Direct RESEARCH JOURNALS
Vol.3 (3), pp. 61-71, December 2016
ISSN 2449-0806
International Standard Journal Number (ISJN)
e-ISJN: A4372-2600
Article Number: DRJA279038834

Direct Research Journal of Social Science and Educational Studies (DRJSSES)
directresearchpublisher.org/journal/drjsses/

Research Paper

Global system for mobile telecommunications services: the unending battle of quality of services in Nigeria

MICAH, D. J. and ALABI, J. T.

Department of Sociology Adekunle Ajasin University,Nigeria.
*Corresponding Author Email: damilolamicah@yahoo.com, damilola.micah@aaua.edu.ng .

Received 27 October 2016; Accepted 28 November, 2016

The Global System for Mobile Telecommunication (GSM) and Code Division Multiple Access (CDMA) services have been in operation in Nigeria since 2001. Despite the perceived benefits associated with the utilisation of these services, problems of quality of services have remained continuous among subscribers in Ibadan, Southwestern Nigeria. The study examined the level of quality of GSM services. The Neoliberalism and Rational Choice theory guided this study. Research design was cross sectional survey. A sample of 1600 respondents consisting of 800 in Ibadan Main City (MC) and 800 in Less City (LC) areas was selected. Moreover, 38 respondents were interviewed. Respondents' mean age was 29.6±9.3 with 45.2% from MC, 54.4% were females, 80.4% earned less than N50,000 monthly and 72.9% had secondary education and above. More respondents from MC (62.0%) and LC (71.8%) perceived quality of GSM services as poor due to incessant call drops (82.4%), network disruption (78.9%), and poor call set-up (79.5%). There was positive association between location and perception on quality of services (X^2 =32.24), between age and perception on quality of GSM services (X^2 =49.24); between income and level of utilization of GSM (X^2 =184.77). Qualitative data showed that infrastructure inadequacies, government's inconsistent policies, heavy import duties and multiple taxations limited the capacity of GSM providers to offer quality services and relatively low tariffs. NCC and CPC officials identified unethical practices in promotions by service providers, exploitation of subscribers and problem of infrastructure as real challenges in the sector. Deregulation increased access and utilization of telecommunication services in Ibadan. Quality of GSM services remained erratic in the face of poor electricity supplies. Government should improve infrastructure to enhance stability in GSM services.

Key words: Telecommunication, Deregulation, Neo-liberalism, Quality of GSM Services, Call set-up

INTRODUCTION

Deregulation assumes inevitable status in the Nigeria Telecommunication section when in 2001 GSM services came to complement NITEL services. Prior to this period, telecommunication was class based because only few rich Nigerians and middle class could afford to own a telephone or cellular. Indeed the tele-density as at this period suggested that less 5% of the population in Nigeria had access to telecommunication services. The meaning is that out of every one hundred persons, there were only four or less than five persons that could either access or utilize telephones. Now the experience has changed dramatically with the introduction of GSM services and CDMA. Despite the landmark achievement in this sector, the stability of network in GSM services has

remained unattainable in the last one decade. Yet deregulation has continued to invigorate as service providers engaged themselves in keen competition, price war and gaining the dominance of the market. Specifically, the dream for uninterrupted GSM services among subscribers in Nigeria has remained unattainable. There are continued problems of call drops, poor call set up, hanging-over and network disruption. At the same time, subscribers have complained wrong call destination and arbitrary charge of GSM tariffs. Thus, while deregulation may have benefitted in terms of the contributions of GSM to Nigerian economy, at the micro level the perceived benefits are yet to be fully enjoyed. This is particularly in the aspect of quality of services providers. The study specifically examined subscribers' description of the quality of GSM services in the study areas.

SIGNIFICANCE OF THE STUDY

Incessant call drops and poor call set-up remain a major factor undermining the benefits of deregulation in Nigeria. This suggests that while access and utilization of GSM services have soared in the last ten years, subscribers have consistently experienced poor services despite their financial commitment. This study will attempt to reveal the perceptions of subscribers regarding the quality of their GSM services. This is important to show how deregulation has impacted positive consequences on the masses of people who are the appraisals of development policies.

LITERATURE REVIEW

Telecommunication infrastructure remains one of the major issues affecting technology deployment required for growth and development in Nigeria. When Nigeria gained independence in 1960, there were only 18,724 functional telephone lines for an estimated population of 45 million. During this time, the tele-density ratio was 0.04 telephones per 100 people (Mughele et al., 2011). In the thirty years of military rule, there was very little investment in telecommunications, and other sectors did not fare any better. According to the International Telecommunication Union, by 1996 Nigeria's tele-density ratio was a mere 0.36 (Ajala, 2005). It rose slightly to 0.4 by 1999 (Ndukwe, 2008). Nigeria's tele-density was a far cry from the African average of 1.67. Even the NCC admits that Nigeria has had a very limited telephone network for many years, and the waiting list is estimated at over 10 million people, who applied to the incumbent monopoly, NITEL for services. However, with the liberalization of the telecommunication industry in 2001, the story changed dramatically. The tele-density ratio tripled within just one year of GSM operation. By May 2005, Nigeria with an estimated population of 128,771,988 had more than 9 million GSM subscribers, making the country one of the fastest growing GSM markets in the world. At the moment, there are four active GSM operators in Nigeria, which included MTN, Globacom, Airtel, and Etisalat. The NITEL's operation of MTEL has been in extension. Also, in Nigeria, there is operation of CDMA services such as Visafone, Multilinks, Starcomms, and Zoom wireless. It was predicted that between 2003 and 2006, Nigeria's GSM market would be Africa's fastest-growing mobile market, and this prediction had been fulfilled. The competition is getting fiercer by the day as operators have to compete desperately for the same potential subscribers (NCC, 2012).

