SYNOPSIS OF THE THESIS

Factors Influencing Prepaid Consumer Behavior In Mobile Telecom Industry Of Bihar & Jharkhand

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CONTENTS

1. Introduction

The word '**Telecommunication**' is derived from the Greek language meaning '*communication at distance*'.Telecommunication is an inseparable part of our everyday life, as mobile phones are now playing a vital role in enhancing effective communication, both at individual and at the organizational level, thereby shrinking geographical distances.All over the world telecom sector is one of the fastest growing industrial segments; the industry has continued its upward surge since its very inception. Over the time there has been a significant rise in the consumer base and the total revenue. The opportunities that lie in the telecommunication market seem endless and the growing demand for mobile telephony is creating a worldwide market. Hence, actors in this industry are seeking the most profitable markets throughout the world (Hossain & Suchy, 2013).

India is reported as the world's second-largest telecommunications market by the Indian Telecom Industry Analysis, (2019) with around 1.20 billion subscribers as on December 2018.Through many mergers and acquisition, currently the telecom sector is entering into a consolidation phase. With the Tele-density at 91.45% (Urban 159.98 and Rural 59.50), getting new subscribers is becoming difficult nowadays. Consumers are highly volatile, spoilt by options and ease of movement amongst operators.   It is important to predict customer behavior because; the knowledge of a customer's loyalty would be useful for improving CRM. It will also help in customer model-building process and evaluating the results of CRM-related investments (Buckinx, 2007). Furthermore, it will help to improve the success rate of acquiring customer, increasing sales and establishing competitiveness (*Qiu, 2014).* **Consumer loyalty** can be defined, according to East et al. (2005) as repeat patronage behaviour which is the combination of attitude and behaviour. In industrial and service marketing, behavioural loyalty is viewed as retention of the brand (Reichheld 1996; Reinartz and Kumar 2000). **Customer churn**, also

known as customer attrition or customer turnover, is the loss of existing customers to another company or service provider (Kerdprasop et al., 2013).

2. Research Motivation

"*Good customers are an asset which, when managed and served, will return a handsome lifetime income stream for the company*" – Philip Kotler.

This research has been motivated by the professional marketing practice of the researcher in the telecom domain. Across telecom market, globally, there is an ardent need to study the consumer behaviour and define strategies around it.

3. Literature Review

Title/ Author /Journal/Year	Purpose	Sample/ Setting	Methods	Key Findings	Conclusions	Limitations/ Gaps/ Further Study
Customer loyalty in telecom service sector: the role of service quality and customer commitment Ernest Emeka Izogo Department of Marketing, Ebonyi State University, Abakaliki, Nigeria 7 March 2016 The TQM Journal Vol. 29 No. 1, 2017 pp. 19-36 © Emerald Publishing Limited 1754-2731 DOI 10.1108/TQM-10-2014-0089	The purpose of this paper is to examine how firms can influence customer loyalty through customer commitment by leveraging two constructs of service quality: service assurance and service reliability	138 responses retrieved from experienced users of mobile phone services in one of the big cities in the South-eastern part of Nigeria	Survey Question naire The validity and reliabilit y of the measure ment model as well as the proposed hypothes es were examine d through the partial least squares structura l equation	Service reliability is a direct predictor of customer loyalty while service assurance is not. Affective commitment has a direct positive effect on customer loyalty and partially mediates the relationship between service reliability and customer loyalty. In contrast, the mediating effects of affective and continuance commitment on the relationship between service assurance and	customer loyalty can be initiated from the lenses of both service quality and customer commitme nt, but the latter mediates the effects of service quality constructs on customer loyalty.	Small sample size of 138

