

An Empirical Study on Customer Churn Behavior of Indian Prepaid Mobile Services

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Abstract: Indian prepaid market, show sin credible growth in subscription with hectic competition, turns out to be at the verge of saturation. Customers have more options to select the mobile operators in prepaid segment without any commitment and risk, when compared with postpaid. Churn rate is very high in prepaid since customers are free from switching barriers in this segment. It is very tough visage for the mobile operators to retain this customer base as the cost of acquisition is very high. To enhance the customer loyalty and return on Investment, it is highly imperative to examine the level of customer satisfaction with respect to their service providers. Thus this study was mainly to gauge the level of customer satisfaction and to analyze the factors driving the customer churn on Indian prepaid segment. Based on the churn factors, the operational retention strategies were designed to enhance the customer loyalty by arresting the churn rate. The research study was descriptive and survey method was employed using structured questionnaires as sampling instrument. Sample size was 1102 and Tamil Nadu, one of the states of India was selected as the sampling framework. Exploratory factor analysis and multiple regression were taken as statistical tools for data analysis. The factors related to the technology based services, network coverage, net speed, complaint resolution system were acting as driving source for the customer churn. Based on this operational strategies were devised to improve customer loyalty.

Key words: Customer satisfaction • Social media marketing • Technology • Customer care • Customer churn

INTRODUCTION

Indian mobile telecommunications is the second largest based on the total number of mobile users in the world. Mobile services in India basically based on two main technologies and they are Code Division Multiple Access (CDMA) and Global System for Mobile Communications (GSM) [1-4]. According to Internet and Mobile Association of India (IAMAI), India has the world's second- largest Internet user base with 190 million at the end of June 2014. Totally 55.20 million are using mobile phones for Internet services of December 2013. This in turn entangled with disloyalty and as the industry at the earlier stage saturation, it become imperative for the mobile operators to shift their focus from rapid acquisition strategies to strategies which helps to maintain and enhance margins from existing customer base. Customer churn happens to be the most challenging issue for mobile industry irrespective of their rapid

growth. The rate of attrition among the subscribers is also growing vibrantly and the churn rate (i.e. the rate at which a subscriber switches his/her operator) was expected to exceed 59% in 2014¹. Churn rate increases pungently in parallel to the growth of mobile subscribers. Customer retention, therefore, is becoming critical to sustain customer base. In this regard it is essential to inspect the basis for mobile churn in India. For this it is imperative to ascertain the level of customer satisfaction and causes for customer churn [5-8].

Review of Literature: Hadden *et al.* (2007) explained the impact of customer churn in the developed countries. [1] pointed out the cost of acquiring new customers would be very high when compared with the cost of retaining the existing customers and emphasized the importance of churn prediction. Song *et al.* (2007) stressed that a robust churn prediction system required to identify the potential churners and to enhance customer loyalty.

¹<http://www.wirelessweek.com/articles/2011/09/mobile-data-pricing-signs-market-maturity>

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Hwang *et al.* (2004) defined that customer defection was the burgeoning issue in highly competitive wireless telecom industry. It emphasized that churn would create long term loss in terms of revenue. [2] described the importance of pricing promotions and their role in customer churn. Berson *et al.* (2002) explained the significance of churn prediction in the mobile segment [9-11].

Research Questions:

- How satisfied are consumers with their current service providers and what influences their satisfaction?
- How can mobile operators sustain their customer base?

Problem Focus: India has more than 15 mobile operators in a highly competitive, predominantly pre-paid market. About 96% of all mobile subscribers are constantly transitioning between mobile service providers to realize incrementally lower prices [12-13]. The monthly churn rate in India averages approximately 6%. Reasons for disloyalty varies for different operators as this market is highly competitive. Customer loyalty generally declines and willingness to churn increases as markets tend to technological changes. Recent churners often switch because of promotional offers from competing providers. Apart from technological reasons, India is overwhelmingly with prepaid market, there is scope for greater disloyalty among subscribers. According to the recent statistics, its churn rate has gone up to 14 per cent per month while incremental net ads are at 8-10 million². The churn is very high especially in the youth segment Customer retention is a challenge as churn takes place in the short period of less than 24 months³.

Research Objectives:

- To ascertain the level of customer satisfaction with regard to their purchasing decision, corporate Image, performance of mobile operator, customer Relationship Management process, Service quality and Price.
- To examine the factors influencing the customer churn with respect to Indian prepaid mobile services [14].