Four years after the start of the GSM era in Nigeria, the focus gradually shifted from providing coverage to provision of quality service. Mughele et al. (2011) observed that the euphoria of owning a phone set is gradually giving way to complaints of dropped calls and congestion. The operators are fast realizing that they are in a highly competitive environment where subscribers can make or break them. Dissatisfaction by subscribers gives rise to a high rate of subscriber churn and low revenue for the operator. The performance of the network has a direct impact on the revenues. The NCC is putting pressure on the operators to step up the quality of services offered to Nigerians and had even gone a step further to award contracts to private companies to conduct comparative analyses of the quality of service offered by each of the operators. The NCC has further threatened to sanction any operator that fails to pay attention to quality (NCC, 2012).

The GSM mobile telephone offers high quality voice communications and low bandwidth (9.6kb/sec) data connections for fax, short message service (SMS) and full dial-up connection to the internet for e-mail and web browsing, usually requiring a mobile computer or intelligent handset. The need for mobile computing came as a result of the need to access information anywhere, anytime. The drawback of this system is its inefficient use of the radio resources (Ndukwe, 2008). The increasing need of mobile telephone and devices for data communication drives the need for a fast, reliable and available infrastructure. Mobile communications now offer a lot of services ranging from voice call to mobile internet, multimedia and e-mails. Mobile terminals are now becoming complex embedded systems, with stringent real time requirements for signaling and voice processing. There are many technical challenges to be solved to make all of these components work as envisaged.

Quality of service can therefore be determined by the following variables. This includes the rate at which difficulty occurs over time, rate of response over time, tariff and availability of communication channels. Since most of these problems involve entities and relationships in reality which is dynamic in nature, it therefore needs a

dynamic ontology. Aside from telecommunication, other service oriented domains finds ontological models to be useful tools (Intelligent Integration of Railway Systems [InteGrail] (2010)). This domain knowledge requires management, and this is one challenge of knowledge representation with ontologies and their incomplete knowledge representation (Brewstar and O'Hara, 2007; Church and Smith, 2007).

The handsets sold over the next few years are likely to operate much more differently than those of today because of innovation that is characteristic of telecommunication world. GSM is going to play a practical and pragmatic role in making all of these features work. Many people are attracted to GSM because of its mobility features. GSM is now a means of livelihood for many people as more individuals are engaged in phone-related businesses.

Another thing that attracted many subscribers is the marketing strategies of the operators and competition to get many subscribers, even though their infrastructure cannot sustain them. Some operators complained exorbitant fee to obtain licenses for operation in Nigeria, so they have to get as many subscribers as possible for them to recover their money. These factors have led to congestion on the Nigerian GSM network. The causes of congestion in GSM services in Nigeria have been identified as follows.

Lack of adequate base stations

On December 29, 2003, Vanguard published a report where Adrian Wood, the Managing Director of MTN made a declaration that they have 1.5 million subscribers and that they had only 670 base stations all over the country. That gives an average of 2,238 subscribers to a base station, which is highly inadequate. Now the numbers of GSM/CDMA subscribers has increased drastically due to a landslide reduction in tariffs and SIM card. It is doubtful if mobile communication Base Stations (BS) had a matching increase. The present ratio is about 10,000 subscribers to one base station (Mughele et al., 2011). This situation fell below international standard of 100 subscribers per one BS.

Lack of adequate channels

The inadequate base stations automatically produce inadequate channels to support the subscribers and the service rolled out by these operators. The channels determine the total number of subscribers that can be allowed to use a base station simultaneously at any point in time. This trend remains the same because any time a base station is added to network; a high-level of promotion will be rolled out in order to attract more customers.

Competition for subscribers among the operators

It seems the highest priority of the GSM operators in Nigeria is the total sum of money they will make from the subscriber base and not the overall quality of service (Mughele et al., 2011; NCC, 2012). So, they have catchy advertisements and often make false declarations to attract customers to their network, but they don't have infrastructure to sustain and satisfy customer demands. This action resulted in too many subscribers for their network to support.

Lack of end-to-end system

The GSM operators in Nigeria are still depending on radio waves to transfer speech and data from base stations to mobile switching centres. Radio wave signals are subject to interference from other electromagnetic waves generating systems such as radio and television. When such interference occurs, it could lead to call setup failure, call drop, or other distortions (Mughele et al., 2011).