			modelling procedure.	customer loyalty were positive but insignificant. Finally, affective commitment mediates the effect of continuance commitment on customer loyalty.		
Valuing Customers Author(s): Sunil Gupta, Donald R. Lehmann and Jennifer Ames Stuart Source: Journal of Marketing Research, Vol. 41, No. 1 (Feb., 2004), pp. 7-18 Published by: American Marketing Association	In this article, the authors focus on the most critical aspect of a firm: its customers. Specifically, they demonstrate how valuing customers makes it feasible to value firms, including high-growth firms with negative earnings. The authors define the value of a customer as the expected sum of discounted future earnings. They find that a 1% improvement in retention, margin, or acquisition cost improves firm value by 5%, 1%, and .1%,	They demonstrate their valuation method by using publicly available data for five firms. One traditional firm (Capital One) and four Internet companies (Amazon.com, Ameritrade, eBay, and E*Trade).	Descriptive research design is followed for study.	Retention elasticity is in the range of 3 to 7 (i.e., a 1% improvement in retention increases customer value by 3%-7%). Retention rate has a significantly larger impact on customer and firm value than does the discount rate or cost of capital.	Customer lifetime value is receiving increasing attention in marketing, especially in database marketing. In this article, attempt has been made to show that the concept not only is important for tactical decisions but also can provide a useful metric to assess the overall value of a firm. The underlying premise of the model is that customers are important intangible assets of a firm, and	The study has been limited to a very small sample size of 5 Firms. It is difficult to quantify the value of Retention in such straight terms basis a small sample study.

	respectively.				theirvalues shouldbe measured and managed like any other asset.	
The Effects of Customer Satisfaction, Relationship Commitment dimensions, and Triggers onCustomer Retention. Author(s): Anders Gustafsson, Michael D. Johnson and Inger Roos Source: Journal of Marketing, Vol. 69, No. 4 (Oct., 2005), pp. 210-218 Published by: American Marketing Association	In a study of telecommuni cations services, the authors examine the effects of customer satisfaction, affective commitment, and calculative commitment on retention. The study further examines the potential for situational and reactional trigger conditions to moderate the satisfaction - retention relationship. The results support consistent effects of customer satisfaction, calculative commitment, and prior churn on	customers of a large Swedish telecommuni cations company that provides fixed- phone service, mobile phone service, modem- based Internet service, and broadband Internet service	Qualitati ve Intervie ws Periodic Survey Reliabilit y and Discrimi nant Validity	Customer satisfaction has a consistent negative effect on churn (a positive effect on retention). In contrast, affective commitment does not predict churn when it is included with customer satisfaction. Other findings involve the effects of prior churn on future churn. Rather than rely solely on psychometric constructs to explain churn, the finding included prior churn as a state dependent variable to explain subsequent churn.	Effective CRM strategies vary considerab ly depending on which factors are driving retention. If customer satisfactio n is the primary driver of retention, a firm should improve product or service quality or offer better prices. If affective or calculative commitme nt is more important, a firm should either build more direct relationshi	A limitatio n of the study is that it explores only nine months of retentio n. Another possible limitatio n is that custome rs self- selected into the various trigger conditio ns using the compan y's own survey. Howeve r, study identifie d the trigger categori es using qualitati ve inter- views

	retention. Prior churn also moderates the satisfaction - retention relationship. The results have implications for both customer relationship managers and researchers who use satisfaction surveys to predict behavior.				ps with customers or build switching barriers in relation to competitor	from a separate sample of the company's customers. More in-depth interviews with the customers who actually responded to the survey would help ensure the more accurate prediction of the type of switching path each customer may be on.
Blinded by Delight Why Service Fails and How to Fix It CEB EXECUTIVE GUIDANCE FOR 2014	Simply satisfying customers is no longer adequate; companies need to delight them, dedicating significant resources to the effort because the reward seems worth it. This	More than 97,000 consumers and business customers globally	Explorat ory.	Service is critical to preventing customer disloyalty and that certain service experiences are far more likely to cause customer churn than others. Specifically, customers will punish organizations that require them to expend a great deal of effort to handle their	Customers whose expectatio ns have been exceeded are no more loyal than are those whose expectatio ns have simply been met. Although	

