the global system for mobile telecommunication (GSM) license to providers. The target of National Economic Empowerment and Development Strategy (NEEDS) and the Nigerian Communication Commission (NCC) for the telecommunication sector include: Attainment of Tele-density (number of telephone lines in relation to population) of 1.25 by the year 2008.

Prior to this, Nigeria maintained an unenviable record as the world's third lowest, after Mongolia and Afghanistan, with a Tele-density of 0.73% before 1999 (OKereocha, 2008). This essentially can be achieved with the advent of mobile telecommunication (GSM) that has resulted in a dramatic increase in the total number of lines from 866,782 in 1999, to over 60 million lines, in year 2008 out of which GSM operators accounted for 57,622,901 lines, fixed line operators accounted for 2,537,504 code division multiple access, CDMA, operators connected 780,938 lines (Ndukwe, 2008). This recent drive in telecom reform policy initiatives has made noticeable impacts on Nigeria. It is however instructive to

investigate the extent and the magnitude of the impacts on employment, investment, income and transaction cost. These indeed form the background for this study.

In order to put the study in the right perspective, the following questions shall be investigated: Has mobile telecommunication (GSM) increased income and the living standard of Nigerians? Has the improvement in mobile telecommunication (GSM) led to employment opportunities (both direct and indirect) for Nigerians? Does mobile telecommunication (GSM) reduce transaction cost of various economic activities in Nigeria?

## LITERATURE REVIEWS

The concept, importance, economic implications and policy implication of GSM have been discussed by some authors and researchers. According to Balogun (2000), the emergence of GSM facilitates economic development as it provides easy and effective communication needed to stimulate and promote trade between Nigerian and its foreign partners in the world. According to Tella et al. (2007), GSM has emerged as an integral essential part of the culture and life of Nigerians. It had played a significant role in communication and encourages investment. In respect of employment, Manuaka (2008) and Okereocha (2008) found that, over 1,000,000 Nigerians have been directly and indirectly employed by the operators.

While supportive enterprises and service organizations like banking, haulage, consultancies, insurance etc. have themselves blossomed. According to Soyinka (2008), mobile phone has empowered the poor by opening up veritable windows of wealth generation for them to get out of the scourge of poverty. For Adebayo (2008), the introduction of mobile telecoms has the potential for reducing the cost of doing business and increasing output.

Soyinka (2008) and Ndukwe (2008) reported that the GSM business has contributed to the economy in the area of GSM recharge card printing. This has had the effect of saving Nigeria of about \$150 million monthly while providing employment and new skills to the dealers. It has also improved entertainment and networking among Nigerians, using short message service, SMS, and the signal calls. This view has been collaborated by Okereocha (2008). According to him, the telecommunication sector has become a major tool for empowering Nigerians, and with the continued inflow of massive investments and the doggedness of the industry regulator, the future look bright.

Sridhar and Sridhar (2003) argued that telecommunication has the potential to benefit urban areas, employers, employees and the society by reducing the need to travel and by reducing office distractions. As Egan (1997), pointed out, IBM reported savings of \$75 million in real estate expenses related to office space because of telecommuting. Also, companies' choice of

talent gets widened to even "mobility-impaired" talent. Contrary to perception, telecommunication has also increased employee participation in organizational activity.

As at 2002, more than 108 million users world-wide are working outside the boundaries of their enterprise. Evidence of such teleporting has been found in India, Europe, U.S.A. The findings of authors like Irani et al. (2000), Mitter (2000), Pancucci (1995), Kurland and Egan (1999), Handy and Mokhtarian (1995), and Shin et al. (2000), testified to this claim.

## THE METHODOLOGY OF THE STUDY

Here research methodology of the study is presented. Emphases are laid on the study area, model specification, research design, sources and method of data collection, sampling procedure and sample size and the data processing technique.

### The study area

This study was conducted in Ilorin the capital of Kwara State which is situated between the Southern and Northern Nigeria. The state is one of the thirty six (36) states making up the country and its population is estimated to be about 2.5 million people. The study was carried out in 20 communities within Ilorin metropolis in Kwara State.

