

An Empirical Research on Factors Affecting Mobile Subscriber Intention for Switching between Service Providers in India

¹G. N. Satish Kumar, ²H. Vani, ³S. Vandana

^{1,2}Dept of M.B.A., Auroras' Pg College, Moosarambagh, Hyderabad, Andhra Pradesh, India.

³Auroras Pg College, Ramanthapur, Hyderabad, Andhra Pradesh, India.

Abstract

This empirical study has investigated the factors influencing the mobile subscribers Intention to switch mobile service providers in India based on Structured Equation Model (SEM). Due to huge growth in mobile subscribers, heavy competition between service providers and Mobile Number portability facility given to the mobile subscribers there is a need to study the impact of various factors influencing mobile subscribers Intention to switch service provider. The study was conducted on 361 Mobile phone subscriber for a period of 3 months. The data analysis was conducted in a three-stage process. First, reliability tests were performed. Upon satisfactory results, the factor analysis of the collected data was conducted followed by Confirmatory Factor Analysis (CFA) was performed to confirm the findings. SPSS Statistics 17.0 is used to conduct factor analysis and the validity of the model. Once the model was validated, SPSS Amos 18.0 is used to test the overall fitness of the SEM. The findings have revealed that Service Quality is the most important factor influencing the mobile subscriber Intention to switch service provider compared to Promotional offers and Service Affordability. This study has important implication for researchers to understand the level of impact that these factors has on Intention for switching service provider and the correlation between these factors.

Keywords

Confirmatory Factor Analysis (CFA), Service Quality, Promotional offer, Service Affordability, Structured Equation Model (SEM).

I. Introduction

The telecommunication market in India is booming as reported by Telecom Regulatory Authority of India (TRAI) the total telephone subscriber's base has reached 787.28 Million in December 2010. The Wireless subscription has reached to 752.19 Million in December 2010. Every month on average there is an addition of 22.62 million new subscribers for wireless telephone. The mobile phone has become a ubiquitous device which has cut across all strata of the population, at present the overall tele-density is 66.16% indicating the number of people using mobile phones in India.

Telecommunication reforms in India started in the year 1980 with introduction of private sector into telecommunication equipment manufacturing. In 1985 Department of Telecommunication (DoT) was established and in 1986 government established Videsh Sanchar Nigam Limited (VSNL) for International telecommunication and Mahanagar Telephone Nigam Limited (MTNL) for services in metropolitan areas. After the Liberalization of the Indian Telecom Sector in 1994 National Telecom policy (NTP) was established to improve India's position in global Telecommunication and in 1997 TRAI was established to regulate all telecommunication services in India. Bharti, a part of Bharti Enterprises was the first mobile service provider to offer its service on July 7 1995 from then onwards Indian market has witnessed a huge surge in mobile service providers,

at present there are around 15 service providers in this market among them including Bharti, Reliance India Mobile (RIM), Vodafone, Bharat Sanchar Nigam Limited (BSNL), Idea Cellular Limited (Idea) are major players in this sector.

Indian Telecommunication sector is divided into fixed service providers and Cellular service providers. Cellular service providers are further divided into Global System for Mobile communication (GSM) and Code Division Multiple Access (CDMA). In India the GSM sector is dominated by Airtel and Vodafone where as CDMA is dominated by Reliance and Tata Indicom. Bharti leads the Indian telecom market share with 20.27% followed by Reliance (16.70%) and Vodafone (16.52%).

The Indian mobile phone market is growing at a tremendous speed ranging from 13 million (2003) to 167 million (2007) and reached 752 million subscribers in 2010 this growth can be contributed by booming Indian economy, increase user comfort with basic mobility services and personalization of content and devices. The launch of advanced telecom services like third generation mobile (3G) and Internet Protocol Television (IPTV) will also drive the growth in Indian telecom subscriber base and further more mobile handset market is also expected to register a robust growth in near future.