Lack of good quality phones

In any radio link communication, it is the radio link between handset and base station that remains the weakest part of the communication system. If conditions are unfavorable, or the user moves into a tunnel during a call, they will lose connection (Mughele et al., 2011). Good quality handsets with higher frequency wave intensity will make a call more stable and reduce interference from another caller. This is justified by the regulation of the power control that transmits power between the terminal and base station. It is very important to have efficient power control in order to keep interference at a minimum.

Lack of good communication terms between different networks

One of the reasons for poor inter-network communication is the inability to agree on the sharing ratio of the revenue between the network operators. As a result the numbers of lines that are open for interconnectivity are small compared to the total number of lines. For example, as of December 2005, MTN had about 6 million subscribers and Mtel had about 3.5 million subscribers. Then MTN only agreed to open up 600 lines to the Lagos region and 300 lines to the Abuja region for interconnectivity with MTN. This is why subscribers find it difficult to interconnect in both networks. Although interconnectivity is opened to every GSM/CDMA line today, tariff and network have continued to erode customers' satisfaction.

THEORETICAL FRAMEWORK

The Neoliberal Perspective and Rational Choice Theory were used. Neoliberalism posits that economic growth is consequent upon free trade, liberalization, deregulation, and privatisation. This means for an economy to develop, there must be open system, which allows for international relations and cross-border trade. Free trade and economic liberalization is not enough, domestic economies should eradicate any perceived barriers to market forces. This is referred to as deregulation that noctures privatisation. Ultimately, a globalised economy that sustains capital flight and investment constitutes the vision and mission of the neoliberals. This suggests the reason for the operation of multinational telecommunication corporations (such as MTN, AIRTEL and ETISALAT, etc) in Nigeria and their continuous provision of services.

Rational Choice focuses on individual rational action that helps to explain the aggregate behaviour in the society. According to the main proponent of this theory, Coleman (1990), the main task of sociologists is to focus on social system, but that such macro phenomena must be explained by examining the factors internal to them, which centres on behaviour of individuals at the micro level. He identified reasons for this argument. First, he argued that data are usually gathered at the individual level and aggregated or composed to yield the system level. Second, that the individual level is the point where interventions are ordinarily made to create social change in the society (Coleman, 1990). Hence, in this study the behaviour of individual GSM subscriber serves to explain the utility or otherwise of deregulation of telecommunications sector in Nigeria.

On the whole, the argument of rational choice theory is the rational construction of social system from the lowest level of individual. This implies that knowledge of macro level is best understood from primacy of micro level. In other words, to gain adequate understanding of the current state of telecom deregulation in Nigeria, focus should be on the aggregate of subscriber's perception which gives telecommunications sector in Nigeria its true character. This refers to subscribers' perceptions and reactions to the quality of services they receive from telecom operators.

METHODOLOGY

Research design

The study adopted cross sectional survey

The study area

The study was located in Ibadan metropolis, South Western Nigeria. A former capital of old Western region, Ibadan is like many cities in Nigeria that have been swelling with migration. There are eleven local councils that make up Ibadan metropolis, which are classified into Ibadan main city and less city areas. The current population is over 2.7 million, out of which approximately 1.2 million people have access to telecommunications services (Federal Republic of Nigeria Official Gazette, 2009). The rationale for selecting Ibadan as the study area lied in the fact that it is the third most populous town in Nigeria after Lagos and Kano. Since deregulation of the telecommunication sector was an effort to make public utility services available to people, it was necessary to examine the impact of the policy in a densely populated areas.

The study population and sample size

The study population comprised GSM subscribers, service providers, and officials of NCC and CPC. The GSM operators selected were Globacom, MTN, Airtel, Starcomm and Etisalat. The GSM service providers were purposively selected. The sample size is limited to 1600 respondents. This was drawn from subscribers across the designated study locations. These locations are divided into main city and less city. The main city/urban locations selected were Ibadan North LG (Mokola-Bodija axis), Ibadan North West LG (Eleyele-Onireke axis), Ibadan South East LG (Molete-Mapo axis) and Ibadan South West LG (Ring road-Challenge axis).

The less city locations selected were Ido LG (Apete-Akufo axis), Akinyele LGA (Ajibode- Moniya axis), Egbeda LG (Alakia- Egbeda town axis), and Lagelu LG (Igbo Elerin- Lalupon axis). The local governments were selected on the basis of simple random sampling (ballot), while study locations within each of the local governments were based on purposive. Thus, 800 subscribers were each selected from urban and rural locations. In other words, sample of 200 respondents were selected from each sub location/community.