### The research design

The research designs used for the study were survey and quasi-experimental research designs. The administered questionnaire is divided into four 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, assess and years of using GSM etc. The second section contains a number of response items like transaction cost since the introduction of telecoms; section three, consists of items on impacts of telecoms (GSM) on employment opportunities; and the last section is the impact of (GSM) on income level and standard of living of respondents. The questionnaire is designed to permit empirical investigation on various issues relating to the objectives of the study.

### Sampling procedure and sample size

A multi-stage stratified random sampling procedure was used in selecting the respondents from business/household/individual in this study. Respondents' communities were purposively selected on the basis of their geographical location, that is, (the four local governments that comprise the Ilorin Metropolis or the Ilorin Emirate). The communities were also selected based on their high population and the fact that majority of these areas have telecommunication network coverage. In all a total of 1000 questionnaires were distributed to respondents' for the study. The survey was carried out between January and February 2010.

### Description and sources of data

This study used purely primary data. The method of data collection was a structured questionnaire that captured the economic variables of the study in the selected areas within Ilorin Metropolis.

Information relating to income and employment generation and transaction cost and their general perception of GSM were sought in the questionnaire. The questionnaire was designed in such a way as to get responses and analyses easily.

**Analytical and estimation technique**

The analytical tools to be used in this study are descriptive statistics and multiple regression models. The data entries base on the standard coding manual were analyzed using the computer programming packages of the statistical product and service solution (SPSS), to produce frequencies and other indices in summarizing and characterizing the data set. Comparative and summary statistics such as the percentages and tables were performed.

**The model**

*Income generation model*

Following Howells and Bain (2000) and Rode et al. (1999), the empirical relationships between income generation and GSM is specified as follows:

$$Y_{ij} = \alpha_{0j} + \alpha_{1j} \text{NETEFF}_{ij} + \alpha_{2j} \text{RHS}_{ij} + \alpha_{3j} \text{HHA}_{ij} + \alpha_{4j} \text{HHO}_{ij} + \alpha_{5j} \text{ACF}_{ij} + \alpha_{6j} \text{CWEL}_{ij} + \alpha_{7j} \text{NSR}_{ij} + \alpha_{8j} \text{EDUC}_{ij} + \alpha_{9j} \text{CONT}_{ij} + \alpha_{10j} \text{SEX}_{ij} + \alpha_{11j} \text{SCA}_{ij} + \alpha_{12j} \text{ABI}_{ij} + e_j$$

$$\alpha_{1j}, \alpha_{2j}, \alpha_{4j}, \alpha_{5j}, \alpha_{6j}, \alpha_{8j}, \alpha_{12j}, >0$$

$$\alpha_{9j}, \alpha_{11j} < 0$$

$$\alpha_{3j}, \alpha_{7j}, \alpha_{10j}, = \pm \dots\dots\dots 1$$

Where,  $Y_{ij}$  = Amount of income generated by respondents in 2009 (Naira); NETEFF = Network has effect on income generated in 2009 (Yes = 1, No = 0); RHS = Savings of the respondent in 2009 (Naira); HHA = Age of the respondent (Years); HHO = Enterprise of the respondent (GSM = 1, non GSM = 0); ACF = Access to credit facility provided by telecom dealers (Yes = 1, No = 0); CWEL = Children’s Welfare (Yes = 1, No = 0); NSR = Number of spouse of respondent; EDUC= Educational attainment of respondents (years of formal education); CONT = Contingency need (Yes = 1, No = 0); SEX = Gender of the respondent (male = 1, female = 0); SCA = Expenses on socio-cultural activities (Naira); ABI = Amount of business investment in the year 2009 (Naira); e = Error term (with mean, zero and constant variance);  $\alpha_0$  = the intercept term;  $\alpha_{ij}$  = The coefficients of the explanatory variables (i = 1,2...12); j = 0.