The Mobile service providers in India has transitioned from offering mere voice connectivity to providing value added services to their customers such as Multimedia Message Service (MMS) and internet connectivity. The mobile phone features are also ranging from normal cell phones to Personal Digital Assistant (PDA) features, so the mobile subscriber are finding it increasingly difficult to choose the right service provider.

TRAI has announced on 20th November 2009, that Mobile Number Portability (MNP) will be introduced in India on 31st December 2009. Through MNP mobile subscribers can change their service provider within 7 days and they can retain their mobile number at a cost no more than Rs 19. Due to many technical reasons from service providers MNP was delayed for long time and at last it was launched on 20th January 2011. It was estimated that around 200000 subscribers has requested from Mobile Number Portability within the first ten day from the launch of MNP. This analysis shows how serious the subscribers are to switch the service provider according to their need.

II. Literature Review And Conceptual Framework

As reported by Internet and Mobile Association of India (2008), Tele Communication in India has moved beyond providing just voice calls. The mobile subscriber are expecting more services from their service providers apart from just making or receiving calls from their mobile phones. This research framework consists of three major factors which are influencing mobile user intention for switching of service providers they are Service Quality, Service Affordability and Promotional Offers.

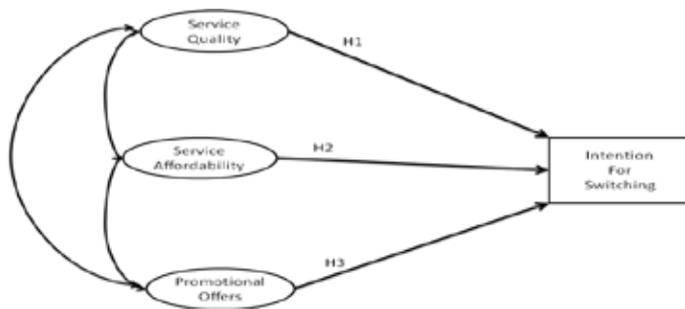


Fig. 1: Factors influencing Mobile Subscriber Intention for Switching - Hypothesis framework

A. Service Quality

Zeithaml et.al (1996) offered a conceptual model of service quality. The service quality affects particular behaviors that indicate whether customers will remain loyal to or leave an organization.

Superior service quality leads to favorable behavioral intentions, which leads to retention, which leads to ongoing revenue, increased spending, payment of price premiums, and generation of referred customers. Service quality is measured in five dimensions they are reliability, responsiveness, assurance, empathy and tangibles. Wang and Lo (2002) studied on comprehensive integrated framework for service quality, customer value and customer satisfaction and behavioural intention of customers in China. Omotayo and Joaching (2008) found a strong relationship between customer service, satisfaction and retention in the communication industry in Nigeria. So, It can be assumed at Service Quality is the one of the main factors influencing the Indian mobile subscribers Intention for switching the service provider. First Hypothesis is formulates as.

Hypothesis1 (H1): The service quality has a significant effect on Mobile Subscriber Intention for Switching of service provider

B. Service Affordability

Affordability is a measure of cost related to the amount that a purchaser is able to pay. Kollmann (2000) states that Price plays a vital role in telecommunication market especially for the mobile telecommunication service providers. Michael Draganska & Dupal Jain (2003) analyzed that companies should differentiate consumer preference by using product line as a price discrimination tool by providing different variety of tariff plans to consumer to purchase the product or service according to their requirement.

India is having 752.19 Million mobile subscribers and Informate Mobile Intelligence reports claim that in Average Minutes Per User (AMPU) in India is 25 to 30 minutes per day of active time on voice calls and almost 15 to 20 minutes per day of the active time on messaging. Bharati the major mobile service provider in India claims as on November 2010 that Indian Monthly Average Revenue Per User (ARPU) is 202 rupees which is reduced at 20% on a year base and it is expected to decrease further. As there is an increase in mobile subscribers and increase in AMPU at the same time there is a decrease in ARPU Mobile service providers are planning to attract Mobile subscriber to their service with less affordable price. Jallet and Fredric (2008) analyzed the importance of yield management and discrimination pricing in telecommunication sector. Yield management techniques can help telecom operators and similar companies to optimize the benefits they can derive from a subtle management of information networks

and partnerships. So, Service affordability is the also one of the main factors influencing the Indian mobile subscribers Intention for switching the service provider. Second Hypothesis is formulates as.

