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Telecommunications Reform and Effects of Competition on Availability, Quality and Cost of Services in Nigeria

Hassan, Afees Olumide
Department of Political Science and Public Administration
Fountain University, P.M.B. 4491 Osogbo, Nigeria
Tel: +2348052214446 E-mail: afeeshassan@yahoo.com

Abstract
The inefficiency and ineffectiveness that characterized the Nigerian telecommunications sector under the Nigerian Telecommunications Ltd (NITEL) monopoly, among other factors, informed the government reform policy in the sector. The reform, which opened up the market to local and foreign private operators, injected competition into the telecom market. The study, using trend analysis, examined the effects of the competition on availability, quality and cost of telecommunications services in Nigeria in 10 years of the reform (2001 – 2010). The study found that: teledensity increased from 0.45 to 58.52 implying a high telephone penetration; there was an increase in range of services but the quality of which desired much improvement; while cost of telephone connection fell by as much as 99%, tariffs only fell by 24%. The study concluded that more regulatory measures and provision of certain network infrastructure by the Nigerian Communications Commission (NCC) are needed to eliminate perceived dominance, enhance competition, improve service quality and as well bring down tariffs.

Key words: Telecommunications, Reform, Competition, Monopoly, Policy

1. Introduction

An assessment of performance of State Owned Enterprises (SOEs) in Nigeria reveals a glaring display of failures. Most public enterprises in the country are characterised by gross inefficiency and ineffectiveness. The poor performance of the public enterprises is so pronounced that some have become moribund, while others in operation constitute a serious drain on the government revenue. In the words of Idigo (2003), an assessment of the various enterprises, corporations and parastatals of the government at various levels reveals an embarrassingly poor and woeful performance. According to him, in all the sectors, ranging from energy, power, aviation, maritime, rail transportation, steel, telecommunications and postal services to all government enterprises including agriculture, mining, industrial manufacturing, construction etc, the performance of government companies have been tales of woes.

In the area of telecommunications, it was a serious case of inefficiency. Prior to the period of deregulation, the country had only about 400,000 connected telephone lines and 25,000 analogue mobile lines. Total teledensity stood at about 0.4 lines per 100 inhabitants (Ndukwe, 2003). Put differently, the teledensity was about 250 inhabitants to 1 telephone line. This was grossly inadequate and called for an expansion and efficiency. More than half of the connected phone lines were concentrated in government offices and corporate organisations. Access in rural areas was much limited and non-existent in many parts of the country. The sector was characterized by weak infrastructure base, huge unmet demand, limited investment, hardly completed calls and unreliable phone lines (Ndukwe, 2004). The Nigerian government thus found the need for a reform and therefore decided to bring private firms into the sector through deregulation and liberalisation against the monopoly enjoyed by the Nigerian Telecommunications Ltd (NITEL)

With the introduction, in 1992, of the Nigerian Communications Commission (NCC), which has the role of creating an enabling regulatory environment for efficient supply of telecommunications services and facilities, the industry began to witness the entry of private participants. The reform, which opened up the market to local and foreign private operators, injected competition into the telecom market. This study examines the effects of the competition on availability, quality and cost of telecommunications services in Nigeria in 10 years of the reform.

2. A Brief Review of Related Works

A large body of literature exists on performance-based analysis of telecommunications reforms across the world. With few exceptions, most of the works tell stories of success. Using panel data set, many of them adopt multi-nation analysis and find a positive correlation between reforms and performance in terms of increased penetration, improved efficiency and improved productivity of firms among other gains (Fink *et al*, 2002; Li & Lyons, 2008; Wallsten, 1999; Boylaud & Nicoletti, 2001). The story is not different for case studies that are country or firm specific (Imai, 2002; Cui *et al*, 2009; Oniki *et al*, 1994; Majumdar,1992). However, the degree of success varies across regions and countries, partly owing to certain peculiarities.

