

Socio-Economic Factors as Determinant of Mobile Number Portability among Mobile Phone Users in Public Universities in Nigeria

Niyi Israel Akeke

Department of business administration,
Ekiti State University, Ado-Ekiti, Nigeria

Omobola Monsura Ajayi

Department of business administration,
Ekiti State University, Ado-Ekiti, Nigeria

ABSTRACT

Mobile number portability is the window for subscriber to move to another network provider when not satisfied, but still keep his/her number. Specifically, the study evaluated the relationship between socioeconomic factors and intention to port among mobile phone users in public universities in Nigeria. The study covered twelve (12) public owned Universities in Southwest Nigeria; Primary data were collected on socio-economic of respondent using structured questionnaires. Descriptive and inferential statistics were used to analyze the data. Descriptive statistics include frequency counts and simple percentages, while inferential statistics such as logistic regression were used. The findings revealed that among all the variables, expenditure on recharge, income and duration of use were significant at ($p < 0.05$). These findings lead to further conclusion that younger consumers are more likely to port than older ones. The results also provided empirical support for linkages between socioeconomic factors, their subcomponents and mobile number compatibility among consumers.

Keywords: Network portability, sex, income, duration usage and mobile phone users.

INTRODUCTION

The Nigerian telecommunication industry has been liberalized and private-driven, but before the full liberalization in the year 2000, the Nigeria Communications Commission (NCC) in 2013 explained that the number of connected lines had been just a little above 400,000 (NCC, 2013). After thirteen years into the advent of the mobile telephone in Nigeria, about 127.6 million lines have been connected. The advent of this liberalization has brought easiness to the way people reach each other and how businesses are being done, which has also created value for mobile numbers; the owners of mobile numbers will have propagated their numbers to customers, suppliers, colleagues, family and friends (Shin & Kim, 2008). Such businesses and persons may be reluctant to change local telephone companies and forgo their number even if the alternative provider offers better service and/or at cheaper rates.

Other business customers may also be reluctant to give up their number if it involves incurring expenses such as changing stationery or product packages (Bueler & Haucap, 2004). Consumers may also prefer to keep their existing number rather than learn a new number and risk missing calls even in the presence of dissatisfaction with their current service provider (Joshua, Stephen & Graeme, 2000). A 1994 Gallup poll commissioned by Microwave Communications Incorporation (MCI) Telecommunications concluded that 80 percent of residential customers and 90 percent of business customers will not likely change their local telephone company if they could not retain their numbers (Weiss, 1998). The importance of

telecommunication to individual and businesses, has given network providers the opportunity to provide the service. Furthermore, the reluctance of consumer in changing their telephone number has given network provider an hedge to create a lock-in of customer. The development and implementation of mobile number portability has been able to pave way for customer and removing the barrier of losing their number if not satisfied with their network providers.

Mobile number portability (MNP) was introduced into the Nigerian telecommunication industry in April, 2013. It gives opportunity to subscribers to change service providers in the face of dissatisfaction without necessarily losing their initial telephone numbers. This migration from one service provider to another while still keeping the initial telephone numbers is considered a way out of the lock-in of subscribers created by the monopolistic ideology of network providers, because, in the absence of number portability, switching networks requires most users to notify people of change of numbers (Electronic Communication Committee, 2005). With the presence of MNP, it is certain that network providers will be prevented from gaining market power by creating a lock-in for subscribers. Moreover, since the introduction of this scheme (MNP) in Nigeria, it is evident that the cumulative total number of ported lines as of March, 2016 was 654,188(NCC ,2016). However, it is of importance to understand the factors that determines MNP in Nigeria as there are available telephones that have the space for multiple SIM cards.

Moving from one service provider to another requires influence of some factors like individual, families with certain economic, social, educational and demographic characteristics (Gbenmiga, 2005). The presence of these factors and how they affect MNP in Nigerian universities in the Southwest is what this study wants to premise. However, since the introduction of MNP, many studies have examined the determinants of portability with a mixed results, , Birgul (2013) in Turkey; Dominic, Joseph and Rogers (2014) in Kenya; Carroll, Howard, Peck and Murphy (2002) in Britain; Shin and Kim (2008); David (2012) in Hong Kong; Xiapong and David (2015) in Britain; Kumaresh and Praveena (2010) in India; Daniel, Alfred and Solomon (2013) in Ghana; Kofi and Oscar (2013) in Ghana; Reddi (2014) in India; Simon and Robert (2015) in Ghana and Pirc (2005) in Spain. As Nigeria communication industry has just introduced the scheme, there is dearth of research on determinants of MNP and in order to ascertain the universality of result of above studies, further investigation is necessary in a country like Nigeria with a large market for communication usage. Hence, this study becomes imperative. It is hope that this study will serve as a good reference point for decision makers in understanding the reasons responsible for customers' portability.