	unquestioning dedication of resources prompted CEB to research how customer service quality affects customer behaviors—specifically loyalty.			service request. Ninety-six percent of customers who put forth high effort in service interactions are more disloyal, while only 9% of those with low-effort interactions are more disloyal. Organizations rarely succeed in delighting customers (only 16% of the time), and doing so is costly.	customers seldom reward organizations that provide a delightful service experience, they will harshly penalize those that do not meet their expectations.	
Corporate image and corporate reputation in customers' retention decisions in services By : Nha Nguyen & Gaston Leblanc Journal of Retailing andConsumer Services : July 2001	In the present competitive environment, corporate reputation and corporate image are acknowledged as having the potential to impact on customer loyalty toward the firm. However, the literature reveals that the precise nature of the relationships that exist between reputation and image and the understandin	3 service industries, namely 222 consumers in the retail sector, 171 clients of a major long-distance company and 395 students of a faculty of business administration. Study in Canada.	Exploratory.	Strong correlation between Corporate Image and reputation in ensuring customers loyalty.	The results of the study reveal that the degreeof customer loyalty has a tendency to be higher when perceptions of bothcorporate reputation and corporate image are strongly favourable. Moreover, the addition of the interaction betweenbo	Correlation of image and reputation in Retention was established however it didn't talk about its weightage or precedence over other factors influencing customer retention.

	g of their effect on customer behaviour remains a key challenge for both academia and management alike.				th constructs contributes to better explain customer loyalty.	
The American Customer Satisfaction Index: Nature, Purpose, and Findings. Journal of Marketing. Oct 1996. Authors :Fornell, Claes; Johnson, Michael D.; Anderson, Eugene W.; Jaesung Cha; Bryant, Barbara Everitt	The American Customer Satisfaction Index (ACSI) is a new type of market-based performance measure for firms, industries, economic sectors, and national economies. The authors discuss the nature and purpose of ACSI and explain the theory underlying the ACSI model, the nation-wide survey methodology used to collect the data, and the econometric approach employed to estimate the indices	seven major economic sectors	Nation-wide survey to collect data & Econom etric approach to estimate the indices.	(1) customization is more important than reliability in determining customer satisfaction, (2) customer expectations play a greater role in sectors in which variance in production and consumption is relatively low, and (3) Customer satisfaction is more quality-driven than value- or price-driven.	The authors find customer satisfactio n to be greater for goods than for services and, in turn, greater for services than for governmen t agencies, as well as find cause for concern in the observatio n that customer satisfactio n in the United States is declining, primarily because of decreasing satisfactio n with services.	

Customer satisfaction and its consequences on customer behaviour revisited: The impact of different levels of satisfaction on word-of-mouth, feedback to the supplier and loyalty Magnus Söderlund, (Stockholm School of Economics, Stockholm, Sweden) International Journal of Service Industry Management (1998)	Explores the extent to which the form of the relationship between customer satisfaction and customer behaviour is different under conditions of "low" satisfaction and "high" satisfaction.	Three behavioural variables (word-of-mouth, feedback to the supplier, and loyalty) were examined.	Factor analysis	Different patterns emerge for each behavioural variable.	The results point to the fact that differences in the form do exist. Moreover, the results show that differences exist between the differences , in the sense that different patterns emerge for each behavioura l variable.	
Factors Affecting Consumer Behavior DR. NILESH B. GAJJAR International Journal of Research In Humanities and Social Sciences April , 2013	Studying other factors, apart from the [economi]c factor of maximizatio n of resource that influences customers behavior / buying decision.		Survey method. Factor analysis	Factors can be clubbed into : 1) Cultural (Culture , Subcultu re & Class) 2) Social (Referenc e Grp , Family , Role & Status) 3) Personal : Age , Occupati on , Economi c situation Lifestyle , Personality , 4) Psycholo gical : Motivati on , Percepti on , Beliefs &attitud	The study of Consumer Behaviour is quite complex, because of many variables involved and their tendency to interact with & influence each other.	