RESEARCH METHODOLOGY

Research Design: Research method adopted in this study was descriptive.

Datacollection

Primary Data: Survey method was employed using structured questionnaire for gathering the primary data.

Secondary Data: The secondary data were gathered from the literature reports and telecommunication reports [15].

Sampling Framework: According to the recent telecom report, Tamil Nadu, the second largest in Prepaid Mobile subscription among the states in India. It contributed 10% of total prepaid subscription of India as of December 2013. Approximately 50% of the monthly average churn is represented by this state. Hence it was taken for the study for the better representation. Customers have been selected from ten major cities of Tamilnadu such as Chennai, Madurai, Dindugul, Coimbatore [16-20], Trichy, Salem, erode, Vellore, Tirunelveli, Thanjavur based on the strength of prepaid subscription and churn rate of 2013⁴.

Period of the Study: Primary data were collected from 2012 to 2013 and secondary data were gathered from 2010 onwards.

Sample Method and Size: Purposive sampling method was undergone in this study and totally 1102 samples were subjected as sample size.

Reliability and validity

Reliability: Using SPSS 20 package, inter item reliability was checked and cronbach alpha value was 0.94.

Validity: Content, construct and face validity were assessed and evaluated through respective experts and supported by literatures.

Pilot Study: Totally 100 respondents were taken for pilot study and it was conducted in Chennai, the capital city of TamilNadu.

Data Analysis

Research Objective 1: To determine the level of customer satisfaction with regard to their purchasing decision,

²<http://www.rediff.com/business/slide-show/slide-show-1-is-the-telecom-tariff-party-over-in-india/20110729.htm#10>

³http://www.exchange4media.com/e4m/news/printpage.asp?section_id=4&news_id=10961&tag=5595

⁴<http://www.trai.gov.in/>

corporate Image, performance of mobile operator, customer Relationship Management process, Service quality and Price.

Statistical Tools:

- Exploratory Factor Analysis
- Multiple Regressions

Exploratory Factor Analysis

Principle: To perform data reduction and to extract the factors that is distinct, reliable and directive to the research objectives. It does this by seeking underlying unobservable (latent) variables that are reflected in the observed variables (manifest variables). These extracted factors would be taken for further statistical analyses [21-25].

A principal component Analysis (PCA) was conducted on 199 items of predictors and criterions with orthogonal rotation of VARIMAX.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy:

This measure varies between 0 and 1 and values closer to 1 are better. The KMO value is 0.85. It is an overall index implying that the data are distinct, reliable and possess sampling adequacy. The KMO for all Individual items from Anti image correlation matrix is above 0.76 explaining the sampling adequacy. Based on this index, it is confirmed that the data support the use of factor analysis.

Bartlett's Test of Sphericity (x2):

This tests the null hypothesis that the correlation matrix is an identity matrix. Since Barlett's test is highly significant (p<0.001) and therefore factor analysis is appropriate since the correlation between the items are sufficiently large [26].

Eigen Values:

An Initial analysis was run to obtain the Eigen Values for each component in the data and Maximum four components had Eigen values over Kaiser's criterion of 1 and in combination explained 75% of the variance.

Table 1: List of predictors

Constructs/Latent Variables	Items/Manifest Variables	Correlation Coefficients
Handset Details	Number of Mobile phones usage(x1)	0.77
	Design of the Mobile Phone(x2)	0.87
Purchasing Decision	Video(x3)	0.83
	Internet usage	0.938
Data card	Type of the data card(x4)	0.938
	Place of purchase(x5)	0.938
	Awareness(x6)	0.938
	Personal Use(x7)	0.938
	Alternative choice due to non-availability(x8)	0.938
	Tariff(x9)	0.938
	Changing the brand(x10)	0.94
Corporate Image	Net Speed(x11)	0.769
	Signal strength(x12)	0.755
	Good Impression on the corporate Image(x13)	0.78
Performance	Recharge Vouchers(x14)	0.757
	Tariff Rates(x15)	0.754
	Internet Services(x16)	0.752
	Customer Care(x17)	0.752
CRM	Time taken for Complaint Resolution(x18)	0.790
	Welfare to the society(x19)	0.755
	Pulsing/Timing(x20)	0.788
Price	Quality of Coverage(x21)	0.754
	Easiness in Subscription(x22)	0.878
	Recharge Process(x23)	0.880
	Functional Product(x24)	0.896
	Quick customer complaint redressed(x25)	0.923
	Application Process(x26)	0.913
	Reach of Customer services(x27)	0.909
	Readiness of Customer care(x28)	0.924
	Availability and Easiness of services(x29)	0.915
	Front End services(x30)	0.890
	Customer Services(x31)	0.931
	Call centers(x32)	0.902
	Personalization(x33)	0.884