LITERATURE

Number Portability

The introduction of number portability is one of the most active policy challenges facing the telecommunications industry worldwide (Daniel, Alfred and Solomon, 2014). The ability to retain a telephone number while switching carrier is known as MNP (Oliver, 2009). Mobile Number Portability means that a customer can keep his/her existing mobile telephone number when he/she changes his/her service provider. Mobile Number Portability is also simply keeping your mobile phone number when moving from your existing service provider to a new provider if perceived that the quality of service offered by the old service provider is not satisfactory (Bluehler & Haucap, 2004).

MNP can be described as an ability to retain subscriber's phone numbers while changing the subscription from one mobile service provider to another. It permits competition by allowing consumers to switch service providers, still maintaining their old mobile phone number. Mobile number portability (MNP) lets subscribers opt for the best service, from one operator

to another operator, and roaming facility from one network to another network provider using the same mobile number. Consequently, the service providers will need to aggressively participate and offer novel and superior customer services, to hold on to and increase their subscribers at large (Solomon, 2010). Oloja, Kuboye and Chukwuma (2013) defined MNP as a telecommunication network property, which allows subscribers to retain their mobile phone numbers when changing from one network provider to the other. It serves as the yardstick for increasing competition and for improving the quality of service among network providers; because subscribers have the freedom to migrate from one network provider to another network provider. Mobile number portability is the ability to take your existing mobile number to a new service provider. Mobile number portability is not a service feature or a product; it is the removal of a barrier to choosing the provider or 'service that suits you.

Theoretical Framework

Theory of Planned Behaviour

This study was underpinned by the theory of Planned behaviour, the theory which provide a framework to study and explain behaviour from intentions in virtually any human behaviour context by Ajzen (1991). Thus, intention and perceived behavioural control directly predict behaviour. Since this study could not lay hands on the number of ported consumer due to service providers protection to information, this study decides to elicit the intention of subscribers on portability and looking at factors like Age, income, Expenditure on recharge, educational level, sex and duration of usage and how they will influence portability.

Empirical Review of related studies

Age and Switching Behavior

Birgul (2013) carried out a study on the effect of mobile number portability: case of Turkey, in which the study identified the model and the factors affecting the MNP in Turkey. The questionnaire was developed based on previous researches and was modified according to a pilot study applied to give end-users. It was administered to a total of 1275 Internet users and 1250 usable data were collected. Regression analysis results indicated that the overall model is statistically significant, where the factors affecting the MNP were age, contract type, operator type, and satisfaction level. This study showed that the specified model can be used by managers of telecommunications service providers in order not to be affected by the MNP.

Dominic, Joseph and Rogers (2014), in "determinant of consumer switching behaviour in the mobile telephony industry in Kenya", studied the factors that influenced consumer switching behaviour, that compel subscribers to port their cell phone numbers as they migrate to new service providers. Regression results showed a strong relationship between the consumer intention to switch and the Push Determinants i.e. the duration and the cost of porting. Other determinants identified are the Swayer Determinants which include the period of usage, age, and the average amount spent on airtime. These were found to have a minimal influence on the intention to switch. Furthermore, results indicated that 68% of the respondents had the intention of switching, but the existing legal framework was found to be ineffective in facilitating an increase in the porting rate.

Shin and Kim (2008) studied forecasting customer switching intention in mobile service: An exploratory study of predictive factors in mobile number portability and found that age has a stronger association with switching compared to education, and that younger subscribers were more likely to switch mobile carriers than older subscribers.

