

# A Study on Customer Attitude towards Full Mobile Number Portability in Kolkata City

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## ABSTRACT

This empirical paper tries to investigate some relevant information about the attitudinal issue amongst the prospective customers of Pan MNP in Kolkata region. Here questionnaire has been designed to capture the attitude of people towards Pan MNP, which can help service provider to formulate their policy and would help them to generate revenue. Data were collected from prospective Pan MNP customers like Students, Service holders, etc. who might change their geographical location. Also predictive attitude has been calculated using various statistical tools like factor analysis, regression method, etc. The result depicts that the cellular customers show preference for Pan MNP based on Tariff, VAS, Technical and Nontechnical components. As a whole customers showed a very positive attitude towards Pan MNP in Kolkata.

**Keywords: Factor Analysis, Mobile number portability, Regression Analysis, Technology Acceptance model.**

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## I. INTRODUCTION

Pan Mobile number portability (MNP) allows the Cellular subscribers to retain their mobile telephone number even if one moves from one access provider to another irrespective of mobile technology without having restriction on geographical boundary. Introduction of Pan MNP in India helps customers to keep contact with their relatives without changing their mobile number when one shifts permanently from one state to another. It will also enhance competition between telecom operators. Pan India mobile number portability is the extension of mobile number portability which removes the restriction of licensed service area (LSA). It is basically a combination of Location based, Operator based and Service based portability. It has fulfilled the provision contained in the National Telecom Policy-2012 regarding "One nation – Full Mobile Number Portability". Pan MNP is one of the proposals made in the National Telecom Policy (NTP) -2012. To implement this, Telecom Regulatory Authority of India (TRAI) has put forward a proposal on 20.02.2013 to different Telecom stakeholder.

After launching Mobile number portability (MNP) service on 20<sup>th</sup> Jan, 2011, it was seen that by the end of July 2017 about 294.87 million subscribers have submitted their requests to different service providers for porting their mobile number. The regulator has received a total of 5.91 million MNP request only in the month of July, 2017 (Chakri Kudikala, Technology news Voice & Data, MNP, July 2017). Similarly, after launching of Pan MNP in India on 3<sup>rd</sup> July, 2015 though many customers are using this opportunity to retain their mobile number across the state or Telecom circle yet Pan MNP subscriber count is not available separately anywhere in the websites. But the data from Census 2011 reveals that the number of migrants by "place of last residence" whose duration of last residence is less than 1 year is 20,688,225 (Provisional Census data-2011).

We took data for less than 1 year since Pan MNP has been introduced in 3<sup>rd</sup> July, 2015. And we assume that only recent data available on migration would be more helpful in analyzing for Pan MNP. As, most of the subscriber would try to change their mobile number as soon as they migrated from other states in order to avoid the incoming call charges which were imposed on the subscriber while they were roaming to other states.

After implementation of MNP the competition amongst Mobile service provider has tremendously increased. In this tug of war the customers are the inheritor. They are enjoying the freebies provided by different Telecom Companies in different time. Thus, it becomes more challenging to retain one owns customers.

But in case of Pan MNP only a section of customer will be benefitted directly. For example – those people who have to travel across India, those whose jobs are transferable, especially Central government employees, military personnel or

students those who have to shift from one state to another for higher studies etc. For these types of customers Pan India MNP would be beneficial.

But if it is seen that the majority of the subscribers are not benefitted or there is no requirement of Pan India MNP for them, instead after implementing Pan MNP, if the monthly telecom bill got increased which the subscriber has to bear from their own pocket then that would annoy the customer more. Moreover, the National Telecom Policy - 2012 also proposes to remove the roaming charges across India. This will make customers less dependent on Pan MNP as nowadays the difference of call charge between local call and STD call is very less. Also, as per Census 2011 about 20 million people migrate from one state to another in less than one year for various reasons. So the service providers have the opportunity to grab these customers to their network and in turn could increase their revenue. Therefore, this study attempts to investigate the customer's perspective regarding Pan MNP.

## II. OBJECTIVE

- 1) To identify the reasons, why cellular customer preferred Pan MNP.
- 2) To find out whether the attitude of customers towards Pan MNP is favorable or unfavorable.