**Employment creation model**

*The employment model in this study is expressed as follows*

$$\text{TELEMP}_{ij} = \beta_{0j} + \beta_{1j} \text{NRS}_{ij} + \beta_{2j} \text{HHA}_{ij} + \beta_{3j} \text{NEMPL}_{ij} + \beta_{4j} \text{EMPLBFGSM}_{ij} + \beta_{5j} \text{CWEL}_{ij} + \beta_{6j} \text{ABI}_{ij} + \beta_{7j} \text{EDUC}_{ij} + \beta_{8j} \text{GSMPOVS}_{ij} + \beta_{9j} \text{CONT}_{ij} + \beta_{10j} \text{DWLTH}_{ij} + \beta_{11j} \text{SEX}_{ij} + \beta_{12j} \text{SCA}_{ij} + e_j$$

$$\beta_{3j}, \beta_{4j}, \beta_{5j}, \beta_{6j}, \beta_{7j}, \beta_{8j}, \beta_{10j}, >0$$

$$\beta_{9j}, \beta_{12j}, < 0$$

$$\beta_{1j}, \beta_{2j}, \beta_{11j}, = \pm \dots\dots\dots (2)$$

Where, TELEMP = GSM employment by respondent in 2009; NSR = Number of spouse of respondents; HHA = Age of the respondent (years); NEMPL = Years not employed before GSM: (a) less than 2 years ( ) (b) above 2 years ( ); EMPLGSM = Employed before GSM(Yes = 1, No = 0); CWEL = Children’s welfare (Yes = 1, No = 0); ABI = Amount of business investment in the year 2009 (Naira); EDUC= Educational attainment of respondents (years of formal

education); GSMPOVS = GSM is an poverty alleviation strategy (Yes = 1, No= 0); CONT = Contingency need (Yes = 1, No = 0); DWLTH = Desire for wealth (Yes = 1, No = 0); SEX = Gender of the respondent (male = 1, female = 0); SCA = Expenses on socio cultural activities (Naira); e = Error term (with mean, zero and constant variance);  $\beta_0$  = the intercept term;  $\beta_{ij}$  = the coefficients of the explanatory variables (i = 1,2...12); j = 0.

**Transaction cost model**

The transaction cost model in this study is expressed as follows:

$$\text{TRCOST}_{ij} = \lambda_{0j} + \lambda_{1j} \text{NSR}_{ij} + \lambda_{2j} \text{HHA}_{ij} + \lambda_{3j} \text{GSMEP}_{ij} + \lambda_{4j} \text{CWEL}_{ij} + \lambda_{5j} \text{GSMTA}_{ij} + \lambda_{6j} \text{DDB}_{ij} + \lambda_{7j} \text{ABI}_{ij} + \lambda_{8j} \text{EDUC}_{ij} + \lambda_{9j} \text{GSMTTTC}_{ij} + \lambda_{10j} \text{PREST}_{ij} + \lambda_{11j} \text{SEX}_{ij} + \lambda_{12j} \text{SCA}_{ij} + e_j$$

$$\lambda_{3j}, \lambda_{4j}, \lambda_{5j}, \lambda_{6j}, \lambda_{9j}, >0$$

$$\lambda_{7j}, \lambda_{8j}, \lambda_{10j}, \lambda_{12j}, < 0$$

$$\lambda_{1j}, \lambda_{2j}, \lambda_{11j}, = \pm \dots\dots\dots(3)$$

Where, TRCOST = GSM transaction cost by respondent in 2009 (Naira); NSR = Number of spouse of respondents; HHA = Age of the respondent (Years); EPGSM = Expenditure on GSM in 2009 (Naira); CWEL = Children’s welfare (Yes = 1, No = 0); GSMTA = GSM is the only means of transaction business (Yes = 1, No = 0); ABI = Amount of business investment in the year 2009 (Naira); EDUC= Educational attainment of respondents (years of formal education); GSMTTTC = GSM reduces traveling and transport cost (Yes = 1, No= 0); PREST = Prestige (Yes = 1, No = 0); SEX = Gender of the respondent (male = 1, female = 0); SCA = Expenses on socio cultural activities (Naira); DDB = Distance between the dwelling unit of respondent and the nearest GSM providers’ office (km); e = Error term (with mean, zero and constant variance);  $\lambda_0$  = The intercept term;  $\lambda_{ij}$  = The coefficients of the explanatory variables (i = 1, 2...12); j = 0.

