

# Fraud Analysis in Nigeria's Mobile Telecommunication Industry

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**Abstract** - Fraud permeates the whole sector of Nigeria's economy, the mobile telecommunication industry is no exception. Nigeria's mobile industry is a fast growing sector of her economy with increasing numbers of mobile telecommunication operators. However, telecommunication fraud has been a major hindrance to the rapid growth of this industry as it has caused both the telecommunication operators and its subscriber's loss of revenue. Different solutions and services have been employed to curb this menace in the mobile industry, but the more advanced the service or solution, the more susceptible it is to fraud. This paper therefore presents a survey on the fraud rate of two major services provided by Nigeria's mobile telecommunication companies over a specified period of time and proffer suitable solutions to reduce fraud in this industry in order to restore the telecommunication subscriber's confidence in their mobile operators.

**Index Terms** - Mobile Fraud, Prepaid and Postpaid Services, Nigeria Telecommunication Industry

## I. INTRODUCTION

Fraud is a household name in any sector of the economy of a country. The term fraud simply means any activity that result to gain of monetary benefit or unlawful advantage. Revenue loss as a result of fraud is rapidly increasing, eating up many business enterprises and economic sectors. Different fraud detection technologies have been proposed to check or reduce the losses caused by fraud perpetrators, but it has continued to pose significant problem to many economic sectors including the high rising mobile telecommunications industry.

Mobile telecommunication fraud refers to illegal access to the mobile operator's network, using their services for unlawful interest to the detriment of the network operators and/or its subscribers. Fraud is the principal profit leakage area in the mobile telecommunication industry [1]. In fact, it was estimated globally that mobile telecommunication fraud cause losses of tens of billions of dollars yearly [2, 3].

The Nigerian mobile telecommunication industry is the fastest growing among her economic sectors, with increasing numbers of network operators. However, revenue loss due to fraud has been a major challenge to the steady growth of this industrial sector. The Nigerian Communication Commission (NCC) estimated that revenue loss as a result of fraud is the largest in the mobile telecommunication industry [4]. Based on the NCC findings, this paper therefore presents a survey on the percentage of annual revenue affected by fraud in two major

services provided by mobile operators in Nigeria over a specified period of time - percentage fraud rate.

The rest of this paper is structured as follows. Section II presents a brief history of Nigeria's mobile telecommunication industry. Section III gives an insight to the types of telecommunication fraud. Section IV presents the major types of mobile services targeted by fraudsters. Section V analyses the fraud trend in Nigeria's mobile telecommunication industry, and suggest solutions to this menace. Section VI critically summarizes and concludes the paper.

## II BRIEF HISTORY OF NIGERIA'S MOBILE INDUSTRY

Telecommunication is fast turning the world into a global village. Globally, the development of telecommunications industry is rapidly increasing with one innovation replacing another in a matter of years, months, and even weeks. Without doubt telecommunication is a key driver of any nation's economy. The Nigerian economy is not left out in the race for rapid developments induce by innovations in telecommunications.

The Nigerian Telecommunication sector was very underdeveloped before the sector was deregulated in 1992 by the then military regime with the establishment of NCC as a regulatory body for the telecommunication sector [4]. Since inception of duties, the NCC has issued licenses to several private telecommunication operators. The license allows the private telephony operators to set up both fixed wireless telephone lines and analogue mobile phones [4].

However, in 1999, the return of democracy to Nigeria saw the beginning of the mobile telecommunication industry. The then democratic government revisited the telecommunication policy and authorised the NCC to issue new licenses to mobile operator(s). Three mobile operators were issued licenses in 23rd March, 2001 with 90days deadline to start operations - MTN Nigeria, ECONET Wireless Nigeria (Airtel), and MTEL [4]. Other mobile operators were later licensed by the NCC, among which are GLOBACOM, Etisalat etc, to create room for competition in the industry, thus, providing efficient and cost effective mobile telephony system. According to the NCC, as at 12th September, 2012, Nigeria has 129million plus mobile subscribers, five main mobile operators, and many other mobile operators that are regionally based [5,6].