Fink *et al* (2002) use a panel data set for 86 developing countries across Africa, Asia, the Middle East, and Latin America and the Caribbean over the period 1985 to 1999 to analyze the effect of policy reform in basic telecommunications on sectoral performance. They find that privatization and competition lead to significant improvements in performance, which they agree is partly driven by fast technological progress in telecommunications. According to the study, a comprehensive reform program, involving both privatization and competition as well as support of an independent regulator, produced the largest gains (an 8 percent higher level of mainlines and a 21 percent higher level of productivity) compared to years of partial and no reform. The study further argues that the sequence of reform matters, as mainline penetration is lower if competition is introduced after privatization, rather than at the same time.

In another study, Wallsten (1999) examines the effects of privatization, competition, and regulation on telecommunications performance in 30 African and Latin American countries from 1984 through 1997. Using fixed-effects regressions, the study finds that competition is correlated with increases in the per capita number of mainlines, payphones, and connection capacity, and with decreases in the price of local calls. Privatizing an incumbent, according to the study, is negatively correlated with mainline penetration and connection capacity. Privatization combined with an independent regulator, however, is positively correlated with connection capacity and substantially mitigates the negative effect on mainline penetration. This stresses the importance of regulation in reforms.

Using panel data on 23 countries, Ros and Banerjee (2000) find a positive and statistically significant relationship between privatization and network expansion and efficiency in the Latin American region. The findings are summarized as: one, privatization has a significant positive impact on both network expansion and technical efficiency; two, privatization altered incentives sufficiently to relieve the supply bottlenecks from the days of public ownership and increased the supply of main lines; and three, low penetration rates in Latin America arose from service prices that are too low. The study concludes that tariff rebalancing, privatization, and network technology upgrades all have the effect of reducing the proportion of unmet demand for residential basic service in a country. According to the study, a 10 percent increase in monthly subscription charges (relative to the average residential price in Latin America) leads to a reduction in unmet demand of approximately 4.1 percent. And, most importantly, even after controlling for tariff rebalancing, privatization appears to reduce unmet demand by approximately 28 percent.

Li & Lyons (2008), in a closely related study, investigate the effect of competition, privatization and the existence of an independent industry regulator on mobile network penetration in 30 national mobile markets, comprising 29 OECD countries and China, over the time period 1991-2006. The study confirms that competition is generally associated with improved telecom performances. However, their finding shows that privatization works best when it is integrated into a broader process of structural reform. That is, when competition is introduced into the system with more than two firms. In agreement with Wallsten (1999), the study also positively correlates independent industry regulator with mobile penetration; arguing that the role of an independent industry regulator is particularly crucial in privatized mobile markets.

Boylaud & Nicoletti (2001) investigate the effects of entry liberalisation and privatisation on productivity, prices and quality of service in long-distance (domestic and international) and mobile cellular telephony services in 23 OECD countries over the 1991-1997 period. Their findings agree with those of the above studies. The analysis shows that prospective competition (as proxied by the number of years remaining to liberalisation) and effective competition (as proxied by the share of new entrants or by the number of competitors) both bring about productivity and quality improvements and reduce the prices of all the telecommunications services considered in the analysis.

In Europe, Cave & Prosperetti (2001) rate telecommunications liberalization as a success. According to them, between 1998 and 1999 alone, international call prices fell by an average of 40 percent; long distance by 30 percent; and regional prices by 13 percent. Telecom operators in Europe rose to about 460. Between 1998 and 2000 the total telecom services market grew by an estimated 12.6 percent, to 161 billion euros. They however point out certain limitations of the liberalization. For instance, competition, according to them, has not led to the widespread deployment of alternative infrastructures, and this outcome has kept leased line prices at a very high level; which in turn, has hampered the growth of Internet penetration.

Using a comprehensive country-level panel data set of 177 countries covering the period from 1990 to 2001, Li and Xu (2004) investigate the impact of privatization and competition in the telecommunications sector around the world. They find that Full privatization, which gave private owners control rights, contributed substantially to improving the allocation of labor and capital, expanding service output and network penetration, and improving labor and total factor productivities. While partial privatization, which retained the state's control rights, showed no significant impact. The study also finds evidence of complementarity between privatization and competition in deepening network penetration and in restraining the rise of service pricing among privatized operators. The study thus argues that optimal policies require bundling competition policies with privatization.