## III. SIGNIFICANCE OF THE STUDY

The research provides a clear picture of cellular customer's attitude towards Pan MNP and also shows the reasons for the formation of this attitude. The study enhanced the knowledge of the researchers with regard to the concept of cellular customer attitude and their importance for the success of a business.

The research also benefits new MVNO (Mobile virtual networks) companies like Aerovoyce, Microtalk etc., which could discriminate customers and could build a strategic plan according to customer's choice. Furthermore, the research lays a ground for further studies in the different location area.

So the Unique Value Proposition (UVP) of this research work is that, it explores a niche population and it could generate huge revenue if systematic strategic policy about this niche population could be implemented.

## IV. RESEARCH GAP

A very few papers have been found on Pan MNP. Also, according to our knowledge TAM model was less used in Telecom field.

## V. STATEMENT OF HYPOTHESES

To find the attitude of customers following hypotheses was proposed:

- H1: Tariff component of Perceived Usefulness for Pan MNP positively influences people to opt for Pan MNP.
- H2: VAS component of Perceived Usefulness for Pan MNP positively influences people to opt for Pan MNP.
- H3: Technical component of Perceived Ease of Use for Pan MNP positively influences people to opt for Pan MNP.
- H4: Nontechnical component of Perceived Ease of Use for Pan MNP positively influence people to opt for Pan MNP.
- H5: Low Efficiency of service provider is a risk factor for Pan MNP and would negatively influence people to opt for Pan MNP.
- H6: Procedural delay is a risk factor for Pan MNP and would negatively influence people to opt for Pan MNP.

## VI. LITERATURE REVIEW

Previous related research work shown in Table I:

**TABLE I. RESEARCH WORK ON MNP**

NAME OF AUTHORS	FINDINGS	LIMITATION
Buehler, S. & Haucap J.(2004)	Examines the consequences of introducing mobile number portability (MNP). Introduction of MNP generates various competitive effects that are of potential interest to regularity authority.	Ignored the possibilities to further entry into the mobile market.
Jessy John (2011)	Showed that customers are loyal to BSNL and Trustworthiness, Relationship, Image, VAS, Inconvenience to switch phone numbers are the factors that influence loyalty.	

Khuhro, Azhar, Bhutto, Sarki & Shaikh (2011)	Following parameters leads to satisfaction: Pricing strategy, Call clarity, User friendliness of service, VAS, Support service, Lower customer complain,	To be used or exemplified for other Industries as well.
Nishat and Rajeshvar (2012)	Examines how MNP changes the effect of other factors that affect the evolution of Market shares of competitors.	
Pratik and Suresh Vaghela (2012)	Network-coverage, Customer care, Quality of service is the main factors for switching mobile service provider.	
Suthar, B. K., Sharma, K. J., and Gwal, A. (2012).	Following parameters has no impact on MNP: Switching barriers, Service fairness, Experience with current service provider, Social influence.	1. Not generalized, sample only taken from Gujrat Telecom circle 2. Large sample required. 3. Comparative studies between cities are required.

As per the latest journals or academic magazines available in the market, many researchers in India as well as abroad worked in the field of cellular customer behavior where the attitude of customers had been derived and utilized in various fields of marketing. Customers attitude has been measured in the banking field, in the service sector and in other areas by different methods. But very few tried to predict the attitude in the telecom sector where the new technology called Pan Mobile Number Portability is concerned. Though after introduction of Pan MNP in July, 2015, very few works could be found, but still, no in-depth empirical investigation in Telecom sector could be found.

If we look at the National Papers of India based on Mobile number portability, "A study on cellular customer behavior after MNP" was discussed by Suthar, B. K., Sharma, K. J., and Gwal A. (2012) where the factors which motivates a customer as well as factors which inhibits a customer towards mobile number portability had been discussed. Jessy John (2011), discussed about the factors related to the loyalty of a customer taking the reference of BSNL customers in India. Pratik Sinh & Suresh Sinh Vaghela (2012) finds out the causes of Mobile number portability. Implementation of Mobile number portability and its evolution in India had been discussed by Nishat (2012). "Mobile number portability: Its challenges and solution" was discussed at length by Atiya Faiz Khan (2011).