Educational Background and Switching Behaviour

David (2012) studied the analysis of customer switching internet banks in Hong-Kong. There were 557 respondents participating in this Internet survey and out of which 271 respondents' background matches exactly the definition of "professionals" group, in this study, it was found that more educated people were likely to switch banks

Ranganathan, Seo, and Babad (2006) discovered that subscriber churn had become a critical issue for telecom operators in India. In their work, they studied customers with no contractual obligations, and they studied the demographic correlation with their switching behaviour, based on data on over 30,000 mobile users. The study result showed significant associations between mobile users and their service usage, service bundling and their switching behaviour. Age and gender was also seen impacting subscriber churn.

Shin and Kim (2008) studied forecasting customer switching intention in mobile service: An exploratory study of predictive factors in mobile number portability and found that subscribers with higher levels of education are relatively more prone to switching mobile carriers than those with lower educational levels.

Income and Switching Behaviour

Daniel, Alfred and Solomon (2014) carried out a study on the effect of the introduction of the MNP in Ghana on subscribers. However, from consumer viewpoint, they summarize the benefits of the Mobile Number Portability system with five major themes. To achieve the objective of the study, the logistic linear regression model was used to estimate the impact of Customer service, service problems, usage costs and income on the switching preference of network subscribers. The regression results indicated that the income of the respondents has a positive relationship with switching behaviour.

Kofi and Oscar (2013), in Mobile number portability: on the switch trends among subscribers within the telecommunication industry in a Ghanaian city, studied the proliferation of mobile telecommunication service providers in the country has prompted concerns about service quality within the industry. Mobile Number Portability was introduced by the National Communications Authority (NCA) as part of a broader campaign aimed at ensuring uninhibited switch from one telecom service provider to another. With a combination of both qualitative and quantitative investigative techniques, an initial attempt is made by this paper to produce results achieved through a representative sample of 200 respondents of different network customers to determine the pattern of switch from one service provider to another. Findings suggested that the instrumentality of income has a positive relationship with switching behaviour

Reddi (2014), in the impact of MNP on consumer behaviour, with reference to the Tirupati city of Andhra Pradesh, studied consumer awareness and preference about mobile number portability and tried to find out the factors, which motive user to opting MNP. The research design used in this study was a descriptive nature. The data were collected from 259 mobile users from different service operators and collecting of the customer opinion survey was taken among the selected users. The collected data included personal detail of existing operator. The MNP awareness motivated factors to choose operator, etc., the data were analysed by percentage, chi-square test was applied. The result found out that income is significantly related to switching.

David (2012) studied the analysis of customer switching internet banks in Hong-Kong and behaviour using correlation analysis with 367 sample size and finds out that higher income

earners place more importance on service provision i.e. were likely to switch when not satisfied

Simon and Robert (2015) studied the influence of demography, Religiosity and porting behaviour on switching behaviour of mobile subscribers in Ghana. 736 respondents were randomly selected and binary logistic regression was used for the analysis of data. The result revealed that income was not significantly related with porting.

Ranganathan, et al. (2006), studied switching behaviour of mobile users and users' relational investments and demographics matter who found family income as significant predictor of switching behaviour of mobile subscribers. Relatively, consumers who earn more can bear the financial cost of switching and therefore were more likely to switch when dissatisfied with current service provider than lower income earners who may perceive the monetary cost involved in switching as a barrier to switching.

Daniel, Alfred and Solomon (2014) studied mobile number portability in Ghana and its effect on subscribers. The result revealed that there was a negative relationship between willingness to switch and the income of the respondents and this was also statistically significant. The negative relationship between willingness to switch and the income of customers indicated that as income of customers increases, they will not be willing to switch but remain with the same network operator.

Duration of Usage and Switching Behaviour

Dominic, Joseph and Rogers (2014), in determinant of consumer switching behaviour in the mobile telephony industry in Kenya, studied the factors that influenced consumer switching behaviour; and that compel subscribers to port their cell phone numbers as they migrate to new service providers. Regression results showed a strong relationship between the consumer intention to switch and the "Push Determinants" i.e. the duration and the cost of porting. Other determinants identified were the "Swayer Determinants" which include the period of usage, age, and the average amount spent on airtime. These were found to have a minimal influence on the intention to switch. Furthermore, results indicated+ that 68% of the respondents had the intention of switching, but the existing legal framework was found to be ineffective in facilitating an increasing the porting rate.