In a case study, Cui *et al* (2009), examine the relationship between reform and the performances of China telecommunications sector over the period 1975 – 2006, using a multiple linear regression. The study finds that privatization and competition significantly improve the output, efficiency and investment. They however do not have significant impact on the employment in the sector.

Assessing the gains from deregulation in Japan's international telecommunications industry, Imai (2002) finds that deregulation brought about a 22.2% fall in Kokusai Denshin Denwa's (KDD) unit cost for the eight-year period ending in 1992. And because this efficiency gain was fully passed along to telephone users in the form of lower rates, the corresponding increment of consumer surplus was of significant size, equivalent to 25.6% of total international telephone call revenues in 1992. The finding is corroborated by Oniki *et al* (1994), which assesses the effects of liberalization on the productive performance of NTT in Japan. The study finds that during the 1958–87 period, NTT's Total Factor Productivity level increased at an average annual rate of 3.4%. However, TFP improved at a significantly faster rate following adoption of policies of liberalization. The NTT's average annual TFP growth rate was 5.12% for the 1982–87 period as compared to a 0.26% per year growth rate for the previous five year (1977–82) period. The decomposition of TFP growth, according to the study, appears to indicate that liberalization was a major source of productivity improvement for NTT.

Majumdar (1992), in another case study, examines the impact of deregulation on the performance of firms in the US telecommunications services industry and suggests that deregulation has differing impacts on different dimensions of firms' performance**.** Among interesting questions the study attempts to provide answers to are: one, has the performance of firms providing telecommunication services in the USA changed as a result of deregulation? and two, why are there differences in the performance of firms in a regulated versus deregulated environment, particularly where the same collection of employees who managed the old regulated firms are in charge in the new regime? In answering these questions, the study posits that deregulation enhances the competitive environment of firms, spurring them to become internally efficient and better their overall performance. It explains further that because the environment of a firm establishes the context within which operations are carried out and performance outcomes attained, performance changes after deregulation are brought about not because of a sudden change in the abilities of incumbent management, but because of the changing constraints and opportunities faced in a more competitive environment.

Profitability, according to the study, often rises in the early post-deregulation period for existing firms since market opportunities are greater. But, as more firms enter the market, concentration within the market is reduced and price-cost or profitability margins drop. Productivity increases because of competitive pressures and, though incentives to innovate are higher, competition drives prices down to marginal costs. The study concludes that the impact of deregulation has significantly affected the performance of firms in the US telecommunications industry.

Pyramid research (2010) examines the impacts of mobile services in Nigeria. It focuses on how mobile technologies are transforming economic and social activities in the country. Among its findings are:

mobile penetration of over 70 million, which is about 50% of the population; approximately $16bn investment in mobile sub sector of the industry; declining prices for connection; increase in employment creation; and spill-over effect of mobile services on other sectors of the Nigerian economy. The study concentrates only on the mobile sub sector of the industry. It equally fails to examine the issue of quality of services provided and other associated problems, which constitute part of the focus of our new study on Nigeria.

3. Methodology

The study made use of data collected from the Nigerian Communications Commission's (NCC) database. The data are complemented with those collected from field survey in which 1200 users of telephone and Internet services were randomly questioned in Lagos, the commercial nerve centre of the country. The choice of Lagos is premised on the need to take samples from an area that accommodates all operators in the industry. The area is sufficient in that the nature of telephone services across Nigeria is same. In addition, a market survey of telephone accessories was made in four cities, namely Lagos, Port Harcourt, Kano and the Federal Capital Territory. The data are analysed using trend analysis.