**RESULTS AND DISCUSSIONS**

**Results**

The results derived for the three models used for the regression analysis were presented in Tables 1 to 3 respectively in the appendix.

**Discussions on the income model**

Table 1 presents the result of the income model (See appendix). In terms of general performance, the model showed that substantial proportion (62%) of the variation in the GSM operators’ income was explained by the variables included in the model. This is proved by the size of the adjusted R<sup>2</sup> which is 0.617. Whether this proportion is significant or not is judged by the size of the F-statistics. While the adjusted R-squared measured the proportion of variation the F- statistic measured the significance of this variation. Based on the statistic reported in the Table 1, the F-statistics is 3.593 (0.000). Given the probability value reported in the parenthesis (0.000), it implies that the F-statistic was significant at 1% critical value, implying that the model was of good fit. The Durbin Watson and other general parameters that

**Table 1.** Regression output of the Income model.

<b>Model summary</b>				
<b>Model</b>	<b>R</b>	<b>R square</b>	<b>Adjusted R square</b>	<b>Std. error of the estimate</b>
	0.675 <sup>a</sup>	0.381	0.617	0.947
<b>Sum of squares</b>	<b>df</b>	<b>Mean square</b>	<b>F</b>	<b>Sig.</b>
41.91	13	3.224	3.593	0.000 <sup>a</sup>
68.19	76	0.897		
110.1	89			
<b>Variable</b>	<b>Coefficients</b>	<b>Standard error</b>	<b>T-stat</b>	<b>Prob.</b>
	<b><math>\alpha</math></b>	<b>S.E</b>		
(Constant)	2.783	1.433	1.942	0.056
Age of respondents (HHA)	-0.223	0.151	-1.482	0.143
Gender (sex)	-0.354	0.226	-1.562	0.123
Types of marriage (NSR)	-0.365	0.406	-0.901	0.371
Types of occupation (HHO)	-0.149	0.358	-0.415	0.679
Level of education(EDUC)	-0.209	0.166	-1.264	0.21
Investment in GSM (ABI)	0.414	0.09	4.587	0.000
Savings from income (RHS)	0.021	0.488	0.043	0.966
Network effect on income (NETEF)	-0.480	0.39	-1.229	0.223
Income used for contingences (CONT)	0.267	0.383	0.697	0.488
Income used for child's welfare (CWEL)	0.154	0.292	0.529	0.599
Income used for social activities (SCA)	0.495	0.308	1.606	0.112
Credit facilities(ACF)	0.353	0.231	1.530	0.13
R <sup>2</sup> =	0.617			
F- value	3.593 (0.000)			
Std. error	0.947			

Source: Data analysis, 2010.

were reported in the regression model may not apply in this case of cross sectional data. This is because the data were collected at a point in time not over a period of time. In such circumstances, the Durbin Watson could not be computed and the issue of serial correlation may become a non issue and therefore they are not reported.

With regards to the significance of each specific variable and its influence on income generation, two things are important: The statistical significance of the variable and the theoretical significance of the variable. The statistical significance is measured by the values of standard error, t-values in absolute term and the probability value while the theoretical significance is measured by the sign of the coefficient of individual variable. The coefficient is reported in column 2 while the significance is indicated by standard error in column 3 and the t-statistic in column 4. The t-value is complemented by the p-value reported in column 5. A variable is significant at 5% critical level if the value of standard error is less than half of the value of the coefficient, the t-values is not less than 2.0 in absolute

term and the probability value is not greater than 0.05.

Twelve variables were included in the model as guided by the theory and existing literature on the household income generation. Using the parameters discussed above, the first variable in the model is the age of the respondent (GSM operator). The coefficient of the variable is -0.223 (-1.482). The coefficient as expected is negative but statistically insignificant. From the descriptive analysis done earlier, it was observed that there were younger people in the GSM operation than the older people. Since the younger people are in their most productive and active age, they were more aggressive and desperate to make ends meets. They have a lot of expectations to meet and they are eager to prosecute the business more aggressively. But as the age increases, these agilities and aggressions reduced and the level of income generated also fell. However, the insignificance of the coefficient, though statistically significance, implied that age is not a crucial factor in the determination of level of income generated by the GSM operator in Nigeria. The sex of the respondent, (co-efficient= -0.354,