				es		
Factors Affecting Consumer Choice of Mobile Phones: Two Studies from Finland Journal of Euromarketing Authors : HeikkiKarjaluotoa, JariKarvonena, ManneKestia, TimoKoivumäkia, MarjukkaManninena, JukkaPakolaa, AnnuRistolaa&JariSaloa University of Oulu, Faculty of Economics and Business Administration , Finland	Mobile phone markets are one of the most turbulent market environments today due to increased competition and change. Thus, it is of growing concern to look at consumer buying decision process and cast light on the factors that finally determine consumer choices between different mobile phone brands	196 respondents in finland	focus group interviews Survey		While technical problems are the basic reason to change mobile phone among students; price, brand, interface, and properties are the most influential fact ors affecting the actual choice between brands.	Study confined only to student group.
A practical approach to maximizing customer retention in the credit card industry Journal of Marketing Management 04/1995; 11:151-163. Author : Robert Hamilton & Barry howcraft Loughborough University	The overall objective of this paper, therefore, is to construct a customer database model with the capacity to predict which customers are most likely to close their accounts and to identify certain customer characteristic s which can	The database model is constructed using linear discriminant analysis, which is applied to a sample of approximatel y 17 000 UK bank credit card holders using various behavioural and sociodemogr aphic variables, and tested on a holdout	Sample Survey	Total number of credit cards held by consumers is declining by approximately 0–6% per month, and the number of new applicants is also running at an all time low (less than 1% per month).		

	be used by the card issuer as part of a marketing or relationship strategy to maximize retention and increase customer profitability	sample of 10 000 cases.			
CreditCardCustomer Retention by ZilvinasBareisis, June 14, 2011 Report Type: Operations/ Benchmarking GeoLocation: Global, Asia-Pacific, EMEA, Latin America, North America	In this report, Credi t Card Customer Retention: Benchmarki ng Study Results, Celent explores customer retention performance and practices among ten credit card issuers and a UK bancassuranc e player	The study participants represent a diverse group of card issuers from the UK, Spain, and the US.	Survey	1) The study found that all participants were focused on reactive retention, with only 45% also engaged in proactive retention 2)While most deploy specialised resources, the degree to which the unit is dedicated to cards retention varies widely across the issuers	1)Proactiv e Retention 2) One of the biggest improvem ent opportuniti es for most issuers is to ensure that "outlier" retention (e.g., written and "out-of-hours" requests for issuers geared up for an inbound retention model) is actively managed.
How to Retain Credit Card Customers by Arthur Middleton Hughes May 15, 2015	Devise mechanism to retain credit card customers	Credit card customers in US	Defectio n Analysis	Credit cards are suffering from the same disease that ails long distance and cellular phone service: lowball price offers. No matter how low you get,	Loyalty Manageme nt is vital to Retain subs Cross sell : Loyalty is a product

				some rival can always undercut you.	of number of relationships or Goods sold	
15 Customer Retention Strategies that Work GREGORY CIOTTI | AUGUST 8, 2013	Identify Retention strategies			1) Stand for something 2) Utilize positive Social Proof 3) Invoke the inner ego 4) Use the words they Love to hear 5) Reduce pain points and friction 6) Realize that budget is negligible 7) Utilize surprise reciprocity 8) Make it personal 9) Speed is secondary to quality 10) Customers enjoy businesses who know them 11) Choose the right platform 12) Make it a communal effort 13) Get people started 14) Get Ideal customers to be VIPs 15) label		
Portfolio Peak Performance: Acquisition, Activation, Usage and Retention Strategies that		Creditcard holders US	Survey Analysis	Two-thirds of cardholders surveyed said they would consider	The survey found that credit card shoppers: – Prefer no	