## III TELECOMMUNICATION FRAUD

As earlier defined, telecommunication fraud refers to illegal access to the mobile operator's network, using their services for unlawful interest to the detriment of the network operators and/or

its subscribers. Mobile telecommunication fraud can be classified into two categories - subscription fraud and superimposed fraud [7].

**Superimposed Fraud** - In this type of telecommunication fraud, the fraudster takes charge of legitimate mobile account(s), and all the illegal use of the account(s) is superimposed on the legitimate customers.

**Subscription Fraud** - This is a type of telecommunication fraud where the fraudsters obtain a mobile account with the intention to never pay any bill.

Both type of telecommunication fraud can either be internal or external - Telecommunication fraud is said to be internal when the fraudster(s) is an employee of the mobile operator while it is an external fraud if the fraud is carried out by the general public.

#### IV TELECOMMUNICATION MOBILE SERVICES

Telecommunication companies in Nigeria provide different services to win the heart of their subscribers because of the market competition. However, some of these mobile services are common to all the mobile operators in Nigeria, these includes:

- Prepaid Services
- Postpaid Services

**Prepaid Services:** This is the most popular of the services provided by mobile operators. As the name implies 'Pre-paid', all transaction in this service is pay-as-you-go. This service is easy for the mobile operator to maintain in the event of fraud and it is less susceptible to fraud as compared to postpaid services.

**Postpaid Services:** This is the most conventional service offered by mobile operators all over the world. As the name implies 'Post-paid', credit facilities is given for services used for some period of time, usually between 1- 6 months. Though, this service is not common in Nigeria because there is no proper means of identification in case a subscriber defaults, yet, all mobile operators in Nigeria still render the service as a result of the stiff competition in the industry.

Other services provided by Nigeria's mobile telecommunication companies that are susceptible to fraud includes: Roaming Services, Value Added Features and Service (VAS), Premium Rate Services (PRS) etc. However, this paper carried out survey to analyse the fraud rate for Prepaid and Postpaid services because these are the two major services generally offered by mobile companies in Nigeria providing both data and voice package to subscribers.

#### V MOBILE FRAUD ANALYSIS

Fraud has continued to pose significant threat to the mobile telecommunication industry, as such, it is necessary to analyse the fraud rate in this industry in order to proffer solutions to this menace. In achieving the aim of this paper, it is imperative to put into consideration the method that will produce the most productive result germane to the problems at hand. In this regard, Data needed for the project was gathered from the various mobile telecommunication companies in Nigeria providing both voice and data services - MTN, Globacom, Multilink, Airtel, Visafone etc. Table 1 (figure 1 a and b) shows the survey result of the percentage of revenue affected by fraud for postpaid and prepaid services offered by Mobile Operators in Nigeria, and table 2

(figure 2 a and b) shows the total (summary) percentage fraud rate caused by both postpaid and prepaid services.

Table 1: Percentage of Revenue Affected by Fraud for Postpaid and Prepaid Services.

Years	Postpaid Services (%) a	Prepaid Services (%) b
2005	0.0320	0.0204
2006	0.0404	0.0240
2007	0.0520	0.0301
2008	0.0630	0.0309
2009	0.0704	0.0406
2010	0.0770	0.0504
2011	0.0779	0.0704

Table 2: Total Percentage of Revenue Affected by Fraud.

Years	Total Loss (%) a + b
2005	0.0524
2006	0.0644
2007	0.0821
2008	0.0939
2009	0.1110
2010	0.1274
2011	0.1362

#### Discussion of Results

The focus of this paper is to investigate the rate of fraud in Nigeria mobile telecommunication industry. From table 2 and figure 2, it is clearly seen that fraud in Nigeria mobile telecommunication industry has continually increase from year to year which is usually in the range of 0.012% - 0.020%. However, between the year 2010 and 2011, there was decrease of 0.0087% in this usual trend.

Also, from table 1 and figure 1, postpaid services is more susceptible to fraud as compared to prepaid services yearly, usually a difference in the range of 0.011% - 0.035%, except between the year 2010 and 2011 that recorded a difference of 0.0076%. The percentage fraud rate of postpaid services is always more than that of the prepaid services because of poor means of identification in Nigeria, whereas, postpaid services requires 1- 6 months credit upon taking up the service.