Furthermore, ten (10) telecom officials were purposively selected for in-depth interview from the five GSM companies. Similarly, 16 respondents who were GSM services hawkers and 8 respondents who utilised GSM services for personal purposes were selected for interviews from rural and urban locations. Also, two (2) staff of the Nigerian Communications Commission (NCC) and two (2) staff of the Consumer Protection Council (CPC) served as key informants (i.e. KII).The calculation for sample size as extracted from the work of Mason (1978) and Berenson and Levine (1998) is given below. The authors identified the following formula as suitable for research in social science while emphasizing 99% as the minimum value of 'z' in medical research.

$$n = \frac{z^2 p (1-p)}{e^2}$$

n= sample size; z= level of confidence; p= proportion of target population (i.e. GSM subscribers); e= permitted error
e= 0.02 constant; z= 1.96 at 95% confidence interval or 1.64 at 90% confidence interval;

p= Target population of GSM users in Ibadan
Total population (both users and non users of GSM) resident in Ibadan

$$= \frac{1200000}{2700000} = 0.4$$

Hence, calculating at 90% confidence level:

$$\frac{1.64^2 * 0.4\ (1-0.4)}{0.02^2} = 1614.$$

The approximate sample size used for the study was 1600. The distribution of the sample size was based on the proportion of GSM subscribers in each of the selected LG areas. According to NCC (2011) data for Ibadan, each of the 8 LGs had an approximate proportion 9.3% of the GSM subscribers in Ibadan. Hence, the distribution gave sample of 200 in each of the LG areas.

Sampling procedure

The sampling technique for this study involved multi stage sampling. This comprised purposive, simple random, cluster, convenience and quota sampling techniques. Purposive sampling was used in selecting the study area (Ibadan). Simple random was used to select the local government areas in the Main and Less cities in Ibadan. Cluster sampling was used to select strategic locations (i.e. Market, Secretariat and Motor Park) for the study.

Furthermore, convenience sampling was used to select subscribers in the study locations. The use of convenience sampling was largely due to the absence of sample frame in the designated study locations. The number of sample selected for survey in each location was based on quota sampling. This technique was also used to select population categories such as students, farmers, civil servants, market traders, and teachers and so on. Furthermore, purposive sampling was used to select respondents for IDIs and KIIs. In essence, triangulation of sampling techniques was utilised in selecting the sample size for this study.

Method and instruments of data collection

The method of data collection for this study involved quantitative and qualitative methods. Whereas the former was used to collect quantitative data, the latter was used to collect qualitative data. Furthermore, the study utilized both primary and secondary sources of data collection.

The instruments for data collection comprised questionnaire, in-depth interviews (IDIs), and Key Informant Interview (KII). Questionnaire was applied on the GSM subscribers, while IDIs was used for Telecom Officials and GSM hawkers. KII was used for the officials of NCC and CPC.

Method of data analysis

The method of data analysis involved quantitative and qualitative methods. Quantitative method was based on univariate and bivariate analyses. The univariate analysis which was purely descriptive utilised frequency counts and percentages to present the data. Bivariate analysis involved cross tabulation and the use of inferential statistics such as Chi-square test to establish association between variables. All these were processed through Statistical Package for Social Sciences (SPSS) (17.0 Version). For qualitative data, raw data from in-depth interviews were transcribed and sorted. However, verbatim quotations, ethnographic summaries and content analysis were used for analysis and also to highlight the subject matter under discussion.

Ethical consideration

The consent of the prospective respondents was sought and obtained through social interaction and familiarities before the study instruments were administered on them including recording their voices on electronic devices.

Presentation of findings

This section presents and discusses the analysis of quantitative and qualitative data collected in the course of fieldwork.

SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS

Finding in (Table 1) shows that male (45.6%) and female (54.4%) respondents participated in the study. Most respondents (36.4%) were between ages 16 and 20 years, though 5.3% of the respondents were 51 years and above. At the level of marital status 65.1% were single, 31.6% were married and 6.1% divorced. This implies that most people who participated in this study were young people who were keen to utilize the services of GSM. At the level of educational qualification, most respondents were very literate having one form of educational qualification or the other (96.4%), although 0.4% had no formal education. This attests to the fact

Table 1. Distribution of respondents by the quality and stability of gsm services.

There is network coverage of GSM services in my resident area	Frequency	Percentage
No	94	5.9
Yes	1506	94.1
Total	1600	100.0
I have clear signal in my main GSM services		
Not sure	162	10.1
No	200	12.5
Yes	1238	77.4
Total	1600	100.0
Connectivity within the same network		
Never easy	158	9.9
Easy	1142	71.4
Very easy	300	18.8
Total	1600	100.0
Connectivity to other network		
Never easy	653	40.8
Easy	803	50.2
Very easy	144	9.0
Total	1600	100.0
Quality of main GSM network		
Very low quality	6	0.4
Low quality	118	7.4
High quality	1162	72.6
Very high quality	314	19.6
Total	1600	100.0

Source: Field Survey, 2011.

that Ibadan is host to foremost university in Nigeria where influences knowledge of residents and also operating GSM requires minimal level of formal education. The religious affiliation of the respondents consists of Christians (76.0%), Muslims (23.8%) and Traditional Worshippers (0.3%) Sociologically speaking, religion is very important because it shapes people's attitude and behaviour towards certain innovations.Income distribution of the respondents shows that most of them (45.7%) were living on less than income of NGN10,000 per month. This implies that most respondents that participated in this study were people of limited means of income and some had no source of income at all.