Another detail paper on "Mobile number portability in India" was published by Siwach and Khullar (2011). TRAI on their "Pre-consultation paper on full mobile number portability" (2013) discussed at length about the pros and cons of full mobile number portability. Underlying MNP technology and its impact to the telephony ecosystem and how Tech Mahindra and its R& D team can shape this evolution was discussed in the paper "Mobile Number Portability: Riding the Wave" by author Krishnan V and Bhaswar Sanyal (2011). Now exploring some International paper based on MNP, we found that an empirical study by Rafique Ahmed Khuhro (2011) conducted from the interior Sindh, Pakistan to see the satisfaction of the customers who have utilized the process of MNP. Buehler, S. & Haucap, J. (2004) discussed the consequences of introducing Mobile Number Portability (MNP). They showed that after introducing MNP switching costs has been abolished and thereby benefits mobile customers. However, MNP causes consumer ignorance, as telephone numbers no longer identify networks, also mobile operators will increase termination charges, with ambiguous net effect on the surplus of mobile customers. They examined how extensions such as MNP based on call-forwarding, termination fee regulation, and alternative means of carrier identification affect these findings and discuss policy implications. Their future scope had been utilized in our paper which tells us to study the customers who already switched successfully.

The basic model for Technology acceptance model (TAM), Technology acceptance model 2 (TAM2), taken from Chuttur M.Y (2009) where Origins, Developments, and Future direction have been studied. Arijit Ghosh, Bandyopadhyay and Choudhuri (2011) prepared a paper using factor Analysis for forecasting BSE Sensex. So their methods of Factor analysis help us in formulating our research paper. Also a paper on customer attitude towards online shopping based on multiple regression approach was referred written by Sreya R. & P.T. Raveendran (2016) which helped us a lot to prepare our research work. Finally, the research and statistical methodology has been followed from the book Multivariate data analysis, 6<sup>th</sup> edition, Pearson Publication by Hair, Black, Babin, Anderson, Tatham (2007).

## VII. RESEARCH METHODOLOGY

Here we have used Technology acceptance model (TAM) proposed by Davis (1985) to determine the attitude towards accepting a new technology. Davis (1985) initially proposed that only two distinct beliefs – Perceived Usefulness and Perceived Ease of Use were sufficient enough to predict the attitude of a user towards the use of a system. Legris, Ingham and Collerette (2003) suggest that TAM must be extended to include variables that account for the change process and this could be achieved through adoption of the innovation model into TAM. So we have taken Telecom field where adoption of new technology is very frequent and try to measure the attitude of customers for adopting a

new technology of Pan MNP. We have wisely chosen our sample so that a holistic approach of attitude regarding Pan MNP could be derived. So we choose our sample from the prospective customers of Pan MNP who could in future move from one state to another state for some relevant reason and could use the benefit of Pan MNP for which it is meant for.

Firstly, we collected Primary data from Students, as they have high chances of shifting from, one State to another State for higher studies. So samples were taken from following two Colleges of Kolkata:

1. Institute of Business Management, Jadavpur, Kolkata. &
2. National Institute of Hotel Management, Balia, Garia, Kolkata.

Secondly, Primary data were collected from various Office employees whose jobs are transferable throughout India. These data were taken from the officers of Bharat Sanchar Nigam Limited. As this organization having presence all over India. So we assume that its officers are liable to transfer very often. Also, some data collected from the employees working in IT and other Private sector like- TCS, CTS, IBM, CAPEGEMINI, ITC and L&T. Their employees are also liable to transfer from one state to another state very frequently.

Thirdly, some data were also collected from general people like retired employees, businessman, housewife, etc. to get their views regarding Pan MNP. So a total 300 sample was collected for this research work. We took 18 number of independent variables. The independent variables in the Model were chosen after discussing with the experts in Telecom field. Generally Sample to Variable ratio of 10:1 is considered to be good. Here our Samples to Variable ratio were more than 16:1 (which is considered to be good). The primary data were collected from the period October, 2014 to August, 2015. A highly constructed questionnaire was supplied to them maintaining ESOMAR guidelines. As per the survey, respondents' perception on Pan MNP were measured on a 7 point Likert scale,

Where, 7 indicates- Extremely important and  
1 indicates – Not at all important.