4. The Nature and Extent of the Reform in Nigeria

The reform adopted by the government in the sector is substitution of competition for monopoly otherwise known as demonopolization or deregulation. With this, apart from offering 60% share of NITEL and M-Tel to private individuals and organisations, private investors are licensed to operate side by side with NITEL. The reform thus involves three elements. These are privatisation, deregulation and liberalisation. NITEL and M-Tel is undergoing a process of partial privatisation in which government is retaining 40% of the stake while 60% is to be sold to private investors. Out of this, 40% is to go to core investors and 20% to the Nigerian public. It is however unfortunate that after a decade, the process of privatising NITEL and M-Tel has not been successful partly due to politicisation of the process. Deregulation is targeted at removing NITEL's monopoly in the market to pave way for competition, while the market is liberalised to allow foreign participation in the emerging competition. As at 2009, no fewer than 20 firms have been licensed to provide range of telephone and Internet services using GSM, CDMA, and Fixed Wired/Wireless technologies. Among other functions, a regulatory body, the Nigerian Telecommunications Commission (NCC), is established to license and regulate the activities of the operators towards achieving the reform objectives and prevent anti-competitive tendencies.

5. The Performance of the Reform Policy

5.1 Service Availability

The study examines service availability by measuring the level of telephone penetration. A combination of existing data and those obtained from fieldwork is used to obtain the level of penetration. Figure 5:1:1 shows the telephone subscribers growth in Nigeria from 1999 to 2010. The figure shows a persistent increase in telephone growth in the country. The growth is at increasing rate with a slight fall in the rate (not actual) of growth in 2007. This indicates an unexhausted growth potential of the market. It is a tremendous growth of subscription base in the country from 508,316 in 1999 to 81,931,223 in 2010 representing over 16000% growth. Consequently, teledensity (telephone penetration) rose from 0.45 in 1999 to 58.52 in 2010 as shown in fig. 5:1:2

What this implies is that before the reform, telephone penetration was as low as 222 inhabitants to a telephone line but rose to less than 2 inhabitants to a telephone line in 2010. This data presupposes that, at least, one out of every two inhabitants in Nigeria subscribes to a telephone line. This is however not the case. The field survey reveals that majority of subscribers, for one reason or the other, subscribe to two or more telephone lines. As shown in table 5:1:1, Only 33.9% of the users questioned subscribe to a single network leaving not fewer than 66% subscribing to two or more telephone lines. The actual number of subscribers in Nigeria cannot be ascertained until the Nigerian Communications Commission (NCC) completes the telephone subscribers' registration. The above notwithstanding, telephone penetration in Nigeria is high and can be doubled in the nearest future considering the installed capacity, which is more than twice the presently active lines. (see table 5:1:2).

While the role of competition, as infused by the reform policy, cannot be undermined, it is equally important to admit the role of global technological revolution in telecommunications, which tremendously aided the success of the reform policy. What is difficult is to state, in quantitative terms,

the level of contribution of each factor. Nonetheless, both the reform and technological innovation in world's telecommunications explain the rapid expansion of Nigeria's telecom sector.

The intensity of the competition rose with entry of Globacom, the 2nd National Carrier, in 2003 and the tempo has since been sustained. The scramble by operators to gain more share of the market made them roll out more lines with competing and innovative packages. It is arguable at this point that competition is really at play. Buttressing this position is that by 2010, MTEL, the mobile arm of NITEL that earlier enjoyed the monopoly, has a share of less than 1% of the mobile market (NCC, 2010a). Over 99% is controlled by the private operators, who came in as a result of the reform. As earlier said, what also aided the rapid growth of the Nigeria's telecom market is technological breakthrough in the world's telecommunications, particularly the advent of GSM. The GSM technology is easier and faster in creation of telephone lines. This is why as at August 2010, GSM sub sector in Nigeria with only 5 operators control 87.24% of the total telephone market, while CDMA and fixed wired/wireless with 16 operators control only 12.76% of the market (NCC, ibid)

With respect to service availability in Nigeria, the reform policy has been a huge success. By the year 2007, all the 36 states and the Federal Capital Territory have been covered by GSM-based mobile operators and CDMA operators (Ndukwe, 2009) with increased range of services. Waiting time for telephone installation and service delivery is tending towards zero. Service penetration, to a larger and growing number in underserved and unserved semi-urban and rural areas, is being witnessed.