Work Robert Legters , Vice President of Loyalty Services Amber Smith, Director of Loyalty Services 2010 Client Conference				switching their primary credit card if a better feature were offered.	or low annual fees – Believe a brand name is important – Value rewards Loyalty Management is vital
Art of Customer Retention in Developing Economy Author: Saleem, Irfan; Saleem, Anjum; Kayani, ArqamJaved	This research is conducted to measure the effect of company's after sales services practices for increased customer retention in the telecom sector of developing economy. Subsequently this study is an attempt to measure the importance of the components which can improve the quality of after sales services and their individual impact for competitive advantage.	The sample is taken from the customers of the telecom products which are using the services of telecommunication sector in Pakistan.		Result show partially significant correlation of after sales services and customer's retention, while the components involved in after sales services has significant impact on customer retention. However the overall relationship between variables is positive. The research suggests that in order to retain more	The above research is clearly indicating the impact of after sales services and their positive effects but the main thing which should be given more importance is that only the after sales is not enough but the components involved which enhances the quality of the of the services

				customers, there is a dire need to adopt new and advanced ways of providing a better quality after sales services	must be kept in mind. In order to get more and more customer we need to give good impression of the company which needs something different or unique from the competitors and this competitive advantage can be increased by improving the customer care in a healthy manner	
Managing Customer Retention By : AkashMathapati Published on May 22, 2012	Devise effective Customer Retention Strategy			An easy way to increase retention rates is to offer lower prices to the best customers} This would be true if max attainable retention ensured max	Databases & Data sources: To manage retention process, a firm needs to understand what influences repeat-	

				profits } Maximizing customer retention is synonymous with maximizing a firm's profits } It makes sense to treat some customers as "transaction" customers, not relationship ones} A firm should strive for 100 percent customer retention }Myths about Customer Retention	purchasing decisions. (expectatio ns, actual experience , perceived value}Dat a sources for Retention & This suggest the need for database that track all customer interaction s} If we believe that every interaction with the firm and the customers affects the customer's attitude and satisfactio n with firm }satisfacti on)	
Customer retention, loyalty, and satisfaction in the German mobile cellular telecommunications market Torsten J Gerpotta, Wolfgang Ramsb, Andreas Schindlerc,	This study tests hypotheses suggesting that CR, CL, and CS should be treated as differential constructs which are causally inter-linked.	684 residential customers of digital cellular network operators in Germany		LISREL analyses support a two-staged model in which overall CS has a significant impact on CL which in turn influences a customer's intention to terminate/exte nd the	Mobile network operators ' perceived customer care performan ce had no significant impact on CR. The findings	

Telecommunications Policy Volume 39, Issues 3−4, Pages 159-374 (May 2015)				contractual relationship with his mobile cellular network operator (=CR).	suggest that an important lever for regulators to promote competition in cellular markets is the enforcement of efficient number portability procedures between mobile network operators.	
Customer service in the retention of mobile phone users in Nigeria OmotayoOyeniyi Lagos state University

African Journal of Business Management 03/2008; 2:26-31. | This paper attempts to find the relationship between customer service on customer retention in telecommunication industry in Nigeria | | | The hypotheses are supported except that a higher level of customer satisfaction does not lead to customer loyalty. | If retention is not managed, customer's loyalty may be lost. This study examined the potential constructs in customer retention by investigating the chain of effects of retention from customer service, satisfaction, value | |

					and behavioura l intention	
The Effect of Customer Trust on Customer Loyalty and Customer Retention: A Moderating Role of Cause Related Marketing By Muhammad ZamanSarwar, KashifShafiqueAbbasi&SaleemPervaiz Mohammad Ali Jinnah University Islamabad Pakistan Global Journal of Management and Business Research Volume 12 Issue 6 Version 1.0 March 2012	This study analyses the Effect of Customer Trust on Customer Loyalty and Customer Retention and the Moderating Role of Cause Related Marketing in Cellular Service Operators likeMobilink, Telenor, Warid, Ufone and Zong.		Question naire Statistica l Method Correlati on Analysis		The outcome of the study refer that the Customer Trust, Customer Loyalty and Cause Related Marketing have a positive association but surprisingl y the Customer Trust and Customer Retention have negative association in Pakistani context. Pakistani Cellular Service Operators have need to clearly define and reframe their policies regarding religious aspect, creating more ease	

					to understand complex price structure and thoroughly understanding buying patterns of customers to retain them for a long life.	