Source –primary data

Table 2: Criterion

Constructs/Latent Variable	Items/Manifest Variable	Correlation Coefficient
Churn factor	Social Media(y1)	0.792

Source –primary data

Table 3: Model summary and ANOVA

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F
.945 ^a	.893	.891	1.99893	1.869	564.15**

** p<0.01

Table 4: Model Parameters

Model	Unstandardized B	Std. Error	Standardized coefficients Beta	t value	Tolerance	VIF
Constant	-.717	.112		-6.416**		
X1	1.746	.020	.935	87.49**	.866	1.154
X2	.078	.024	.035	3.247**	.849	1.178
X6	.065	.013	.090	5.170**	.327	3.059
X12	-.188	.035	-.130	-5.301**	.166	6.037
X17	.145	.059	.036	2.453*	.447	2.237
X18	-.124	.068	-.026	-1.817*	.491	2.037
X20	-.102	.050	-.023	-2.041*	.761	1.314
X21	.209	.046	.064	4.512**	.487	2.052
X29	-.174	.061	-.042	-2.852**	.467	2.143

*p<0.001

** p<0.01

The following are the factors, are extracted based on the rule of thumb in confirmatory factor analysis, loadings should be 0.7 or higher to confirm that independent variables identified a priori are represented by a particular factor.

- Extracted from Rotated component matrix
- Extraction Method: Principal Axis Factoring.
- Rotation Method: Varimax with Kaiser Normalization.

Multiple Regression Steps:

- From the factor analysis the factors of predictors and criterions are extracted. They are subjected to multiple regressions to determine the effect of each predictor on the criterion.
- These dataset is taken through the test of curve estimation and it is found that they are significant with cubic and quadratic model. Hence they are nonlinear.
- In order to ascertain the influence of each predictor on criterion, there was a necessity to subject the data set to linear transformation using squaring method as prescribed in the statistical rule of thumb.Hence nonlinear dataset is transformed to Linear. Then multiple linear Regression was carried out.
- There are33 predictors from x1to x33 as labeled in the above table of factor analysis were taken for this analysis and one criterion y1.

- Each criterion is taken separately with all the predictors for this analysis.
- Certain predictors have been removed from the list as they have collinearity and confirmed through collinearity statistics, whose values of variance Inflation factor (VIF) are greater than 10 and tolerance level is below 0.2.They have been eliminated and again the analysis has been performed to rule out collinearity in the model. They are x22 to x28 and x30 to x33
- Certain predictors are removed on third and fourth model since they lead to auto correlation and results to low Durbin Watson value say 0.4.They are from x4 to x10.They have been eliminated and again the analysis has been performed to rule out auto correlation in the model.
- The tables presented below for all the models are with the predictors whose t value is statistically significant.

Model 1:

Criterion y1: Churn due to the impact of Social Media
Null Hypothesis H0-1

There is no significant relationship between churn by social media and the level of customer satisfaction on prepaid mobile services.

Hypothesis H1: There is significant relationship between churn by social media and the level of customer satisfaction on prepaid mobile services.

Capital R is the multiple correlation coefficients that tells us how strongly the multiple independent variables are related to the dependent variable R square is useful as it gives the coefficient of determination and the result emphasizes 89% of variability in the criterion is accounted for by all of the predictors together. The adjusted R2 explains how well the model generalizes and it provides cross validation of the model. ANOVA tells whether the regression equation is explaining a statistically significant portion of the variability in the dependent variable from variability in the independent variables. F-test to determine whether the model is a good fit for the data. Since p value of F is significant at 99% confidence level, the model is a good fit for the data. Durbin Watson statistics infers whether data subjected to auto correlation or not. As from the conservative rule the value should not be below 1 and above 2 and it should be closer to 2. Hence it is clear that the model taken for analysis is free from auto correlation effect [27].

The above table represents the unstandardized and standardized beta coefficients with respective t value having statistical significance. Standard errors are depicting that they close to 0 and at the minimal level. The collinearity statistics are given, where all values are above 0.2 in case of Tolerance and Variance Inflation factor is below the value 10 shows that the model is free from collinearity [28].