Now we have used the Technology Acceptance Model (TAM) developed by Davis, Bagozzi, Warshaw (1989) to predict Customers attitude regarding Pan MNP in the Telecom Field. For reducing the number of variables we did factor analysis. For predicting the Customer attitude we did regression analysis. To derive the actual customer's attitude regarding the weight and importance of various variables which leads people to opt for Pan MNP, we talked with different experts in the

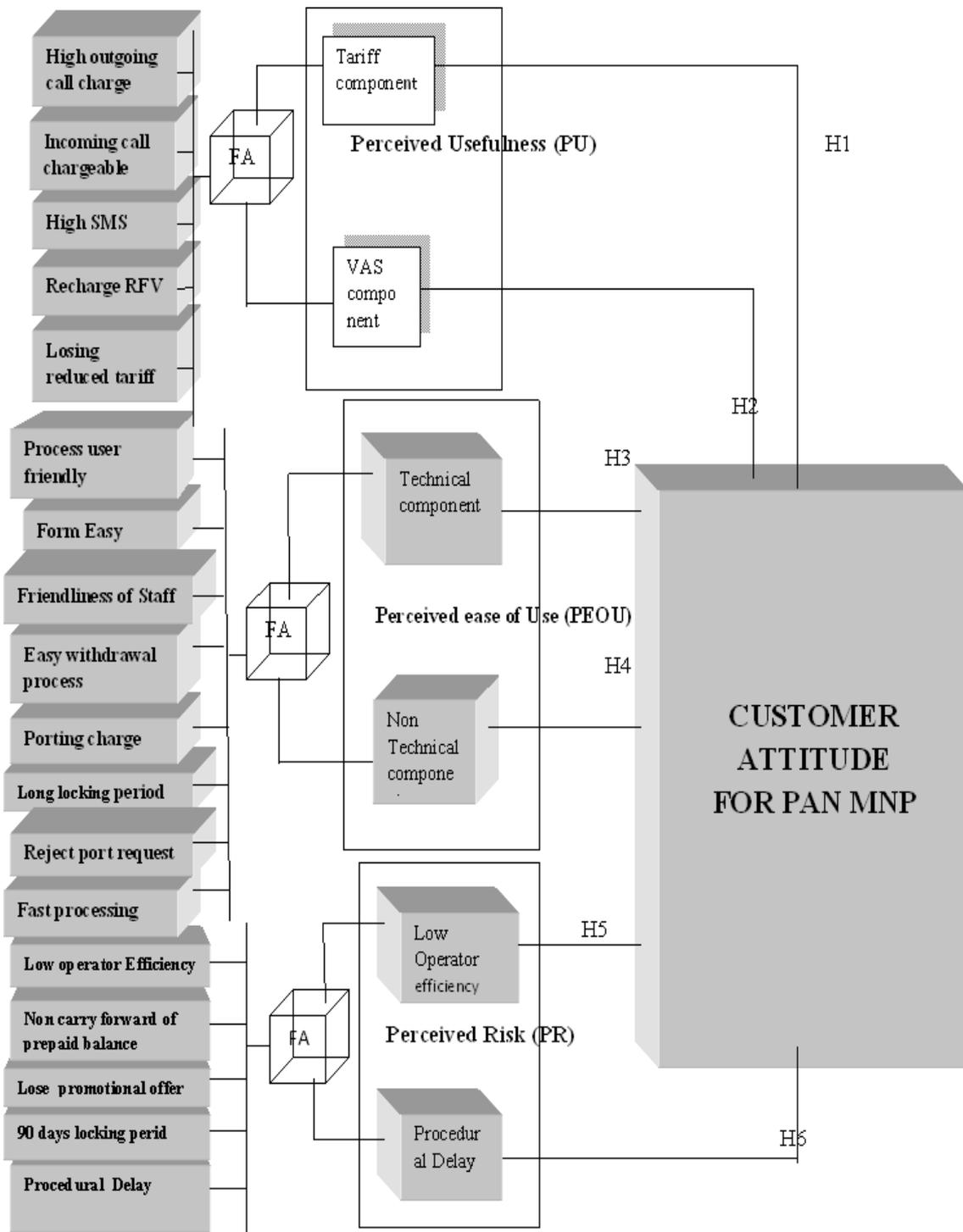
Telecom field who dealt with the formulation of MNP and Pan MNP process from beginning. Also, we discussed with various people from different profession who had used the Mobile Portability beforehand. From the responses we measure MODE (which appears most) and took that value for weightage calculation. The range of weight is (0.0 to 1.0 %). Finally, we draw the weightage amongst the six (6) variables which we derived from factor analysis. For the calculation we took that value of variables which had highest loading in factor analysis. Now to test the Hypotheses, we considered factors analysis result. The loading of factors which are greater than ( $\pm 0.50$ ) were taken for acceptance. So, our ultimate attitudinal model for Pan MNP is presented at **Fig.1**:

### VIII. ANALYSIS OF THE MODEL

Our model consists of three main parts, they are Perceived usefulness (PU); Perceived ease of Use (PEOU) and Perceived Risk (PR). We have used two statistical methods to analyze this issue. First part, we did factor analysis and in a second part to predict the Customers attitude, we have used linear regression analysis using SPSS. Now we have designed a questionnaire in such a way that PU, PEOU and PR could be measured in a bettered way. With the help of Expert's view in the related field, we have chosen sub- variables of Perceived usefulness.

They are – Charge of incoming call, High outgoing call charge, High SMS charge, Recharge roam free voucher, losing facility of reduced tariff in roaming. Similarly for Perceived ease of Use the expert's people suggest some sub variables. They are - User friendliness of the process, Simplicity of forms, Friendliness of Service Operator staff, Simplicity of the withdrawal process, Porting charges, Duration of locking period, Rejection of porting request, Processing time. Now for Perceived Risk the sub- variables are – Low Efficiency of Operator, Non carry forwarding of money, Loss of Promotional offer, Duration of locking period (90days), Procedural delay.

Now in order to reduce the sub variables and to make our model compact, we did a factor analysis of PU, PEOU and PR separately and reduced 18 variables to 6 variables. After that we performed simple linear regression in order to predict the attitude of Cellular customers regarding Pan MNP. We took six variables from the factor analysis as independent variables, namely – Tariff Component, VAS Component, Technical Component, Nontechnical Component, Low Operator efficiency and Procedural Delay. We took Customer attitude as the dependent variable.



**Fig.1 Pan MNP Attitudinal Model. FA= Factor Analysis.**

So our Predicted equation of Attitude becomes:

$$\hat{A} = b_0 + b_1F_1 + b_2F_2 + b_3F_3 + b_4F_4 + b_5F_5 + b_6F_6$$

Where,  $\hat{A}$  = Expected Attitude

$b_0$  = Intercept

$b_1$  = Change in the attitude for Pan MNP associated with a unit change in Tariff component. Similarly  $b_2$  to  $b_6$  is defined.

$F_1$  = Tariff Component,  $F_2$  = VAS Component,  $F_3$  = Technical Component,  $F_4$  = Nontechnical Component,  $F_5$  = Low Operator's Efficiency,  $F_6$  = Procedural Delay.

Now, the experts suggested the following independent variables:

- X1= O/G Charge; O/G call Charge during roaming
- X2 = I/C Charge; I/C call Charge during roaming
- X3= SMS Charge; SMS Charge during roaming
- X4= RFV (Roam Free Voucher); Recharging voucher during roaming
- X5 = Loss of Reduced Tariff; Facility of losing benefits of reduced tariff during roaming
- X6= User-friendly Process; Degree of User-friendly Process of Pan MNP
- X7= Ease of Form fill-up; Degree of simplicity of Pan MNP Forms
- X8= Friendliness of Staffs; Degree of Friendliness of Service Provider Staff
- X9= Withdrawal Process; Ease of Withdrawal Process for Pan MNP
- X10= Fast Processing technique; Degree of Promtness in Processing technique
- X11= Locking Period; Locking Period during transition of Pan MNP
- X12= Rejection of Porting request; Rate of Rejection of Porting request for Pan MNP
- X13= Porting Charges; Charges that Service providers are allowed to take
- X14= Low Operator –Efficiency; Probability of bad service from Ported operators
- X15= Non carry forward of Prepaid Balance; Prepaid balance that may lapse if not uses before doing Pan MNP
- X16= Lose promotional Offer; Facility of losing different Promotional offer during roaming
- X17= Locking Period of 90 days; Minimum Residing Period once you do Pan MNP
- X18 = Procedural Delay; Probability of delay of service during Pan MNP

### IX. RESULTS AND DISCUSSION

**Factor analysis for PU:**

There are overall five variables taken for PU. Now using SPSS we did common factor analysis. Here 5 attributes (x1 to x5) are examined. The result shows the correlation matrix for the perception of customer attitude. The Bartlett’s test (415.488) finds that the correlations, when taken collectively, are significant at the 0.05 level (sig. >0.05, Hair et al. 2012) Here Minimal sample adequacy (MSA) value of all the 5 variables are above 0.50 (acceptable >0.50, Hair et al. 2012). So we took all the 5 variables in factor analysis. KMO value = 0.732 (acceptable >0.7, Hair et al. 2012) that means our samples are adequate.

We keep Eigenvalues greater than 1. The Two factors retained represent 68.511 percent of the variance of the 5 variables. Factor loadings, in either the unrotated or rotated factor matrices, represent the degree of association (correlation) of each variable with each factor. Eigenvalues represent the total amount of variance accounted for by a factor. Here our analysis shows that the unrotated component matrix has a clear set of factor loadings. We still do that VARIMAX rotation. Since it is the most popular orthogonal factor rotation method for achieving a simplified factor structure. So even if we do a Varimax rotation or not, our analysis gives a clear set of factor loading. All of the loadings are above 0.50 meaning that more than one-half of the variance is accounted for by the loading on a single factor. Here the loading below 0.50 were not taken and the variables are sorted by their loading on each factor. We got two factors. Factor 1 has three variables and Factor 2 has two variables with significant loadings. Each factor is named based on the relation with each variable. We named F1= Tariff component and F2= VAS (Value added services) Component.

Similarly, we did a factor analysis for PEOU and PR and named the Factors similarly. The results of factor analysis are depicted in Table- II below:

**TABLE II. COMPARISON OF PU, PEOU, PR**

	<b>PU</b>	<b>PEOU</b>	<b>PR</b>
<b>Bartlett’s Test</b>	415.488	23.781	31.490
<b>KMO Value</b>	0.732	0.563	0.523
<b>Total Variance Explained</b>	68.511	47.677	48.70
<b>Factor’s Name</b>	Tariff component, VAS Component	Technical Component, Non Technical Component	Operator’s low efficiency, Procedural delay

**Weight of Variables:**

The different weight of the variables as given by experts are shown in Table- III.

**TABLE III. WEIGHT IN PERCENTAGE**

Variables	Factors	The weight given by Experts in %
X2(i/c chargeable)	F1 (Tariff component)	0.5
X5 (losing reduced tariff)	F2 (VAS component)	0.1
X6(user friendly process)	F3 (Technical Component)	0.2
X7(simplicity of Form)	F4 (Non Technical component)	0.1
X14(Low Operator's Efficiency)	F5 (Low Operator's efficiency)	0.05
X18(procedural delay)	F6 (Procedural Delay)	0.05

So the equation for Attitude considering weight is:

$$A = 0.5 \cdot X_2 + 0.1 \cdot X_5 + 0.2 \cdot X_6 + 0.1 \cdot X_7 - (0.05 \cdot X_{14} + 0.05 \cdot X_{18})$$

Here, the dependent variable is A = Customers attitude for doing Pan MNP and the Independent variables are: - X2, X5, X6, X7, X14 and X18.

As a PR denotes the risk factor, so it would deviate the customer from a positive attitude to do Pan MNP towards negative attitude. So we took minus (-) sign for X14 and X18.