QUALITY OF GSM SERVICES

The period NITEL dominated telecommunications sector in Nigeria was marked by poor service coverage; incessant disruption of network; abnormal billing rate; and low accessibility among several inhibiting factors (Ndukwe, 2003). As a way of correcting these anomalies, telecommunication sector was deregulated in 2001. As a result, GSM technology emerged to compete with NITEL. Despite the deregulation, one major issue which has characterized the sector is the issue of quality of GSM services offered by the operators. The result presented in the table above showed that when the respondents were asked about the GSM network coverage in their areas, 94.1% said they had network coverage in their locations, and 5.9% were not certain about network coverage. As a follow up to the above question, 77.4% of the respondents said GSM communication gives clear network signal in their locations and 10.1% stated otherwise. Moreover, 78.9% of the respondents claimed that they experienced network disruptions, while 12.8% said there were no network disruptions in their area. The fact is that in GSM services, there are two categories of operators. One operates on SIM card and this includes companies like MTN, Globacom, Airtel and ETISALAT. For this category of operators, they have wider coverage area with exorbitant tariff charges. The second category of operators operates on Code Division Multiple Access (CDMA) and some companies found in this category include Starcomms, Multilinks, Visafone, Zoom etc. This second category has relatively low coverage area with cheaper tariffs. However, it is important to note that the former continues to dominate the market. Interconnectivity of network refers to connectivity within the same GSM networks, while interconnectivity is communication between GSM networks. Respondents were asked to give account of their experience on interconnectivity, and the result shows that 71.4% said it was easy, while only 9.9% indicated it was not easy. On the aspect of interconnectivity, 40.8% of the respondents said it was never easy, while 50.2% said the connectivity was easy. Furthermore, the quality of main GSM network

was rated by the respondents in the study areas. On this basis, 72.6% rated the quality as high, while 7.8% rated it as low. The deduction one can make here is that most of the operators may have invested in network expansion which involved building new base stations that improved the quality of services in the study areas unlike in the last ten years when only few base stations existed. The stability in the quality of GSM services was attested by a twenty five year old male respondent when he asserted:

I use Globacom and MTN. The services vary. I prefer MTN because the network is relatively stable. Globacom has not been very stable for some times now. I use the two lines because the networks cannot be bad at the same time. If one is not good, you can use others. Network is very unstable especially during the period of promos and bonanzas (IDI/GSM subscriber/civil servant/Lagelu LG/2011).

The response above shows that although there is relative stability in the quality of GSM services, evidently most subscribers continued to maintain two networks in order to avoid instability that may appear in the services with some cost implications. Furthermore, it can be inferred that the desire by the operators to have greater share of the market through promotions and other bonanzas usually lead to network congestions which affect the quality of services offered to the consumers. The role of NCC is central in understanding the problems associated with network services. A senior official of the Commission said:

*The Commission has notified some GSM operators with poor quality of service of its intention to issue a direction that with effect from November 30, 2011, any of the operators that fail to meet the targets will be barred from further sale of its SIM Cards or add any new subscriber to its network. Any new SIM card sold, or additional subscriber added to the network in contravention of the direction, will attract a penalty of NGN1,000,000 per subscriber added. The Commission in a notice of intention to issue the directives to the operators also told three operators MTN, GLO, and AIRTEL, who are the main culprits that at the expiration of the 30-day deadline, it will strictly enforce the impending directive whose contravention will attract a penalty of NGN5,000,000 and additional NGN500,000 per day that such contravention persists. Apparently to ensure that the operators do not take its threat with levity, the commission said that failure of any of the operators to meet the quality of service targets from November 30, 2011 will attract a fine of NGN500,000 for every month of failure (KII/NCC/Abuja/2012).*The position of NCC is strong at correcting the poor services noticed in the sector, however the problem has persisted. It is important to note that several months after the expiration of ultimatum given to the operators to improve the quality of their services, most subscribers were still confronted with poor service delivery in the sector. Recently the NCC fined four GSM operators whose quality of services fell below the Commission's Key Performance Indicators (KPI). This is clearly stated in the Commission's website which reads:

The nation's telecoms regulator, which recently sanctioned four GSM network operators a total of N1.17billion in poor service quality fines had given the erring operators "gestation period" between when they launched services in 2001 and now to grapple with various challenges they were facing. NCC had also consulted with operators on service quality benchmarks ahead of the January 2012 gazetting of regulations that gave the telecoms regulator adequate powers to begin imposition of sanctions for poor service quality (www.ncc/news.gov.ng/2012).

Evidently, the action of the Commission gives insight into the readiness of the regulatory agency to protect the interest of subscribers and enforce standard and quality in the sector. In a similar directive, the Commission's website further reads that:

Almost three weeks after missing the deadline given the four GSM operators – MTN, Globacom, Airtel and Etisalat – to pay a N1.17 billion fine imposed by the Nigerian Communications Commission (NCC), the companies have agreed to pay the fine. The telecoms were fined for poor quality of services and failure to meet their key performance indicators (KPIs). However, the companies, whose representatives met with NCC officials in Abuja, demanded, as a precondition for the payment of the fines, a review of the present KPIs, which they argued did not take into consideration the peculiarity of the Nigerian business environment. KPIs are the parameters set by NCC to monitor quality of service, customer service and technical service, among others. But the operators have complained that the KPIs were unrealistic and unachievable, going by the present poor state of infrastructure in the country (www.ncc/new.gov.ng/2012).
It appears that the sanction imposed on the operators is proactive, however the contending issue bothers on the capacity and capability to sustain the action bearing in mind the infrastructural challenges faced by the operators. This position is substantiated when an official of GSM provider said:

It is true that sometimes services may not be stable. We run a 24-hour daily and 7 days a week on our generating plant to power the base stations. The cost is high. Most times our cables are destroyed due to road construction. May be with time services will remain stable when government fix the infrastructure (IDI/Globacom staff/Ibadan/2011).