Lopez, Redondo, and Oliván (2006) studied the impact of customer relationship characteristics on customer switching behavior in Kenya. The study uses 643 sample size, logistic regression was used for the analysis of the data and the authors found that relationship length is a key predictor of consumer switching behaviour and that consumers who stayed in a longer relationship with current service providers were also less likely to switch to a new one. As consumers stayed longer in relationship with service providers, they were able to use the firm offering more and develop an attachment.

Pirc (2006), in Spain, studied the Mobile telecommunications service sector. By using the consumption system perspective on mobile services and mobile phone, he provided the explanation of the factors of Customer switching, with 1000 sample size and nested multiple regression analysis was used. It was found that the duration of services usage effect on switching intentions was curvilinear (positive linear and negative quadratic).

Sex and Switching Behaviour

Ranganathan, Seo, and Babad (2006) discovered that subscriber churn had become a critical issue for telecom operators in India. In their work, they studied customers with no contractual obligations, and they studied the demographic correlation with their switching behaviour, based on data on over 30,000 mobile users. The study result showed significant associations between mobile users and their service usage, service bundling and their switching behaviour. Age and gender was also seen impacting subscriber churn.

Expenditure on Recharge and Switching Behaviour

Dominic, Joseph and Rogers (2014) in determinant of consumer switching behaviour in the mobile telephony industry in Kenya, studied the factors that influenced consumer switching behaviour; that compelled subscribers to port their cell phone numbers as they migrate to new service providers. Regression results showed a strong relationship between the consumer intention to switch and the "Push Determinants" i.e. the duration and the cost of porting. Other determinants identified were the "Swayer Determinants" ,which include the period of usage, age, and the average amount spent on airtime. These were found to have a minimal influence on the intention to switch. Furthermore, results indicated that 68% of the respondents had the intention of switching, but the existing legal framework was found to be ineffective in facilitating an increase in the porting rate.

RESEARCH METHODS

This study adopted survey research design to achieve all the objectives of this study. The choice of this research is borne out of the fact that quantitative researches usually fit with deductive approaches in which there is a theory and or hypothesis, which justifies the variables and the objective of the research (Borredgoet Streveler, Miller and Smith, 2009). Since this study was anchored on fresh gathering of data, survey research design was the most appropriate. One of the main purposes of the quantitative research is for the researcher to use a specific population and project the findings onto a larger population using a very objective process (Thorne and Gissen, 2002). Responses were sought from staff and students of public universities in south west Nigeria on factors enumerated in the research instruments for the purpose of itemizing the incidence of socioeconomic factors and portability. The research instrument used for this study was the questionnaire adapted from the work of Olatokun and Nwonne (2012). The major modification of the research instrument is in the area of switching for portability.

Population, Sample and Sampling Techniques

The population of the study covered all the staff (academic and non-academic) and students of the selected public universities in Southwest Nigeria. A total number of 37,918 and 275, 083 of staff and students, respectively, constitute the total population of the study. The population figures were gotten from each sampled institution. All of these were gotten for the year end 2014.

Sample size and Sampling Techniques

Mugenda and Mugenda (2003) explained that target population should have some observable characteristics, to which the researcher intends to generalize the results of the study. Considering the enormity of the population of this study, and in order to avoid voluminous data, the total sample size for the study was 1522. This was achieved using the Krejcie and Morgan (1970) sample Table.

Sampling Technique

Probability and non probability sampling techniques were used for this study. The non

probability sample techniques used was the homogenous purposive sampling technique for the selection of two universities (one state university and one federal university) from each state in the Southwest, Nigeria, based on the high number of students' enrolment and by JAMB choice, which were a proxy to a large number of staff as well.

Method of Data Analysis

Data for the study were analyzed using descriptive and inferential statistics. Descriptive statistics were used to present and analyze demographic data of respondents. The inferential involve the use of binary logistic model, which was applied to all the variables of the study objectives. Parameter estimates of the model were useful in testing the hypotheses of the study following the stated research design. The model was tested using non-linear estimation techniques.