It is clear that the null hypothesis was rejected. Hence there is significant relationship between churn by social media and the level of customer satisfaction on prepaid mobile services.

Hence the Regression Equation is as follows,

$$Y_1 = -0.717 + 1.746x_1 + 0.078x_2 + 0.065x_6 - 0.188x_{12} + 0.145x_{17} - 0.124x_{18} - 0.102x_{20} + 0.209x_{21} - 0.174x_{29}$$

Otherwise: Churn due to the impact of social media = $-0.717 + (1.75 \text{ Number of Phone usages}) + (0.078 \text{ Design of the Mobile phone}) + (0.065 \text{ Awareness of Internet Usage}) - (0.189 \text{ signal strength of the Data card}) + (0.15 \text{ Customer Care}) - (0.12 \text{ Time taken for Complaint Resolution}) - (0.10 \text{ Pricing on Pulsing/Timing}) + (0.21 \text{ Quality of Coverage}) - (0.174 \text{ Availability and Easiness of services})$

Result and Interpretation: From the above equation it is clear that, every unit of change in the number of phone usages induces nearly two units of rise in the Churn due to social media. This implies the customers are fond in buying new models that are latest to the market and they

are ready to take up the innovative upgraded version. This mainly happens through the vigorous promotions on social media networking. Customers are ascertaining the compatibility of the mobile operators with their new phones. Hence the churn has been influenced by the purchase of new mobile phones and number of phone usages. Churn is influenced to an extent by 0.07 units change for every unit increase in Design of the mobile phone. Customers are purchasing new mobile phones based on their design [29]. Based on the functional aspects and facilities of the mobile phones, they are changing the mobile operators. Majority of the mobile phone users are fond of taking up Internet usage.

Awareness level of Internet usage has been increased in TamilNadu and based on this customers are ready to switch to those operators who are offering attractive packages with tariffs. Therefore for every unit change in the Awareness of Internet usage brings 0.08 unit increase in churn by social media.

The signal strength of the data card also plays vital role in determining churn. When the signal strength is better, the customers are ready to stay with the operator. It could be noted that every single unit of change in signal strength pulls down churn by 0.19 units. Hence mobile operators have to strengthen their signals for Data cards and should be robust in network coverage to improve customer loyalty. They have to invest more on networking technology and improve their signal strength.

For every unit of change in the customer care improves churn by 0.15 units. This means that when customer care improves, the churn will also improves in such a way that their level will be controlled. This indicates that there are scope for the marketers to improve customer care services. Personalized customer care services and strong Customer Relationship Management can grab the attention of the customers to remain with existing network. Nowadays customers are using internet and accessing online help. Even though the operators are providing customer care it did not reach the customers. Hence operators should customize need based services to reduce churn.

Time taken for complaint Resolution plays vital role to reduce churn. For every single unit of change in time taken for complaint resolution drags down churn by 0.12 units. This depicts that the waiting time or trouble shooting time should be minimized for controlling churn. Hence the mobile operators have to pay attention on staffing the customer care function, to give immediate solutions and to resolve the complaints effectively.

Increase in level of Customer satisfaction on pricing, especially with pulse timing, reduces churn. Thus for every single unit of change in level of customer satisfaction of pricing pulse, slashes churn by 0.1 unit. Hence each mobile operator need to present their tariff plan with scope for fixing appropriate pulse rate. Since the customers are keen and highly satisfied with pricing factor on pulse, mobile operators can come up with attractive schemes by focusing on this to lessen the level of churn.

For every single unit change in Quality of service improves churn by 0.21 units. This indicates that marketers have to improve their performance on coverage, accessibility and the audio quality to reduce the churn. Availability and Easiness of availing services finds important in bringing down the churn. Churn goes down by 0.17 unit for every single unit of increase in the level of satisfaction. Therefore service providers can come out with novel strategies to create higher level of convenience in availability and easiness of subscription. They can even link with banking sectors to avail new subscriptions of prepaid services like other financial billing and transaction, since they have all the supporting mandatory documents of the customers. They can even promote online subscription for new SIM and services like E recharge options can cut down the operational cost.