Table 2. CHI square test of association between respondents' area of residence and their perception of quality of GSM services.

Area of residence	Perception of quality of services			
	High	Moderate	Low	Total
Ibadan Less City	490 (30.6%)	233 (14.6%)	77 (4.8%)	800 (50.0%)
Ibadan Main City	552 (34.5%)	216 (13.5%)	32 (2.0%)	800 (50.0%)
Total	1042 (65.1%)	449 (28.1%)	109 (6.0%)	1600 (100.0%)

Calculated chi square:15.65, df:4, probability value: 0.040.

Table 3. CHI square test of association between age of the respondents and their perception of quality of gsm services.

Ages of respondents	Perception of quality of services				
	Very low	Low	High	Very high	Total
16-20	1 (0.1%)	25 (1.6%)	428 (26.8%)	128 (8.0%)	582 (36.4%)
21-25	0 (0.0%)	17 (1.1%)	119 (7.4%)	36 (2.3%)	172 (10.8%)
26-30	0 (0.0%)	18 (1.1%)	284 (17.8%)	43 (2.7%)	345 (21.6%)
31-35	4 (0.3%)	11(0.7%)	99 (6.2%)	10 (0.6%)	124 (7.8%)
36-40	0 (0.0%)	20 (1.3%)	67 (4.2%)	25 (1.6%)	112 (7.0%)
41-45	0 (0.0%)	9 (0.6%)	53 (3.3%)	19 (1.2%)	81 (5.1%)
46-50	1 (0.1%)	14 (0.9%)	52 (3.3%)	33 (2.1%)	100 (6.3%)
51 and above	0 (0.0%)	4 (0.3%)	60 (3.8%)	20 (1.3%)	84 (5.3%)
Total	6 (0.4%)	118 (7.4%)	1162 (72.6%)	314 (19.6%)	1600 (100.0%)

Calculated chi square:112.82, df:21, probability value: 0.00.

HYPOTHESIS ONE

H0: There is no association between location and perception of quality of GSM service
H1: There is association between location and perception of quality of GSM services

The result in (Table 2) provides that there is association between subscribers' area of residence and their perception of quality of GSM services. The chi square statistics is given as ($cX^2P \leq 0.04$). The indication is that calculated value of chi square is greater than the critical table values. The interpretation of the above explanation is that quality of GSM services in the MC area was relatively stable than those services available in the LC area. This may not be unconnected with the fact that 61.3% of the respondents in LC described the quality of their GSM services as high. At least 69.0% in the MC area said they had high quality of GSM services. The views expressed by a forty-year old respondent who resided in the Less City were significant when he said:

GSM services in this area are not stable. Sometimes you may have to climb some mountains to locate networks. At times, the services available may not be strong enough to connect your calls. This could be very frustrating. Although GSM service providers are doing their best, we need better services in our area to boost economic activities (IDI/GSM subscriber/Lagelu LG/Ibadan/2011).

It is important to mention that quality of GSM services has remained major problem in the last eleven years of operation in Nigeria. This problem alone attracted the sanctions of GSM service providers by the regulatory body of NCC to enforce stable services in Nigeria. Findings have shown that GSM subscribers in Nigeria and Ibadan in particular have continued to face with unstable and intermittent quality of services in GSM telecommunication. However, subscribers in the rural were worse off in the structural problem.

HYPOTHESIS TWO

H0: There is no association between age of the respondents and perception of quality of GSM services.
H1: There is association between age of the respondents and their perception of quality of GSM services.
Hypothesis eight above is derived by cross tabulating questions 002 and 051 in the questionnaire.

The Chi square test of hypothesis in the (Table 3) shows that there is significant association between respondents' age and their perception of quality of GSM services. This is because the calculated value of chi square (112.82) is greater than the critical table value, i.e. ($cX^2P \leq 0.00$). The interpretation of the foregoing analysis is that the definition of quality of GSM services varied across age groups of respondents in the study area. This means what constituted high quality of GSM services in one age group was defined either as moderate or low quality

services by another age group(s). In this wise, findings showed that about 52.0% of respondents whose ages ranged between 46 and 50 years said GSM telecommunication offered them high quality of services. Similarly, not less than 71.4% of the respondents who were aged 51 years and above rated the quality of their GSM services as high. On the contrary, 73.5%, 70.2% and 82.3% respectively of the respondents whose ages were 16-20, 21-25 and 26-30 said their GSM telecommunication offered them high quality of services. Further analysis of the quality of services is provided in the qualitative data.