RESULTS AND DISCUSSION

Response Rate of Research instrument

A total of one thousand five hundred and twenty two (1522) copies of the questionnaires were circulated, 187 and 1335, respectively among staff and students of public owned universities. Out of the one hundred and eighty seven (187) copies of the questionnaire distributed among the staff of sampled universities, one hundred and seventy nine were found useful. This represented a response rate of 95.72% from the staff of sampled universities in the study area. However, one thousand two hundred and forty (1240) copies of the questionnaires out of one thousand three hundred and thirty five (1335) distributed copies were found useful; this was due to the improper filling of the questionnaire. This represented a response rate of 92.88%. The difference in response rate showed that the staffs of the sampled universities were more responsive than the students. Overall, a total of one thousand four hundred and nineteen (1419) copies of questionnaires were found useful for analysis, representing 94.3% of distributed copies of the questionnaires.

Relationship between socioeconomic factors and intention to port

The results of the logit model to explain the relationship between socioeconomic factors and intention to port are presented in Table 1.1 The null-hypothesis that all variables can be dropped was rejected at less than the 1% level of significance. Since the log odds of the outcome were modeled as a linear combination of the predictor variables, the marginal effects were also computed to interpret the magnitude of the coefficients. Socioeconomic variables, such as sex ($\beta = -0.61$, $z = -3.49$, $p < 0.01$), age ($\beta = -0.31$, $z = 2.66$, $p < 0.01$), expenditure on recharge ($\beta = 0.29$, $z = 2.63$, $p < 0.05$), income ($\beta = 0.27$, $z = 2.13$, $p < 0.05$) and duration of use ($\beta = -0.38$, $z = -3.54$, $p < 0.01$) were significantly related to intention to port among phone users.

Parameter estimate of sex is negative and significantly related to intention to port among mobile phone users in public owned universities. The result indicated that female mobile phone users in public owned universities were more inclined to port than male. For every unit increase in the number of female subscribers, there is likelihood of 7% increase in porting.

Coefficient of age is negative and significant, suggesting that younger mobile phone users were more likely to port than older ones. The result also implies that the likelihood of an older subscribers porting decreases by 3%, *ceteris paribus*.

Parameter estimate of monthly expenditure on recharge of mobile phone exerts a positive and significant effect on intention to port.

A positive sign is associated with monthly income variable, implying that increase in income would lead to increase in mobile number portability by magnitude of less than 1%.

Income is the fourth significant predictor of switching behaviour. The result indicates that income positively influences porting behaviour or that the higher the income a respondent earns, the more likely he/she is to port than those who earn lower incomes.

Coefficient of duration of use shows a negative but significant relationship with intention to port. Increase in number of years of relationship with mobile service provider may lead to decrease intention to port by 4%.

Table 1.1: Estimated relationship between socio-economic factors and intention to port

Variables	Estimates	Std. Err.	Z	Marginal effect
Sex	-0.619	0.177	-3.49***	-0.069**
Age	-0.306	0.115	-2.66**	-0.035***
Educational level	0.079	0.104	0.75	0.502
Expenditure on recharge	0.297	0.113	2.63**	0.034**
Income	0.265	0.124	2.13**	0.003**
Duration of use	-0.382	0.108	-3.54***	-0.043***
Constant	3.029	0.489	6.19***	

N = 1419

LR chi2 (6) = 42.98

Prob > chi2 = 0.0000

Log likelihood = 433.73

Y = pr (d5) (predict)

= 0.870205

DISCUSSION OF FINDINGS

Relationship between socio-economic factors and intention to port among mobile phone users.

Sex is positive and significant, however in the course of the running of the data we analyzed the sex separately and found that more female had intention to port than the male. As noted earlier, this result was in conflict with the study of Ranganathan *et al.* (2006), which showed that female is less likely to switch than male. This study based its findings on what is termed 'techno-phobia'- fear and anxiety of using mobile technologies, which was found to be more rampant among females in their study area. This factor, according to the study, tends to discourage female mobile subscribers from switching. Since fear and anxiety factors have not been established for female telecom subscribers in this study. The finding of this study holds that female subscribers were more likely to port than male. Plausible reason for this finding may include the observed multiple relationships between a female and different male friends. Secrecy of communication activities of female in public owned universities may likely results in their intention to port to different mobile phone service. However, this assertion is subject to further empirical test. Meanwhile, Shin and Kim (2008) found that gender may not affect subscribers' decisions to port. This contradictory empirical evidence implies that the role of gender in porting behaviour might be different for specific research contexts and consumers. Also, differences in mobile commerce and advertising diffusions may also result in different porting behaviour among male and female consumers.