In order to reduce fraud in the mobile industry, in 2010, NCC in conjunction with all the mobile telecommunication companies and the Nigerian law makers passed a bill which states that all Subscriber Identification Module (SIM) should be registered before usage. Insight into information and knowledge derived from the SIM registration will give mobile operators competitive edge in terms of customer care and retention, marketing and fraud detection. The SIM registration approached helped reduce the percentage fraud rate between the years 2010 - 2011 as compared to previous years (see table 2).

Similarly as a result of the SIM registration approach, there is a partially proper means of locating and identifying subscribers, as such, the difference in percentage fraud rate between postpaid and prepaid services in the year 2010 - 2011 is less as compared to the difference in previous years (see table 1).

perpetrators have found their ways through these technologies and have continued to pose significant problem to the mobile operators.

### Remedies to Mobile Fraud in Nigeria

Based on the findings of this research work, fraud cannot be completely eradicated in Nigeria's mobile telecommunication industry and the world in general, however this menace can be properly managed to reduce its effect on the revenue of the mobile operator to the lowest possible value.

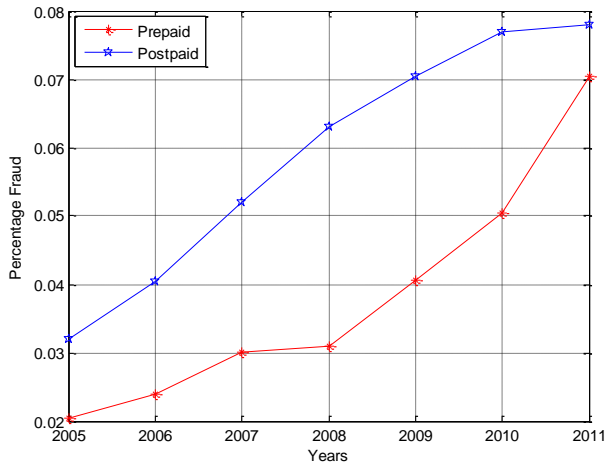


Figure 1(a): Graphical Representation of the Percentage of Revenue Affected by Fraud for Postpaid and Prepaid Services.

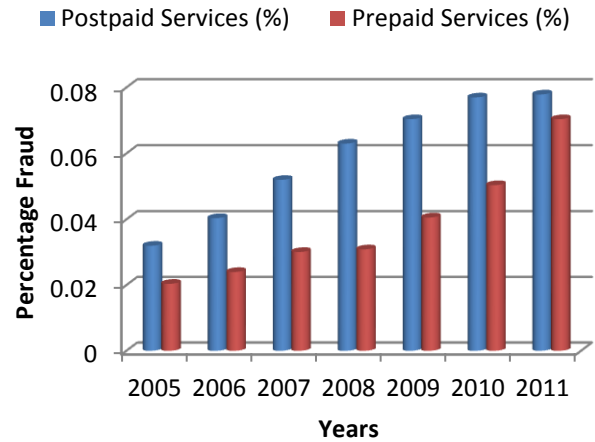


Figure 1(a): Bar Chart Representation of the Percentage of Revenue Affected by Fraud for Postpaid and Prepaid Services.

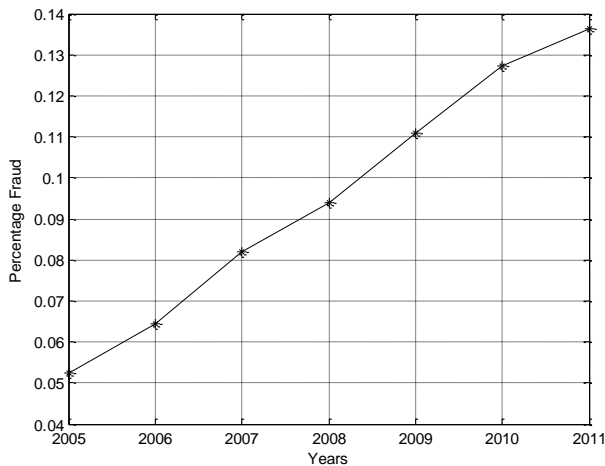


Figure 2(a): Graphical Representation of the Total Percentage of Revenue Affected by Fraud.