5.2 Quality of Service

As shown in table 5:2:1, not fewer than 10 different problems are identified by the telephone users while three principal problems are identified as associated with use of internet in Nigeria. The most reported problems are network failure and network congestion, which are reported by more than half of the people sampled. With respect to the Internet, most users complained of slow download and connection drops as the most frequently encountered problems.

The above implies that much is still desired in terms of service quality in Nigeria. Factors affecting the quality of telephone and internet services in Nigeria have been identified to include poor power supply, security problem, limited transmission infrastructure and operators' penchant for adding more subscribers than their networks can accommodate. All these were identified by participants at the NCC public forum on quality of service. Poor power supply in Nigeria, for instance, is identified to be responsible for at least 70% of the poor service quality (NCC, 2007). Theft of generating sets and vandalisation of infrastructure by restive youths are the security factors identified as partly affecting service quality. In view of these problems, both government and operators have roles to play in ensuring improved quality of telephone and Internet services in Nigeria.

5.3 Cost of Service

As the provision of telephone and Internet services are being synchronised, that is, connection to telephone may also imply connection to the Internet today, this part of the study focuses on cost of telephone services in Nigeria. Cost of telephone services has two components, namely, cost of connection and tariff. Between 2001 and 2010, cost of telephone connection in Nigeria witnessed a drastic fall, particularly the cost of Subscriber Identification Module (SIM) cards. The story of tariffs during the period was however different. This section of the study attempts to provide explanations for the contrasting observations.

The intense competition in the world telecom market coupled with technological revolution, particularly Chinese production of low priced telecommunications accessories including handsets, has reduced the cost of mobile phones by as much as 80% (market survey, 2010). With as low as three thousand Nigerian naira (N3000/$20), users are able to purchase a new handset in the Nigerian market against the initial N15,000 and above in 2001.

While the cost of SIM fell by about 99% (from N14,500 to N150) between 2001 and 2010 (Fig 5:3:1), tariff (off net) only reduced by 24% (Fig 5:3:2). The effect of competition was not much felt in the market until the arrival of Globacom, the 2nd national carrier, in August 2003 with competitive packages like per second billing. The period marked the beginning of intense competition in the mobile sub sector of the telecommunications market with each operators scrambling to capture maximum possible share of the market. The year 2004 marked the beginning of fall of cost of SIM, which is sustained till date. It is however a different story for tariffs, where competition has no serious effect till

date. The popular view of subscribers, as presented in Table 5:3:1, is that tariffs charged by operators are still high.

About 52% of the users rate the tariffs either as much or too much, while 39% consider it moderate. The inability of competition to bring about a significant reduction in tariff as shown in fig 5:3:2 in a period of 10 years can be attributed to factors that included presence of dominance in the mobile sub-sector, poor power supply and security problem.

Available statistics shows that MTN Nigeria has maintained a dominant share of the market since 2001, even though the dominance is being challenged by other competitors (Table 5:3:2). The NCC in a study affirms that MTN controls a significant portion of key network infrastructure in Nigeria's mobile telecommunications sector (NCC, 2010b). Such facilities include towers and backbone network transmission. It is also observed in the study that MTN appeared to be significantly larger than its two main competitors (Zain [now Airtel] and Globacom) put together. About 89% of users sampled subscribe to MTN out of which are over 23% that subscribe to only MTN, while 65% subscribe to MTN and other networks. This clearly supports the statistics provided by NCC.

What is significant here is that any network that has dominance in the GSM market definitely extends the dominance to the entire telephone market as the GSM sub sector controls over 87% of the entire market (Table 5:3:3). The dominance of MTN, both in the market share and network infrastructure, gives it an advantage over other operators in two ways. One, being the first to cover many parts of the country, it provides the basic infrastructure that others coming later share and pay for. The situation gives MTN the advantage of sole determination of what others pay for use of the infrastructure, particularly in areas where MTN has the only viable infrastructure.