In line with the above, a twenty-four year old respondent was emotional when he said:
I wish government of Nigeria can just put an end to the problem we are facing about network failure in GSM services. Many times the internet services are very bad despite huge amount of money you pay to get this service. The internet modems sold by GSM operators do not work well. When the modem is loaded and activated by subscriber, it is possible that you may not be connected to the internet. In the case you get connection to internet, the service may be very slow to give you desired satisfaction. In some cases, your modem may not connect at all. The most painful is that the unused megabyte or gigabyte i.e. air time will be deactivated at expiration (IDI/GSM subscriber/Ibadan North LG/2011).

Another nineteen-year old female GSM subscriber succinctly put:

I am not satisfied with the type of GSM services offered in the last five years. I am a dual citizen of both Nigeria and America. Whenever I traveled to USA for summer and winter holidays, my blackberry used to work very well. I connect fast to internet services without delay or hitch. The services in America are very stable and reliable. However, the experience in Nigeria is never palatable. Internet services on blackberry are not stable. Sometimes you wonder if NCC is really enforcing standard in Nigeria. For God sake, something need to be done to correct the anomaly of poor GSM services in the country (IDI/GSM subscriber/Ibadan South-West LG/2011).

Similarly, a sixty-four year old respondent was dissatisfied with the quality of GSM services when he said:

Indeed GSM services are not stable and reliable. The service is below expectation. I use three GSM lines of different networks. None of the services is reliable. It is a fact that GSM services have offered a lot of benefits in Nigeria. There is need for government to do something about incessant network failure. We deserve to be treated fairly (*IDI/GSM subscriber/Ibadan South-West LG/2011)*.

It may be inferred from the above views that the quality of GSM services is still far from something desirable and satisfactory to subscribers. Although the description of quality of GSM services varied across age groups as shown in the quantitative data, findings showed that people below the ages of thirty five years frequently utilised GSM services for social and economic needs. Besides, they constituted majority of respondents that had access to GSM services. Therefore, it follows that until the population of the youths who utilised GSM services rated mobile telecommunication services as satisfactory, it may be difficult to conclude that there is stable provision of GSM services in the study area and by extension Nigeria as a whole.

DISCUSSION

The theoretical position of Neo-liberalism and Rational Choice theory is understood in the context of the findings. Prior to deregulation of the telecommunication sector, more than two third of the respondents in the study area were dissatisfied with the operations of NITEL due to low accessibility and utilization of telecommunication services. The deregulation of telecommunication sector produce a new kind of life experiences for the respondents as more than two third of the users reported that GSM has positive impact on them as a result of wide access and utilization of GSM services. However, there were some respondents who continued to utilize the services of NITEL or both. In the same vein, most respondents in the study area perceived the deregulation policy as beneficial because of the enormous benefits associated with GSM services. For Neoliberal theorists, economic growth and social services are possible if hindrances and obstacles to market system are abolished. These theorists believed that until bureaucratic bottlenecks are removed to allow private capital to thrive, public utility services such as telecommunication may remain inadequate. The main argument of Neoliberals is that deregulation and privatization can free resources and help to make basic services available to the masses. It is evident that deregulation of the telecommunication sector significantly transformed the provision of telecommunication services in the study area.

This evidence is based on the fact that most respondents agreed that GSM services have benefitted them a great deal because of wide range of services offered by the service providers. In essence, deregulation of telecommunication sector has significantly improved people's access and utilization of GSM services. Furthermore, the deregulation of the sector has enabled the respondents to connect with families and friends on regular basis. Also, the technology has become a source of employment to some respondents, and reduced their travelling expenses. The GSM services has also seeking behavior of the people as most respondents could

browse the internet and access information resources at regular interval. This is most applicable to the youths in the study areas.

Prior to the advent of mobile telecommunication, only few respondents had access to telecommunication services provided by NITEL. Even at that time, telecommunication was seen as a status symbol as only the elites and corporate bodies could afford the access and utilization of telecommunication services. Also, individuals who were fortunate to own mobile phones promoted by NITEL never had access to wide range of services such as text messaging, radio, videos, facebook, conference calls, and internet access among other several services that made telecommunications versatile (NCC, 2012). Despite the immense benefits resulting from deregulation of telecommunication sector as promoted by the Neo-liberalists, the tariffs charged by the various service providers under the current dispensation have become a burden on the shoulders of the subscribers. This idea is well articulated in this study which informed the use of Rational Choice theory to further explain the behaviour of the consumers.

The position of the Rational Choice theory is that the action of a consumer is directed towards the satisfaction of needs at the lowest cost possible. The assumption is that every individual is rational and purposive, motivated to pursue a meaningful course of action. Although the introduction of GSM yielded some positive changes in the study area, nevertheless there were several challenges and inadequacies which seemed to undermine the benefits of GSM communication. This is particularly concerned with problems inherent in the utilization of GSM. Findings showed that GSM is a source of social vices such as theft, examinational malpractices, family disorganization and threat to human life caused by electronic tower mast. It is evident in the study that respondents experienced continuous failure in the services of GSM such as call drops, wrong call destination, network disruption, hang over problem, poor call set up, and poor customer service. There were cases of abnormal tariff billing and promos ripping off unsuspecting subscribers. The Rational Choice posited that every individual initiates action that prevents hindrance to satisfaction in the consumption of goods or services such as GSM services. Hence, the challenges identified in the opinions of the respondents helped to explain their dissatisfaction with the GSM services. These challenges are not imaginary, but they are real to the subscribers.