Hypothesis2 (H2): The service affordability has a significant effect on Mobile Subscriber Intention for Switching of service provider.

C. Promotional Offers

Alvarez and Casielles (2005) specified promotion is a set of stimuli that are offered sporadically and it reinforces publicity actions to promote the purchasing of a certain product. Mobile service providers are giving different promotional offers like prepaid offers on top-up recharge, E-recharge mobile top up vouchers for prepaid connection, chota recharge topup, bonus cards, phone alert of astrology, cricket score, call management services, caller tunes, free mobile calls, Short Message Services (SMS) offers, limited time free internet usage, various kinds of ring tone services, dialer tone services and other promotional offers to attract the mobile subscriber.

Chinnadurai and Kalpana (2006) analyzed the increasing competition in cellular services, changing mobile subscriber taste and changing preferences of the customer's all over the world. These circumstances are forcing companies to change their customer promotional strategies. It is analyzed that advertisement play a dominant role in influencing the customers but most of the customers are of opinion that promotional strategies of cellular companies are more sale oriented rather than customer oriented. The third hypothesis is formulated as follows

Hypothesis3 (H3): The Promotional offers has a significant effect on Mobile Subscriber Intention for Switching of service provider

III. Research Methodology

Structural Equation Modeling is used as the main statistical technique. The methodology used to develop the instrument followed the guidelines given by Churchill (1979), Gerbing and Anderson (1988) and O'Leary-Kelly and Vokurka (1998). Data was collected through questionnaire survey. The questions in the survey are self created. 5 point likert scale was used (1 strongly disagree, 2 disagree, 3 nether agree or disagree, 4 agree and 5 strongly agree) to measure affects of Service Accessibility, Service Affordability, Promotional Offer and Customer Service for selecting the service provider. The research questions consisted of 23 questions. The first 3 questions are related to demographic variables age, gender and Family monthly Income. The remaining 20 questions are related to Mobile service accessibility, Service affordability, promotional offers and Customer Service. The questionnaire was pretested with a pilot study on a small sample size of 30 respondents to clarify the overall structure of questionnaire to test its consistence and reliability of questions to its research objective.

IV. Sampling And Data Collection

A total of 400 questionnaire forms were distributed to respondents in different parts of Andhra Pradesh for a period of 3 months from 5th January 2011 till 10th April 2011. A total of 361 questionnaires were analyzed for the research as other 39 questionnaires were incomplete. All the respondents are mobile phone subscriber for at least one year and selected based on convenience sampling method. Respondents are clearly

explained about the objective and purpose of the research article before distribution of the article.

The demographic characteristics of the customers are summarized in Table 1. Majority of respondents are males 207 (57.34%) and female respondents are 154 (42.66%). Majority of respondents are of age group 21 years to 30 years (40.17%).

Table 1: Demographic Characteristics of Respondents

Variable		Frequency	Percentage
Gender	Male	207	57.34
	Female	154	42.66
Age	Below 20 years	41	11.36
	Between 21 to 30 years	145	40.17
	Between 31 to 40 years	109	30.19
	Above 41 years	66	18.28
Family Monthly Income	Below ₹ 10,000	132	36.56
	Between ₹ 10,001 to 25,000	121	33.52
	Above ₹ 25,001	108	29.92

V. Data Analysis

The data analysis was conducted in a three-stage process. First, reliability tests were performed. Upon satisfactory results, the factor analysis of the collected data was conducted followed by Confirmatory Factor Analysis (CFA) was performed to confirm the findings. SPSS Statistics 17.0 software is used to analysis the Content validity, Construct validity and Convergent validity of the model. Once the model was validated, SPSS Amos 18.0 software is used to test the overall fitness of the Structural Equation Model (SEM) and to estimate the relationships between the independent variables and the dependent variable so as to accept or reject the hypothesis.