Two, being the first to cover many parts of the country, most of earlier consumers subscribe to MTN. As a result of high interconnection rate, calls across networks (off net) attracts higher tariffs. This situation has forced new subscribers to either subscribe to MTN or add an MTN line to their choice network. This further expands MTN network and makes more call to terminate on it than any other network. This makes it the net beneficiary (receiver) of interconnection fee. The national policy on telecommunication (2000) provides that payments for interconnection and access services between operators should be based on the actual cost of such interconnection, NCC has however not been able to enforce this simply because it is difficult to ascertain actual cost of interconnection and infrastructure use. Until the question of dominance is addressed, competition will continue to be hindered in the area of tariff and no serious reduction may be witnessed, particularly in off net calls.

Equally, the need for the operators to provide for themselves alternative power supply most of the time constitutes an increase in service production cost. The operators in Nigeria's telecom industry largely or entirely depend on power generating set and fuel, which invariably is an extra cost on production. Conversely, stable power supply in the country will reduce cost of production and subsequently reduce tariff.

Lastly, vandalism and theft of installations of the operating firms across the country has added to the cost of operation, as they have to hire and pay for security services to protect the installations. Addressing these problems will, expectedly, bring about a substantial reduction in telccom services tariffs.

6. Other Attendant Effects

As expected, it is not all about positive story of reform. Though not a focus of this study, it may be necessary to identify a few of other attendant effects of the reform. Prominent but unnoticed among these is the tendency towards foreign domination of the sector. This may be recalled as a fundamental reason that brought about the indigenisation policy of the government in the 1970s as a move towards economic independence. What is rather being witnessed in the Nigerian telecom sector is a tendency toward market imperialism with leading firms being foreign owned.

Another effect of the reform is the loss of jobs recorded in the public owned NITEL, which is undergoing a privatisation process. However, the reform, according to NCC (2005), has created over 5,500 direct and 450,000 indirect new jobs. Also, the rate of cyber crime has seriously increased partly owing to expanded access to Internet facilities and high unemployment rate in the country.

7. Conclusion

The study examines the effects of the competition that was brought about by deregulation and liberalisation of the telecommunications sector on availability, quality and cost of telecommunications services in Nigeria in 10 years of the reform. The result shows an unprecedented high telephone penetration with teledensity increasing from 0.45 to 58.52 lines per 100 inhabitants. Also, an increase in the range of services was witnessed but with relatively poor quality. Other findings include a drastic fall in the cost of connection with cost of GSM SIM falling by as much as 99%, while tariffs only fell by 24% during the period.

Aside the positive findings, there are other attendant problems such as loss of jobs in the NITEL, which is undergoing privatisation process, perceived foreign domination of the sector, increased rate of cyber crime and health hazards created by various telecom firms' installations among others.

While the reform may be largely adjudged a success, there still exist desires for improvement, particularly in the areas of service quality and tariffs reduction. It is in view of this that improvement of electricity supply becomes expedient in order to improve service quality and reduce cost of services. The Nigerian Communications Commission (NCC) should address the issue of network infrastructure sharing, particularly in areas where there is a single provider. This will promote grater access to shared infrastructure, reduce dominance and subsequently reduce tariffs. This becomes necessary in view of the fact that every licensed operator cannot provide the infrastructure it requires.

Implementation of number portability is of equal importance to strengthen consumers' choice. Many users may intend to change their network but are constrained by their unwillingness to change the number with which they are known. When number portability, which allows subscribers to change network and retain their numbers, is combined with provision of alternative network infrastructure, dominance in the market will be greatly reduced. With this, a level playground is ensured and fair competition will bring down tariffs. Other requirements to improve the situation include a significant reduction of interconnection rate and regular review of market activities with a view to identifying and eliminating anti-competitive practices.