4. Research Gap

❖ Telecom industry globally is plagued with the common challenge of churn. The intensity varying depending on the lifecycle of the business

❖ Search for a potent tool to predict churn timely and accurately has been a constant endeavour

❖ Churn predictors are primarily based around business/usage variables which delays the prediction time and is ineffective to arrest Acquisition Churn

❖ Can the study of factors, impacting churn, extend beyond the business variables and also include the factors intrinsic to the customer viz. socio-economic background, educational level, gender, geography etc.

❖ Is it possible to derive a scientific formulae that will predict a customer's churn propensity at the stage of acquisition thereby allowing the Telecom industry to prepare an appropriate retention strategy right from the time of Acquisition

5. Research Problem

Even though Indian mobile telecommunications marked tremendous growth, it is facing very fierce competition and churn in the market. Churn behaviour is a common problem faced by telecom companies as it reduces the revenue, profitability and damages the brand image of the business(Adebiyi et al., 2015). They have also reported that, customer use their right from switching from one operator to the other. Moreover, Mobile Number Portability (MNP) has become a choice and provides a path for the dissatisfied customers for switching from one service provider to the other by retaining the existing number. It is quiet difficult to analyze the factors that are influencing the loyal and churn behavior of the customers and also their level of satisfaction or dissatisfaction from the cellular service providers.

Competition in the market is so fierce that there is practically No response time for the service providers. Current predictive models primarily focused on Business / Usage patterns. The idea of a consumer at the end of the number is lost. Demographic and socio- economic influences on the behavior have been downplayed. Also, making an analysis on the churn and loyal behavior of the customers from a holistic view provides competitive advantage to the cellular service providers. Industry is alarmed about the importance of retention over acquisition in the overly saturated market, but need the tool to correctly and timely identify the defectors.

6. Research Objectives

➢ To identify major factors influencing a consumer (Prepaid) to switch or be loyal to a specific telecom service provider and then Group them into factors

➢ Rank the identified factors in order of priority.

> Devise a formula to generate a discriminant score that will judge the loyalty of a consumer in the prepaid telecom sector

7. Hypotheses

> It is not possible to identify various demographic factors and the socio- economic factors which influence churn or loyalty.

> It is not possible to develop a suitable predictive Model, based on demographic factors and the socio-economic factors, to assess the churn and loyal behaviour of a new customer.

8. Scope of the Research

- The study covers two districts of Jharkhand namely Ranchi and Dhanbad, and also four districts of Bihar namely Patna, Begusarai, Bhagalpur and Muzaffarpur considering the feasibility of data collection.

- The study did not only cover the external factors like Product, Price, Service, Delight but also factors intrinsic to customers viz. socio-economic background, educational level, gender, geography etc.

- The respondents belong to Loyal (>2yrs in Network) as well as Churners. Factors important for both the groups were studied.

- The current study focused on Vodafone (Prepaid) on the basis of their popularity and market share

9. Research Methodology

The research design of the study is Exploratory and Descriptive in nature as it explores the important factors, which are influencing the Loyal or Churn behaviour of consumers along with trying to describe the characteristic of the consumers and also the reason for consumers staying with the same service provider or switching from one service provider to another.

All the relevant variables that influence consumer behavior loyal or churn were identified through primary data collections (Call Centre, Marketing and customer service teams) and secondary data sources through literature reviews. With an aim of doing a pilot study draft questionnaire was developed and with sixty respondents the Pilot study was conducted from the 6 zones of Bihar and Jharkhand. Based on the inputs gained from the pilot study, the final questionnaire was drafted on the 5 points Likert scale.

The operator specific data points viz. Value Band, Age on Network has been provided (Without the identification of the customer) by the operator for the benefit of the research. These data points were used to pre-segment the consumer before the survey was conducted. The segmented consumers were then met through customer Melas and the responses collected in the questionnaire.

The study follows stratified random sampling for selecting a sample of consumers of both loyal and churn. Out of 2134 responses 580 were Churn customers (Customers who frequently switch in less than or equal to 6months in the network) and 1554 were loyal customers (> 2yrs). Data collection period: January to July, 2015.