A. Reliability Tests

The reliability of 8 items in the questionnaire is tested with Cronbachs' alpha (Cronbach, 1951). Cronbach alpha reliability coefficient is 0.772 which is exceeding the suggested level of 0.70 (Nunnally, 1978). It suggests that the questionnaire is having reliability and can be used for further analysis.

B. Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test is used to test suitability of data for factor analysis. KMO value was 0.739 exceeding the recommended value of 0.60 which can be considered as adequate (Kaiser and Rice, 1974) while Bartlett's Test of sphericity reached statistical significance (Approx. chi-square 648.812, df 28 and Sig 0.00) which signifies the data is good for conducting factor analysis.

The 8 items were subjected to Principal Component Analysis

(PCA) with varimax rotation to test the suitability of data for factor analysis. The items having factor loading less than 0.50 should be eliminated (Hair et al, 1996) but all factor loading each items are above 0.50 suggesting that the data set is appropriate (Stewart, 1981). So, all 8 items are accepted and PCA revealed that these 8 items are grouped into 3 components with Eigen values exceeding 1, explaining 3.151, 1.516 and 1.108 respectively. The total percentage of variance is 72.194. The individual dimensions of the proposed instrument explained total variance exceeding 60 percent, suggesting the appropriateness of the process. These components correspond to three constructs influencing the Mobile Subscriber Intention for Switching of service provider in structural model – Service Quality, Service Affordability and Promotional Offers. The results of the Principal Component Analysis can be viewed in Table2.

C. Confirmatory Factor Analysis

According to Ahire, Golhar and Waller (1996) Confirmatory Factor Analysis (CFA) provides enhanced control for assessing unidimensionality than Exploratory Factor Analysis and is more in line with the overall process of construct validation. Unidimensionality measure the extent to which the items in a scale all measure the same construct (Venkatraman, 1989). In this study, CFA model is run through SPSS AMOS 18.0 software. CFA was conducted for each of the three constructs to determine whether the 8 indicators measured the construct they were assigned to adequately. Some of the important validity tests generally considered includes construct validity and Convergent validity.

D. Construct Validity

In the present study, in order to check for unidimensionality, a measurement model was specified for each construct and CFA was run for the entire construct. If a Comparative Fit Index (CFI) is 0.90 or above for the model implies that there is a strong evidence of unidimensionality (Byrne, 1994). CFI values for this construct are specified in table3. This indicates a strong evidence of unidimensionality for the scale.

E. Convergent Validity

It is the degree to which multiple methods of measuring a variable provides the same results (O'Leary-Kelly and Vokurka, 1998). Convergent validity can be established using a coefficient called Bentler-Bonett coefficient. The Bentler-Bonett Normed Fit Index (NFI) is 0.950 in this research which is obtained from CFA can be used to assess convergent validity. This index measures the extent to which different approaches to measuring a construct produces the same results (Hair et al, 1996). According to a rule of thumb, NFI values of 0.90 or greater than that indicates an adequate of model fit (Bentler, 1980).

Table 2: Factors Extraction Results of the Items in Questionnaire

Item No	Component	Factor Loads	Eigen Value	% variance
SERVICE QUALITY(SO)				

SQ1	Customer service centre are easily accessible	0.879	3.151	39.385
SQ2	Customer service centre provide quality service	0.837		
SERVICE AFFORDABILITY (SA)				
SA1	Call rates are economical	0.799	1.516	18.953
SA2	Call rates are worth paying	0.862		
SA3	Initial subscription cost is low	0.785		
PROMOTIONAL OFFERS (PO)				
PO1	Promotional offers are attractive	0.853	1.108	13.856
PO2	Promotional offers are useful	0.839		
PO3	Promotional offers are reliable	0.737		
Total percentage of variance 72.194				