Among the independent variables, the most important variables are determined by studying the standardized value of regression coefficients. In the above equation, it is found that the number of phone usage has a very high coefficient value [0.935] followed by signal strength [- 0.110]. This helps to decide the importance to be given to that variable with high standardized coefficient value and use that while determining policies. In the current context, the Mobile service provider needs to pay special attention in mapping their services at par with the advanced mobile technologies. New generation services need to be imparted to the services as majority of them are using Internet services. The next important variable is signal strength. It is mandatory for every service provider to ensure to offer absolute signal strength so that the customers would prefer that service provider. In this context, they can cover the quality of coverage and net speed also to sustain the customer base. Even though BSNL is having wide coverage and quality of services, they are not spending on promotions at par with their competitors for publicity. Hence private players hold majority of the market share in Tamil Nadu. Therefore along with the quality of service, they should concentrate on promotional activities also.

CONCLUSION AND RECOMMENDATION

Mobile operators can implement the following operational strategies.

Multifaceted Customer Care Centers: Mobile operators can revamp their customer care centers with updated technologies having all built in soft wares to personalize and connect the customers. They can redesign the pattern of complaint resolution system as majority of the respondents complained about the time taken for trouble shooting. Quick complaint resolution system need to be practiced by maintaining robust customer account management system.

Differential Pricing Strategy: It is highly recommendable for the mobile operators to concentrate on differential pricing strategy. They can design varieties of service plans that are need based according to the current juncture. As per the current scenario they can focus on recharge plans with respect to data packs to attract internet users.

Promotional Campaigning: Potential marketing campaigning need to be planned to promote and energize the services portfolio by announcing the new schemes that are attractive at par with the latest trends of the market.

High Speed Internet Connectivity: The recent statistics on Indian prepaid market depicts that the majority of the customers are using high techno based smart phones and they are fond in using internet services. Their expectations are to use uninterrupted, high speed internet without any network hassles. They are substituting mobile phones instead of computers in accessing all facilities. Based on their motives marketers need to upgrade their technology in the field of Internet especially in network coverage, net speed, and high resolution in terms of quality in internet facilities.

Subsidized Handsets: Mobile operators can offer subsidized handsets that are compatible to recent technology. It may facilitate all functional requirements of the customers without any network or data distortions.

Customer Relationship Management: It is highly pivotal for the mobile operators to maintain customer's database to understand their account details. Database management are to be functionally improved in prepaid

segment when compared with postpaid. By conducting events and campaigns in various public spots, mobile operators can enhance customer relationship. They can organize message or concept contests for the customers.

Participative Marketing: Customers can be asked to suggest their ideas on mobile services and open discussions can be organized to receive their opinions on various services attributes.

Summary: Research is all about the comprehensive assessment of the level of customer satisfaction on Indian prepaid mobile services that are directive on the churn reasons. Operational factors are identified and they are related to technology based services, network coverage, net speed, complaint resolution system. Mobile operators have to attend these driving factors proactively by building customer bondage through effective customer relationship management. They are in need to devise strategies building customer values on moral and ethical values to enhance the customers trust and beliefs over the services. Rigor social media campaigning required to advertise the new arrivals in terms of service packs to attract the prepaid market. Mobile operators need to radically transform their images that they are master in rendering high tech service ends.

Research limitations/Implications: The paper examines on the Indian prepaid segment by taking one of the states in India.

Practical Implications: The outcome of this study will enlighten the Indian mobile operators to calibrate the operational strategies to increase the level of customer loyalty.

Usefulness of Study: The major outcome of this study highlights the importance about the customization of mobile phones and their designs in predicting churn. It also mentions the significance of social media and affiliate marketing to control churn. Simulated mode of customer's mind mapping on various buying attributes revitalizes the mobile operators to design the retention strategies like online catalogs, spot exchanges of mobile phones, B2C auction sites, developing customer community centers.

Indications for Further Research: This research is developed focusing mainly on Churn behavior of customers' prepaid mobile services. From this, study it was found that there are unsought segments in services,

to be tapped by the marketers. One among that is the predictive analysis about the integration of mobile subscription through banking system. The customers are favoring the factor called easiness and availability of prepaid mobile subscriptions. To enhance customer convenience, the mobile operators can come up with a prepaid subscription by ping-ponging their official web subscription with banking system and mandatory procedures of document verification can also be done through online. Since majority of the customers are having bank accounts, will facilitate the process of prepaid subscription. This will reduce the operational cost for the operators and at the same time beneficial for the banking sector to rise their revenue. This study can be taken forward for the future research for the benefit of the society.

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