Age has been found to be negative but significant. Without doubt, suggesting that younger mobile phone users were more likely to port than older ones. This is in line with the findings of Dominic *et al* (2014), in Kenya and Birgul (2013), in Turkey. Young mobile users use mobile

services to satisfy their social and leisure needs, reinforced group identity, and add value to their lifestyles. Therefore, younger subscribers were more likely to switch mobile carriers than older subscribers (Shin and Kim, 2008).

Expenditure on recharge refers to the money spent on recharge cards monthly and it was found not only to be significant but also positive. This suggests that increase in monthly expenses on mobile phone recharge could increase portability among consumers. As consumer expenses on mobile phone recharge increases, consideration of porting to another service provider with reduced charges may increase among subscribers since financial stability of individual is crucial to loyalty to a particular service this is in line with the study of (Dominic *et al*, 2014). Furthermore, income was positive and significant to portability. However, this suggested that the higher the income a respondent earns, the more likely he/she is to port than those who earn lower incomes. The finding of this study is consistent with the work Daniel *et al* (2015) and Reddi (2014). Relatively, consumers who earn more can bear the burden of porting and therefore are more likely to port when dissatisfied with current service provider than lower income earners who may feel reluctant to port due to fear of monetary cost even if charge is declared free. Duration of usage was found to be negative but significant. Duration of firm-customer relationship was a significant predictor of porting behaviour. Specifically, the longer a respondent's relationship with a service provider, the less likely he/she is to port. This implies that the longer a service provider is able to keep relationship with customers by satisfying them and meeting their needs and requirements, the less likely will such customers completely port to competitors. These findings corroborate previous studies that when service providers are able to keep profitable customers longer in business relationships by meeting their needs and expectations, the more the customers are likely to become active users of the firm's services Kofi and Oscar (2013), feel committed to current service provider Rehana *et al* (2012), and therefore, will be less likely to switch to new service providers (Daniel *et al.*, 2014; Chiu, Hsieh, Li and Lee, 2005). Furthermore, duration of use which indicates years of relationship suggest strength of firm-customer relationship as an antecedent of consumer intention to remain loyal to a service provider. Studies such as Lopez, Redondo, and Olivan (2006), Pirc (2005) have established that the strength of the relationship between a firm and its customers is recognized as extremely important cornerstone that emerges from active consumers' involvement in the use of services, and their cognitive and emotional commitment to service provider. The more a consumer frequently uses a variety or bundles of services of a firm and feels emotionally attached to the service provider, the stronger will be the firm-consumer relationship. This could also be ascertained in this study as the most patronized network is MTN with respondent who has 10-13 years relationship being the more among the sampled respondents. Educational level was found to be positive but insignificant, this result was in agreement with the study of David (2012) done in Hong-Kong. This could be as a result of the liberation in the telecommunication industry in Nigeria; which made telecommunication available and affordable to all its citizens in respective of their social, economic and educational status.

Hypotheses Testing

In order to test for the hypotheses in this study, F statistics will be more appropriate since the data in the study were ordinal in nature and the variables used in this study were categorized in to socioeconomic, push-pull-mooring factor.

Test of Hypothesis 1

There is no significant relationship between socioeconomic factors and the intentions to port among mobile phone users in public universities in Nigeria.

The results in Table 1.2 below clearly allows for the rejection of the null hypothesis that there is no significant relationship between socioeconomic factors and intention to port. This is due to the value of p being less than the 0.05 significance level.

Table 1.2 Test of Hypothesis

Source	DF	MS	Pr > F
	20	13.78	0.0000
Residual	1185		
Total	1205		

CONCLUSION AND RECOMMENDATION

From the results of data analysis, this study empirically concluded that due to the influence of socioeconomic factors, the determinants of the MNP were not a unified construct but rather one with both positive and negative switching barriers. Demographic factors such as gender and age have a negative influence on intention to port while economic factors of individual respondents such as income and expenditure exert positive influence on intention to port. These findings lead to further conclusion that younger consumers are more likely to port than older ones. The results also provided empirical support for linkages between socioeconomic factors, their subcomponents and mobile number compatibility among consumers.

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