t-value = -1.562) also has similar pattern with age. It is negative and also statistically insignificant which implies that sex is not a significant determinant of the income generated from the GSM business. This is in line with a 'prior' expectation. GSM business is neither a male nor female dominated business. This thus suggests that despite the cultural setting, gender is not important issues in GSM business in Nigeria. Type of marriage (coffie= -0.365 and t-value -0.901) and type of occupation with -0.149 (-0.415) were also statistically insignificant and negative effect on income generation. Level of education with -0.209 (-1.264) and network effects on income with -0.480 (-1.229) were also negative and insignificant.

A general observation about all these socio-demographic variables in this model is that they were all negative and statistically insignificant in influencing the level of income generated. It implies that sociological and non economic factors might not be crucial in explaining the level of income of GSM operators in Nigeria. Looking at the other variables which constitute the economic variables, they all have positive effects on level of income.

Of most important variable in the model is investment variable. This variable represents the amount of money invested in the GSM business. The relationship between this variable and income generated showed the extent in which the investment in GSM business has boosted respondents' income and invariably increased the standard of living of the operators, all other things being equal. The coefficient on the Investment in GSM is 0.414 (4.587). Apart from the fact that the variable is statistically significant, it also has a positive sign and the value is very high in magnitude. It implied that income generated by the operator responded positively to increase in investment in GSM. Specifically, a 1% increase in investment on GSM would translate to more than 41.4% increase in the income of the operator. The positive and significant relationship between the investment and income generated is in line with a 'prior' expectation. By ordinary economic intuition, it is theoretically expected that increase in investment would increase the size of the business and if the economic fundamentals in the business are right, then it will result in higher income. Most of the GSM operators are into the business to generate income. The more they invest the more they are likely to have greater income. This implies that adequate and increased investment by GSM dealers will help increase their productivity, improve their living standard through increase in wealth or reduce the rate of unemployment. The variables that measure how the income is utilized though have positive signs but they were not statistically significant. For example, income use for contingencies [0.267 (0.697)], income used for child welfare [0.154 (0.529)], and income used for social activities [0.495 (1.606)] have positive signs. The positive relationship between these variables and income generated shows that consumption induced the operator

to work more. The consumption spending could be interpreted as a measure of standard of living.

### Discussion on employment generation model

Table 2 presents the estimates of the employment model (See appendix). As shown by the parameters in the table, the model fit the data well and the explanatory power was relatively high and significant. The coefficient of determination  $R^2$ , which measured the proportion of changes in the dependent variable that is explained jointly by the independent variables, was 0.71 and the remaining 0.29 is explained by other factors outside the model. This implied that a unit change in all the independent variables could bring about 71% changes in the dependent variable (employment). This therefore reinforces the fact that the model is of good fit. Four variables were significant in this model. These include the income used for contingencies, unemployment before GSM, duration of unemployment and GSM as poverty alleviation strategy. Two of the variables: Unemployment before GSM (0.603) and duration of unemployment before GSM (0.264) had positive coefficients and the remaining two; Income used for contingencies (-0.424) and GSM as poverty alleviation strategy (-0.321) had negative coefficients.

The positive value of the coefficient of unemployment before GSM variable (0.603) implied that GSM has increased employment in the study area by 60%. Therefore, engaging in GSM business reduced poverty and provided employment opportunities for the teeming population of Ilorin.

Duration of unemployment is also significant and positive [0.0264 (2.507)]. This implies that those who were unemployed for longer period constituted the bulk of GSM operators in Nigeria. The positive relationship also indicated that the urge to get out of poverty due to unemployment drives many people to GSM business. Therefore, GSM has substantially created jobs and impacted positively on income and standard of living of people in Nigeria.

The sign and significance of the poverty alleviation variable is very instructive and supportive of the positive role GSM business has played in poverty reduction among the Kwara State residents. The coefficient of poverty alleviation variable which is -0.321 (-2.178) showed that employment and poverty level were inversely related. This suggested that the more people participate in GSM business the less the poverty level. Therefore GSM could be considered to be an important strategy for reducing the incidence of poverty in Nigeria.