Table 3: Descriptive statistics for the questions in the survey

Item No	Description	Mean	S.D
SQ1	Customer care service centre are easily accessible	3.30	1.121
SQ2	Customer service centre provide quality service	3.37	0.998
SA1	Call rates are economical	3.65	1.018
SA2	Call rates are worth paying	3.66	0.949
SA3	Initial subscription cost is low	3.66	1.028
PO1	Promotional offers are attractive	3.57	1.078
PO2	Promotional offers are useful	3.57	1.026
PO3	Promotional offers are reliable	3.55	1.016

The following value are found in our study for each parameter to test model fit

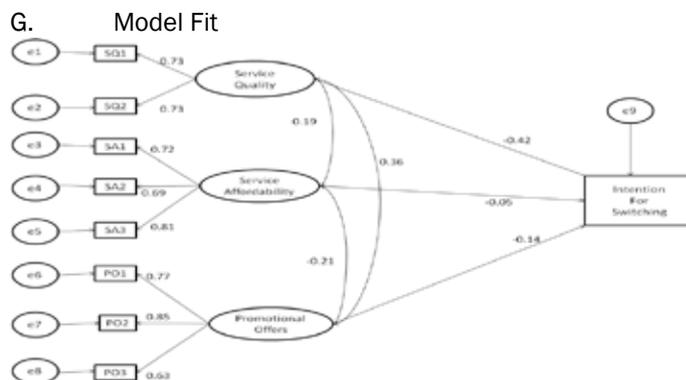
Table 4: Parameter value for model fit measures with SPSS Amos

Name of the Parameter	Value
Goodness of Fit Index (GFI)	0.986
Adjusted Goodness of Fit Index (AGFI)	0.964
Normed Fit Index (NFI)	0.977
Comparative Fit Index (CFI)	1.000
Tucker-Lewis Index(TLI)	1.003
Incremental Fit Index(IFI)	1.001
Relative Fit Index(RFI)	0.953
Root Mean Square Error of Approximation (RMSEA)	0.001

Based on various studies conducted by Bentler and Bonett (1980), Jöreskog, and Sörbom (1974), Bollen's(1989) and Bentler (1980) it was suggested that if the Index value is greater than 0.9 and if RMSEA values is less than 0.05 it indicates model is fit and accepted.

F. Structure Equation Model

SPSS Amos 18 software is used to perform confirmatory factor analysis using Structural Equation Model (SEM). Total number of variables in the model is 21, number of observed variables 9, number of unobserved variables 12. The data has no missing values. The model is over-identified, a preferable situation for SEM. According to the univariate and multivariate normality tests the data is not normally distributed. After the data was normalized, the Maximum likelihood (ML) estimation method is used. ML attempts to maximize the likelihood that obtained values of the criterion variable will be correctly predicted.



Based on Structure Equation Model using SPSS Amos 18 it is found that Chi-square(CMIN) = 16.944, Degree of freedom(DF) = 18 and probability level is about 0.527 which is evidence against the null hypothesis is not significant at the 0.05 level. CMIN/DF is called as the minimum discrepancy which is 0.9413 Wheaton et al (1977) suggested that if the minimum discrepancy is less than 5 the model is reasonable fit.

Figure 2: Structure Equation Model - The path diagram with standardized parameters estimate.

VI. Findings

SPSS AmosGraphics has specified path-diagram in fig. 2 specifies the relationship between the observed variables and unobserved variable. The portion of the model that specifies how the unobserved variables are related to each other is called structural model. In this present structural model Service Provider is the dependent variable and the four variables Service Quality, Service Affordability and Promotional Offers are independent variable. The Regression weights estimates provides the relative importance. The estimates with the largest value represent the most important dimension in terms of its influence on overall Intention for switching service provider. The findings of the regression weights estimates are summarized in table 5.

Table 5: Standardized Regression weights Estimations

Factor	Direction	Factor	Estimate
Intention for Switching		Service Quality	-0.42
Intention for Switching		Service Affordability	-0.05
Intention for Switching		Promotional offer	-0.14

Hypothesis1 (H1): The Service Quality has a significant negative effect on Mobile Subscriber Intention for Switching of service provider with Standardized regression weight of -0.42. So, Hypothesis1 is accepted.