What has been witnessed in ten years of telecommunications reform in Nigeria is an indication that competition, rather than monopoly, is desirous in certain public service delivery. However, such competition requires sufficient legislation and regulation to succeed. Otherwise, a tendency toward private monopoly may develop. The success story of telecommunications reform in Nigeria is partly due to the regulatory competence of the NCC.

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Table 5:1:1 Distribution of respondents by networks subscribed to

Network	**% of Total Subscribers**	**Subscribers to Single network in %**
MTN	88.9	23.4
GLOBACOM	51.3	6
AIRTEL	39.3	3.7
M-TEL	-	-
ETISALAT	27.4	0.8

Total		**33.9 (of 100%)**

Source: Field Survey, 2010

Table 5:1:2 Installed capacity, active lines and connected lines as at August 2010

Lines	Connected Lines	Active Lines	Installed Capacity
GSM	95,718,928	74,074,793	134,025,308
CDMA	11,706,269	6,616,457	75,415,597
Fixed Wired/ Wireless	2,722,322	1,239,973	9,315,277
Total	**110,147,519**	**81,931,223**	**218,756,182**

Source: NCC, 2010

Table 5:2:1 Complaints on Telephone and Internet Use

S/N	Complaints	% of users	Rating of Complaints (%)
Telephone			
1	Network failure	60.8	15.71
2	Network congestions	50.4	13.01
3	Charging for undelivered SMS	43.6	11.26
4	Call drops	42.7	11.03
5	Over billing	42.7	11.03
6	Inability to connect other networks	35.0	9.04
7	Poor connections	34.2	8.84
8	Inability to recharge	33.3	8.60
9	Inability to check balance	28.2	7.28
10	Disappearance of credit	16.2	4.18
TOTAL			**100.00**
Internet			
1	Slow downloads	71.8	42.81
2.	Connection failure/drops	54.7	32.62
3	Inability to connect	41.2	24.57
TOTAL			**100.00**

Source: Field Survey, 2010

Table 5:3:1 Description of tariffs

Rating	% of users
Too Much	10.3
Much	41.9
Moderate	39.3
Cheap	3.4
No response	5.1
Total	100

Source: field Survey, 2010

Table 5:3:2 Mobile Operators Market Shares

Operator	**% share**
MTN	46.12
GLOBACOM	26.87
Airtel	24.74
EMTS (Etisalat)	1.76
M-Tel	0.44
Total	**100**