### Discussions on transaction cost model

Table 3 presents the estimates of the regression for the

**Table 2.** Regression output on employment generation model.

<b>Model summary</b>						
	<b>R</b>	<b>R square</b>	<b>Adjusted R square</b>	<b>Std. error of the estimate</b>		
	0.879 <sup>a</sup>	0.501	0.708	0.392		
<b>Model</b>		<b>Sum of squares</b>	<b>df</b>	<b>Mean square</b>	<b>F</b>	<b>Sig.</b>
Regression		7.569	12	0.631	4.105	.000 <sup>a</sup>
Residual		7.528	49	0.154		
Total		15.097	61			
<b>Variable</b>	<b>Coefficients</b>		<b>Standard error</b>			
	<b>B</b>	<b>Beta</b>	<b>S.E.</b>	<b>T – stat</b>	<b>Prob.</b>	
(Constant)	-0.214	0.057	0.66	-0.323	0.748	
Age of respondents (HHA)	0.045	0.003	0.09	0.507	0.615	
Gender (sex)	0.003	0.165	0.112	0.029	0.977	
Types of marriage(NSR)	0.332	0.071	0.221	1.498	0.14	
Level of education (EDUC)	0.054	0.072	0.088	0.614	0.542	
Investment in GSM (ABI)	0.028	-0.254	0.043	0.65	0.519	
Income used for contingences (CONT)	-0.424	-156	0.176	-2.41	0.02	
Income used for child's welfare (CWEL)	0.195	0.073	0.142	1.371	0.177	
Income used for social activities (SCA)	0.118	0.073	0.177	0.670	0.506	
Not employed bf GSM (NEMPL)	0.603	0.497	0.129	4.682	0.000	
Duration of unemployed bf GSM	0.264	0.275	0.105	2.507	0.016	
In GSM business due prestige (PREST)	0.125	0.116	-0.115	1.086	0.283	
Is GSM poverty alleviation program (GSMPOVS)	-0.321	-0.248	0.147	-2.178	0.034	
R <sup>2</sup>	0.708					
F- value	4.105 (0.000)					
Std. error	0.392					

Source: Data analysis, 2010.

transaction cost model (see appendix). One of the positive benefits of GSM is the possible reduction in cost of business transaction. The introduction of GSM has reduced the need for physical contact and possibly increased communication. Unlike before, many people will rather make a call first to confirm any appointment before they embark on the journey. Many businesses which were usually negotiated through direct physical contact or face to face are being carried out through GSM phone calls. The cumulative effect of this change in business transaction is the possible reduction in production cost of business. The result of the transaction cost model indicated that the adjusted R<sup>2</sup> was 0.733 which implied that the independent variables in the model were able to explain over 73% of the variation in the transaction cost. The absolute value of F- statistics which is 5.641 which is highly significant ( $p < 0.01$ ) implied that the model was of good fit. Two of these variables: level of education (EDUC) and amount of business investment (ABI) were significant and they both conformed to 'priori' expectations. Given the significance of level of education, it shows that the higher the level of education of the GSM operator, the lower the transaction cost. The implication

of this result is that the level of education of the GSM operator assisted them to reduce the cost of doing their business.

The amount of business investment was also inversely related to transaction cost.

The coefficient of the investment in GSM variable which is 0.638 implied that an increase in business investment by 1% will lead to reduction in the transaction cost of the respondents by 64%. This suggested that as the investment in GSM increases, the cost per unit falls. When economies of scale are present, increase in output will result in lower per unit.

## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **Summary of findings**

Specifically, the study examined the impacts of the trend and the spreads of GSM usage on employment opportunities to the Nigerians; income of the masses and transaction cost of various economic activities of the

**Table 3.** Regression output on Transaction cost model

<b>Model summary</b>					
<b>R</b>	<b>R square</b>	<b>Adjusted R square</b>	<b>Std. error of the estimate</b>		
0.806 <sup>a</sup>	0.537	0.733	0.988		
<b>Model</b>	<b>Sum of squares</b>	<b>Df</b>	<b>Mean square</b>	<b>F</b>	<b>Sig.</b>
Regression	82.844	12	6.904	F	Sig.
Residual	71.296	73	0.977	7.069	0.000 <sup>a</sup>
Total	154.14	85			
<b>Variables</b>	<b>Coefficients</b>		<b>Standard error</b>	<b>T- value</b>	<b>Prob.</b>
	<b>Λ</b>	<b>Beta</b>	<b>S.E</b>		
Constant	-1.522		1.210	-1.258	0.212
Age of respondents (HHA)	-0.054	-0.027	0.174	-0.312	0.756
Gender (sex)	-0.174	-0.065	0.249	-0.698	0.487
Types of marriage (NSR)	0.043	0.009	0.429	0.101	0.92
Level of education (EDUC)	-0.443	0.227	-0.172	-2.577	0.012
investment in GSM (ABI)	-0.638	0.569	-0.121	-5.273	0.000
Income used for child's welfare (CWEL)	0.35	0.108	0.288	1.216	0.228
Income used for social activities (SCA)	0.382	0.099	0.338	1.132	0.261
In GSM business due to prestige (PREST)	0.313	0.112	0.241	1.300	0.198
GSM expenditure (GSMEP)	0.114	0.092	0.139	.823	0.413
GSM your only means of transacting business (GSMTA)	-0.053	-0.02	0.239	-.224	0.824
GSM reduce traveling (GSMTTC)	0.608	0.157	0.347	1.751	0.084
Nearest GSM center to you (DDB)	-0.182	-0.144	0.137	-1.328	0.188
R <sup>2</sup>	0.733				
F – value	7.069 (0.000)				
Std. error	0.988				

Source: Data analysis, 2010.

masses'. The findings can be summarized as follows:

1. The first major observation made is that the introduction of GSM in Nigeria has actually revolutionized information and communication sector and increased the accessibility and utilization of GSM among generality of Nigerians.
2. The GSM business was found to be the main occupation of the respondent as such it is the main source of their income and livelihood.
3. Most of the GSM operators had over N20,000 investment in their retail GSM phone business.
4. Most of the operators generated a gross income of not less than N40,000 per month.
5. The outcome of the empirical investigations shows that Global System for Mobile Communication has contributed positively to the economic situations of Nigeria and has served as source of income and employment to many Nigerian youths.
6. The study found that GSM business had reduced

production cost of doing business in terms of traveling and transaction cost.

7. Investment in GSM was found to have positive and significant effect on income and employment generation while it has negative but also significant effect on transaction cost. This implies that significant investment in GSM has impacted positively on Nigeria economy using the Kwara State as a micro mirror of Nigeria economy.

## Conclusion

The Nigerian economy is found to have naturally gained from the emerging information technology. Meanwhile, the GSM licensing process which is universally adjudged to have been a rare display of transparency, openness and non – intervention, has turned the fortunes of the country around, and has consequently raised the investor's confidence in the Nigerian market and



economy. Likewise, the country has also benefited in the aspect of employment generation which is in consonance with the objectives of NEEDS to the Nigerian Youths. Other benefits are reduction in transportation costs, production cost, increased business efficiency, attraction of foreign funds, increased in interment services and a host of others. Thus we conclude that the deregulation of the telecommunication sectors has made very positive and significant impact on the economic situations of Nigeria

## RECOMMENDATIONS

From the findings and conclusions presented above, the following recommendations were made to the regulatory body of GSM in Nigeria; that is, the Nigerian Communication Commission (NCC) and, the Federal Government of Nigeria. The government should expand tele-density and directly make telephone communications cheaper and accessible. To achieve this goal, more licenses should be given to GSM operators in order to allow for healthy competition among the GSM operators. This will lead to improved quality of services, quality of product and consequently increased employment creation in the country.

Therefore, there is need for the Federal government to provide the necessary economic infrastructure (particularly power supply) to the GSM operators in order for them to deliver efficient services and to be able to reduce their call charges. Since the licensed operators claimed that high cost of maintenance, irregular power supply and tariffs are some of the factors responsible for the high cost of making GSM calls.

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