Furthermore, figure 2a shows that the yearly increase in percentage fraud is not at a fixed rate. This means that the increase in percentage fraud rate differs from year to year. Between the years 2005 - 2006, there was increase of 0.012%. Similarly, between the years 2006 - 2007, 2007 - 2008, 2008 - 2009, 2009 - 2010, and 2010 - 2011 there was increase of 0.018%, 0.012%, 0.017%, 0.016%, and 0.0087% respectively. But the fact remains that there have always been increase in the percentage fraud rate each year giving a total of 0.084% between the years 2005 - 2011. These discrepancies in the trend at which the percentage fraud rate increases yearly is to show that difference fraud detection technologies have been put in place to curb this menace in the industry, however, mobile fraud

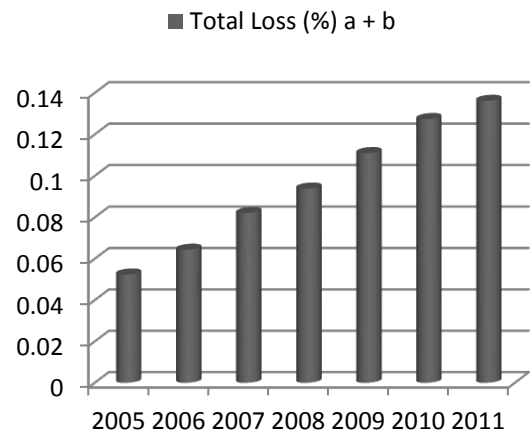


Figure 2(b): Bar Chart Representation of the Total Percentage of Revenue Affected by Fraud.

Firstly, the registration of SIM before usage is a welcome idea to reduce fraud in the mobile industry but this exercise should be carried out thoroughly. Subscribers should register their SIM with a standard Identification Card (ID card) accepted nationwide. In the course of this paper research, it was observed that 22.9% of mobile subscribers register their SIM with fake addresses. The question is 'why should mobile subscribers

register their SIM with fake addresses?'- Fraud. As such, SIM registration with accepted ID cards will further help to curb fraud in this industry.

Also, it was revealed in the course of this paper research that most of the mobile telecommunication companies in Nigeria do not have the understanding of the threat mobile fraud pose and proper record of past fraud cases. Recent researches in mobile fraud show that for mobile companies to have an effective fraud management system in place, the companies must have an in depth knowledge of the threat posed by this menace. All fraud cases should be properly recorded in order to utilize the information from the previous fraud cases in the future and to enable proactive detection of fraud

Furthermore, recent mobile fraud researches indicate that most fraud cases have an internal source or link. As such, mobile operators should ensure proper management control, supervision and monitoring of internal activities of system user. This should be taken seriously, because as earlier said, 22.9% of mobile subscribers register their SIM with fake addresses and when asked reason for their action, they claim their information is not save with their network operator. Therefore, if mobile telecommunication operators are open minded to internal risk, it can help save the operators lot of money as a result of fraud, and also help restore subscriber's confidence in the security of their transactions.

## VI SUMMARY AND CONCLUSION

Mobile telecommunication fraud is a problem that has grown noticeably over years and has become a serious global issue (the Nigeria's mobile industry is no exception) for mobile network service providers. This paper has presented a survey on the percentage of annual revenue affected by fraud over a specified period in prepaid and postpaid services offered by mobile telecommunication companies in Nigeria. Without doubts, fraud has continued to pose significant threat to this industry despite numerous fraud detection techniques put in place by these network operators. Also, this paper has presented insights to the trend of mobile telecommunication fraud in Nigeria and has proffered solutions to reduce fraud losses.

Fraud has indisputably become a significant cause of substantial annual revenue losses in Nigeria's mobile telecommunication industry. If proper fraud detection technology is not put in place by each network operator and NCC to curb this menace, it will lower the subscriber's confidence in the security of transactions available via the service operator.

Finally, this paper has only presented survey on the two services (prepaid and postpaid) generally offered to subscribers by mobile network operators in Nigeria. From this, it shows that the revenue losses will increase if other services such as VAS, PRS, etc were to be considered. The level at which the percentage fraud rate will increase if other services are considered is an open area for future research.

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