Source: NCC, 2010

Table 5:3:3 Share of Services

Technology	**% share**
GSM	87.24
CDMA	10.65
Fixed	2.12
TOTAL	**100**

Source: NCC, 2010

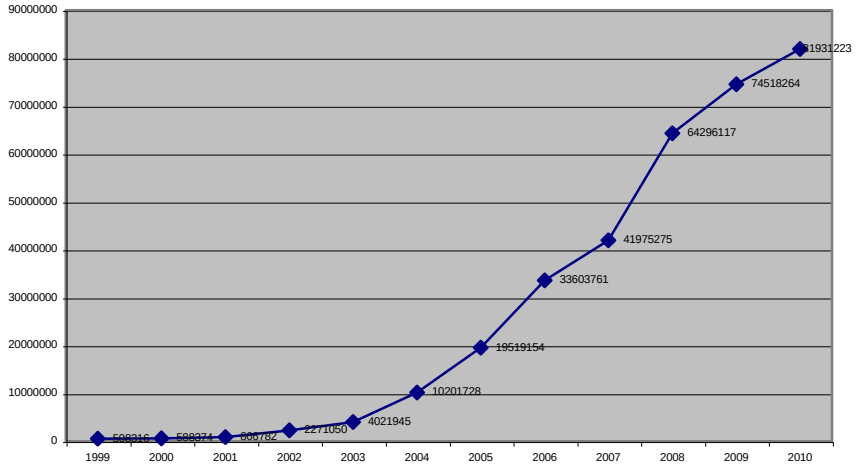

Figure 5:1:1 Subscriber Growth in Nigeria
Source: NCC, 2010

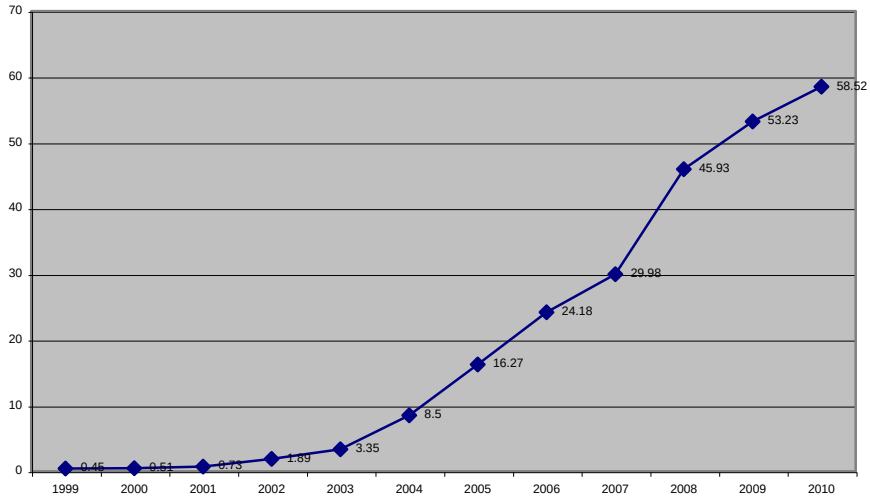

Figure 5:1:2 Teledensity Growth
Source: NCC, 2010

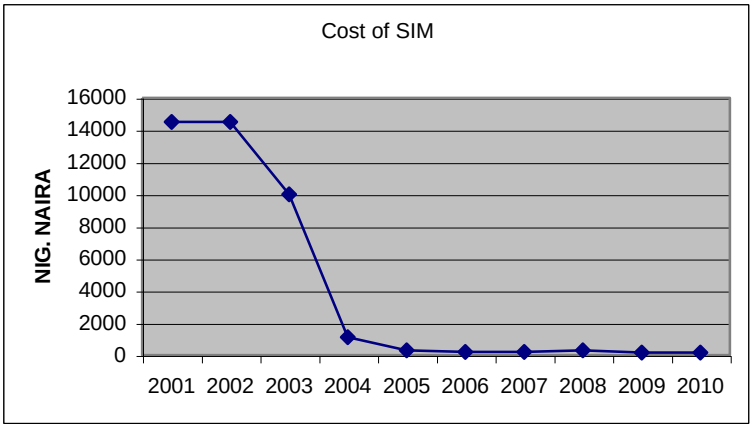

Fig 5:3:1 Cost of SIM
Source: NCC, 2010

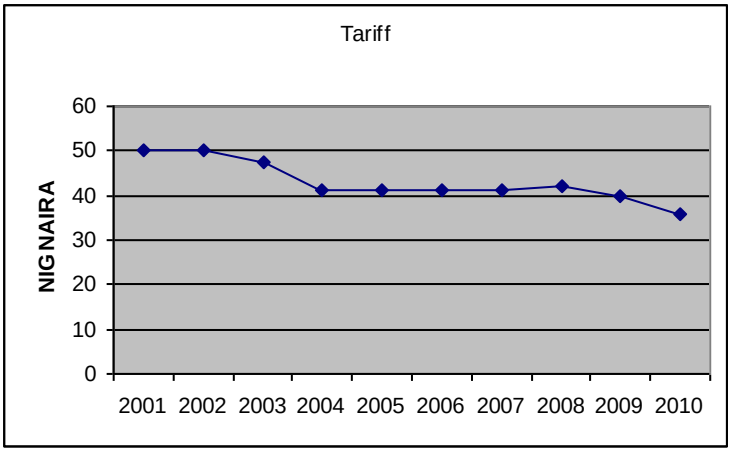

Fig 5:3:2 Tariff
Source: NCC, 2010