10. Data Analysis

After the data collection, data cleaning was done, in which the collected data was edited, coded and treated for outliers through the statistical package SPSS 17 for analysis purpose. Frequency tables were employed in order to describe the sample composition based on their demographic profile. Apart from measures of central tendency and measures of variation in descriptive statistics, factor analysis, t-test, ANOVA, discriminant analysis and cluster analysis were used.

Exploratory Factor Analysis has been made use of for finding the most important factors influencing a particular behavior. Exploratory Factor Analysis has been done on the full set of data i.e. Churn (580) and Loyal (1554). Total data points were 2134.

We found the analysis significant; hence null Hypothesis that the identified parameters '34' are mutually exclusive has been rejected. Our Output having 14 Factors and Eigen value more than '1' could explain more than 74% of the Variance of the Data

In the study, we have run **'Discriminant Analysis'** to construct a discriminant equation that can assign a discriminant score so that we can forecast the possibility of consumers exhibiting Loyal or Churn behaviour. We have used these mutually exclusive 14 Factors as independent Variables. Against each customer Loyal or Churn factor loadings of the corresponding 14 factors have been used to run the Discriminant Analysis

Cluster Analysis was used in the Research to enable grouping of customers into specific clusters with dominant characteristics. These dominant clusters would facilitate appropriate retention strategies per dominant cluster. Data for 580 churned customers has been collected. Using Hierarchical (Agglomerative) cluster procedure, we have drawn the dendrogram. On the basis of

the dendrogram we decided to put the Churned customers into 6 clusters and accordingly 'K' mean procedure of clustering has been applied to get the final Output.

Data for 1554 Loyal customers was collected. Using Hierarchical (Agglomerative) cluster procedure dendrogram was drawn. On the basis of the dendrogram it was decided to put the Loyal customers into 8 clusters and accordingly 'K' mean procedure of clustering has been applied to get the final Output.

11. Findings and Conclusions

Using exploratory analysis, it is possible to find out the various Demographic and Socio-Economic Variables that define churn or loyal behavior amongst consumers. Factor Analysis helps group them into distinct Factors. Discriminant scores derived using discriminant analysis of demographic and socio-economic factors provides a predictive model that can accurately predict churn or loyal behavior of a new customer

- The variables influencing churn or loyal behaviour can be clearly identified and grouped into Factors using factor analysis. The factor loadings suggest the demographic and socio- economic variables have a very important role to play in determining consumer behavior.

- Factor analysis can successfully rank these factors into a hierarchy allowing formulation of a discriminant equation

- 'Discriminant Analysis' helps construct a discriminant equation that can assign a discriminant score so that we can forecast the possibility of consumers exhibiting Loyal or Churn behavior. The mentioned equation is mentioned as below:

$$D = -.463(F4) + .439(F6) - .258(F3) + .121(F2) + .113(F8) - .106(F12) + .074(F11) + .066(F14) + .057(F7)$$

F1 : Education: E1 (-.748), Education: E2 (.846) and Occupation:04(.711)

F2 : Age: A2 (.768), Age: A3 (-.614) and Value: V1 (.675)

F3 : Call Charges (-.741), Internet Speed (.647) and Ease of Use (.634)

F4 : Multi Sims (.887), Multi Sim phones (.857)

F5 : Gender (.837), Occupation: O2 (.814)

F6 : Innovative VAS service (.72)

F7 : Security/Privacy (-.604)

F8 : Age: A4 (.798)

F9 : Value: V2 (-.742), Value: V3 (.869)

F10: Age: A1 (.620), Zone: Z5 (-.783)

F11: Occupation: O1 (.664), Occupation: O3 (-.847)

F12: Network (-.824)

F13: Zone: Z1 (.903)

F14: Zone: Z3 (-.904)

 * Detail of the above mentioned equation along with the factors is mentioned in the thesis.