It is pertinent to note that immediately after the deregulation of telecommunication services in 2001, only very few subscribers could afford it because SIM card was costing as much as NGN25000 naira and a minute call was put at NGN50 or more. However, as other competitors joined the market, the cost of SIM card and tariff charge started to drop as dictated by the market forces promoted by Neoliberal theorists. Within this context, more subscribers being rational beings started to join various GSM networks. As a matter of fact, the entry of GLOBACOM into the market broke the exploitative activities of other operators and started charging per *second* rather than per *minute*. This gave impetus for more subscribers to join. The fact is that subscribers are rational being consciously calculating the cost and benefits of each network and are always craving for the providers that will provide maximum satisfaction with least cost. Therefore, it is not uncommon to see a subscriber patronising more than one service providers as demonstrated by this study.

The Rational Choice theorists have maintained that analysis of structure must proceed from the micro base as it provides valid data to appreciate development in general terms of society (Ritzer, 2000; 2007). It follows that the challenges inherent in the utilization of GSM gave insight to assess the policy of deregulation. Though GSM is a source of numerous benefits to respondents, nevertheless the continued problems facing subscribers tend to undervalue the gains of deregulation. This accounted for the need of intervention at the level of individual as argued by the Rational Choice Theorists (Coleman, 1990; Ritzer, 2008). Interventions in this case will not only address dissatisfaction of users in the utilization of GSM, but it will also be directed to tackle infrastructural failures such as electricity, vandalisation, land dispute, road networks, and import duties which constrained service providers in the study area.

RECOMMENDATIONS

GSM service providers were confronted with arrays of problem such as infrastructural inadequacies which limited their capacity to supply stable networks. The problem also limited the gains accruing to consumers in terms of tariff billing. Therefore, to ensure sustainable deregulation in the Nigerian context, government should be proactive and pragmatic to address infrastructural shortages. This will go a long way to reduce cost of production and transform into long run benefit for consumers and the society as a whole. GSM services remained largely unstable and intermittent in the study area thereby limiting effective communication. Therefore in order to ensure uninterrupted quality service in GSM communication, there is urgent need for government to address instability in the supply of electricity. The solution is not only limited to power supply but also there is need to grant GSM providers concession to import up to date equipment that can withstand supply of stable network.
The import duty should be relatively cheap to attract such hardware equipment.

REFERENCES

Ajala I (2005). *GIS and GSM network quality monitoring: A Nigerian case study*. Available at: http://www.directionsmag.com/article

Brewstar C, O'Hara K (2007). Knowledge Representation with Ontologies: Future Possibilities. In*: International Journal of Human-Computer Studies,* 65, 563-568, Elsevier.

Church K, Smith R (2007). An Ontology-Based Dynamic Enterprise Model for Managerial Planning and Control.

Coleman JS (1990). *Rational choice*. In Ritzer, G. 2008. Sociological theory. 7th edition, McGraw-Hill.

Intelligent Integration of Railway Systems [InteGrail] (2010). Publishable Final Activity Report. Integrated project. IGR-PDAP-156-07.

Mason R (1978). Basic Business Statistics. 9th Edition.

Mughele ES, Olatokun W, Adegbola T (2011) .Congestion Control Mechanisms and Patterns of Call Distribution in GSM Networks – The Case of MTN Nigeria. *African Journal of Computer and ICTs*. Vol 4, No. 3. Issue 2 pp 29-42.

NCC (2012). NCC, National Lottery Regulatory Commission (NLRC) move against fraudulent lottery shows. The Nation, 4th July.

Ndukwe CE (2008). "Seven Years of Telecoms Revolution" *Tell* Nigeria. January 24. pp. 17-16.

Ndukwe E (2003).The Role of Telecommunications in National development. 19th Omolayole Annual Management Lecture. December 5, Victoria-Island, Lagos, Nigeria.

Nigerian Communications Commission 2010. *Annual Subscriber Report*, Lagos.

Nigerian Communications Commission, (2007). "Commercial frequency management policy, administrative procedures and technical guidelines". Annual report. January.

Nigerian Communications Commission. (2010). "A Quality of Service Performance Survey of GSM Providers in Nigeria". *Computer.com: The ICT Newspaper*. February 2010.

Nigerian Communications Commission. (2010). "A Quality of Service Performance Survey of GSM Providers in Nigeria". *Computer.com: The ICT Newspaper*. February 2010.

Nigerian Communications Commission. (2011). *Subscriber data*. Available at: http://www.ncc.gov.ng.htm.

Scouria J (2001). Overview of the Global System for Mobile Communications. African experience. *Journal of Information Technology,* Vol. 2, p.311-317.