Hypothesis2 (H2): The Service Affordability has a no significant

effect on Mobile Subscriber Intention for Switching of service provider with standardized regression weight of -0.05 So, Hypothesis2 is not accepted.

Hypothesis3 (H3): The Promotional offers has a significant negative effect on Mobile Subscriber Intention for Switching of service provider with standardized regression weight of -0.14. So, Hypothesis3 is accepted.

Table 6: The estimation of correlation among exogeneous variables

Exogeneous Variables	Correlation	Exogeneous Variables	Estimate
Service Affordability		Promotional offer	-0.21
Service Quality		Service Affordability	0.19
Service Quality		Promotional offer	0.36

Service Quality and Promotional Offer are exogeneous variables which have a significant positive correlation towards each other and Service Quality and Service Affordability has very less correlation where as Service Affordability and Promotional Offers has negative correlation towards each others.

VII. Discussion

A review of literature revealed that Service Quality, Service Affordability and Promotional Offers are three important factors which are influencing the mobile subscriber intention to switch the service provider. This study provides a significant contribution to the theory by conducting factor analysis and Structure equation method to know the impact of these factors Intention for switching service provider.

Service Quality has the negative impact of -0.42 standardized regression weight on mobile subscribers Intention for switching the service provider because more the service quality is given by the service provider less the subscriber thinks to change the service provider these are reciprocal action to each other, from the literature review it is known that retention of the customer is very important to service providing company than searching for a new customer because the cost of acquiring a new customer is more than retention of the old customer. All service providers are concentrating on service quality in order to retain the customer as especially after TRAI has implemented number portability in India. Now customers can retain his mobile number and easily switch their service provider with minimum charges. So, service quality is very important factor at present scenario which is influencing the intention for switching the service provider.

Service Affordability is the tariff plans companies provide to the customer to use their service. At present due to huge competition companies has reduced their talk time cost in order to attract the customer. Customer is aware that all service providers are providing same price with slight modification in their packages so, Service Affordability having very less negative influence on mobile subscriber intention for switching the service provider with -0.05 standardized regression weights. The relation between Service Affordability and Intention for switching is negative because if service is affordable then subscribes intention for switching service provider reduces.

Promotional Offers is the third factor which is influencing the mobile subscriber's intention for switching the service provider

with -0.14 standardized regression weights. Promotional offers have less impact on selection of service provider because customers are aware that these promotional offers are purely to attract them for their service. Customers are always cautious in selecting the service provider based on the promotional offers. Promotional Offers has negative impact on mobile subscriber's intention for switching service provider because if more promotional offers are given to the subscribers then there is a change to reduce the intention of subscriber to switch the service provider.

Service Quality has high correlation with Promotional Offers because in order to improve service Quality Company gives more promotional offers to attract the subscriber and reduce the intention to switch the service provider. Promotional Offers has negative correlation with Service Affordability because generally promotional offers reduce the cost of the service so they have negative relation influencing the subscriber's intention for switching the service provider.

VIII. Conclusion

This study used the Structured Equation model to understand the factors which are influencing the subscriber intention for switching service provider in India. There is a huge growth in mobile subscribers in India and heavy competition between the service providers, TRAI has implemented Mobile Number Portability due to which customers has a chance to select their own service provider keeping the mobile number unchanged. At present there is a very little research available to investigate the factors influencing subscriber's intention for switching between service providers in India. The result of this research predicts that Service Quality has high negative impact on Intention for switching and Promotional offers has less negative impact on intention for switching where as Service Affordability has no significant impact on subscriber's Intention for switching service provider. There is a good correlation between Service Quality and Promotional Offers. The findings of this study contribute to a better understanding of the relationship between Service Quality, Service Affordability, Promotional Offers and its impact on Intention for switching service provider. In particular, the finding in this research can help practitioners and academicians' to understand the level of impact that these factors has on subscriber Intention for switching the service provider and the correlation between these factors.

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