- Cluster Analysis and the demographic construct of dominating cluster provides segmentation to the policy makers to devise Retention strategy on the cluster level.

12. Contributions

At First it studies the Socio-economic and demographic variables along with the business and usage specific variables, thereby making the discriminant equation more comprehensive and Robust. Secondly, The Approach provides a predictive Model which is available right at the stage of acquisition and can correctly classify 91% of original grouped cases. Thirdly, the Cluster

analysis groups the customers into specific clusters with dominant demographic characteristics, thereby allowing the telecom marketer to make cluster specific Retention strategies.

The research outcome provides a potent tool in the hands of the telecom Marketer to predict customer behavior timely and more comprehensively. Thus, when used in conjunction with appropriate retention strategies will help operators gain significant competitive advantage in the highly competitive telecom industry.

13. Limitations

- The principle restriction of the present study was time and data availability, therefore only Vodafone customers in Bihar and Jharkhand's 6 districts were chosen for the study.

- Only Prepaid mobile customers were taken into account for the study purpose and the postpaid and landline customers were not kept in the scope of this research.

- Individual consumers were studied, 'Enterprise' as a segment was excluded from the current study.

- Study was conducted before Reliance Jio and its Market disruption strategy.

- The occurrence of sampling error and respondent's biasness during data collection cannot be underestimated as a limitation of the study.

14. Scope for future research

This thesis uncovered and evaluated significant new dimensions with the aim of creating and testing a robust, holistic framework for predicting customer churn. Based on the contributions and limitations of the thesis various avenues of future research can be undertaken.

The study was undertaken in the Bihar & Jharkhand state for Vodafone operations. Future studies should attempt to test the framework discussed in the thesis across other Telecom operators and regions of India. It will also be interesting to expand the study to cover multiple operators provided the data points are available

Future studies should delve into other lines of the Telecom business like Postpaid, Enterprise and landline. It will be an interesting study to see if the different product lines throw back different customer behavior.

Reliance JIOs introduction in the market has badly shaken up the Indian telecom industry. The entire industry has undergone a metamorphosis and a new trend of mergers and windups is in place. It will be interesting to study the customer behavior in the new market setup once this metamorphosis crystallizes in a couple of years from now.

In this research, the researcher has developed discriminant equation to predict the loyal & churn behavior; the future researchers might test the equation.

BIBLIOGRAPHY

Adebiyi, Sulaimon Olanrewaju, Emmanuel Olateju Oyatoye, and Owolabi Lateef Kuye. "An Analytic Hierarchy Process Analysis: Application to Subscriber Retention Decisions in the Nigerian Mobile Telecommunications." International Journal of Management and Economics 48.1 (2015): 63-83.

Buckinx, Wouter, Geert Verstraeten, and Dirk Van den Poel. 2007. "Predicting Customer Loyalty Using the Internal Transactional Database." *Expert Systems with Applications* 32 (1): 125–134.

East, R., Gendall, P., Hammond, K., & Lomax, W. (2005). Customer loyalty: Singular, additive or interactive? Australasian Marketing Journal, 13 (2), 10-26.

Hossain, M.M. and N.J. Suchy, 2013. Influence of customer satisfaction on loyalty: A study on mobile telecommunication industry. J. Soc. Sci., 9: 7380.

Kerdprasop, N., Kongchavi, P. & Kerdprasop, K. (2013). Constraint mining in business intelligence: a case study of customer churn prediction, International Journal of Multimedia and Ubiquitous Engineering, 8(3), 11-20.

Qiu, J., Lin, Z. and Li, Y. (2014). "Predicting customer purchase behavior in the e-commerce context" Electronic commerce research 15 (4), 427-452.

Reichheld, F. F. (1996). "Learning from Customer Defections." Harvard Business Review 74 (2): pp: 56-67.

Reinartz, Werner J., and V. Kumar (2000), "On the Profitability of Long-Life Customers in a Noncontractual Setting: An Empirical Investigation and Implications for Marketing," Journal of Marketing, 64 (October), 17–35.

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