**Regression Analysis**

Now to predict the customer's attitude regarding Pan MNP, we use the multiple regression method. Here, we have 300 observations and six (6) independent variables. So our samples meet the guideline for the minimum ratio of Observation to independent variables (5:1) (Hair et al., 2012). Our actual ratio is (50:1).

The results of regression analysis are analysed below:

**Stepwise Estimation: Selecting the First Variables**

The Pearson correlation amongst the variables shows that X2 has the highest bivariate correlation of (0.941). So we have selected X2 to be the first variable to enter. Here the R square value = 0.886. This value indicates the percentage of total variation of customer attitude explained by the regression model consisting of only X2. The standard error of estimate = 0.302. It is another measure of the accuracy of our predictions. It represents an estimate of the standard deviation of the actual dependent values around the regression line. The ANOVA analysis provides the statistical test for the overall model fit in terms of F ratio. The total sum squares = 239.096, is the squared error that would occur if we used only the mean of A to predict the dependent variable. Now we see that which variable to be entered next. From the SPSS result we could see that, the X6 has highest "t" value = 17.411. It measures the significance of the partial correlation of the Variable reflected in the regression coefficient. So our next variable to be entered is X6. So including X2 and X6 we see the R square value increased to 0.944. So we proceeded in the same manner as discussed above for the entry of next variables. Finally the included variables in chronological orders are - X2, X6, X5, X7, X14 and X18.

Now the final Regression model with six independent variables (X2, X6, X5, X7, X14 and X18) explains almost 99.9 percent of the variance of customer attitude (X19). The adjusted R square of 0.999 indicates no over fitting of the model and that the results should be generalizable from the perspective of the ratio of the Observations to Variables in the equation (50:1 for the final model). The standard error of estimate has reduced from 0.302 (when taken one variable) to 0.028. All the six regression coefficients are significant at the 0.05 level. Now from Regression result we found that constant term (0.011) and the coefficients (0.5, 0.197, 0.153, 0.101, - 0.024 and - 0.026) for X2, X6, X5, X7, X14 and X18 respectively. The predictive equation would be written:

$$\hat{A} = 0.011 + 0.5 * X_2 + 0.197 * X_6 + 0.153 * X_5 + 0.101 * X_7 - (-0.024 * X_{14}) - (-0.026 * X_{18})$$

With this equation, the expected customer attitude level could be calculated if that customer's evaluation is known. Suppose a customer rated each variable with a value of 6.0, then the predicted attitude level for that customer would be:

$$\text{Predicted Attitude} = 6.017$$

The constant value is very low. That means we can assume that our independent variables made a vital role in predicting the customers' attitude favorably. In other words, in the absence of the predictor or independent variables the predicted attitude would be very low or it won't be favorable towards Pan India MNP. As our value is more than 4 in 7 point Likert scale so we assume that Cellular customers responded in a favorable way for Pan MNP in Kolkata region.

### X. HYPOTHESIS TESTING

Now to test the Hypotheses, we would consider factor analysis result. The result of Varimax loading of factor analysis shows that the loading of each component of factors is greater than ( $\pm 0.50$ ) which is generally considered necessary for the practical significance (Hair et al. 2012).

The Factor loading values are shown in Table-IV:

**TABLE IV. VARIMAX LOADING**

FACT OR	HYPOTHE SIS	VAL UE WITH HIGH ER LOAD ING	RANGE( $\pm 0.50$ )	REMAR K
F1	H1	0.890	Greater than 0.50	Accepted
F2	H2	0.739	Greater than 0.50	Accepted
F3	H3	0.747	Greater than 0.50	Accepted
F4	H4	0.604	Greater than 0.50	Accepted
F5	H5	0.677	Greater than 0.50	Accepted
F6	H6	0.744	Greater than 0.50	Accepted

As all the values of loadings are greater than 0.50 so we could conclude that all our hypotheses are accepted and are practically significant.

### XI. MANEGERIAL IMPLICATION

Now a days Spectrum sharing, tower sharing, infrastructure sharing concepts have been incorporated by TRAI (Telecom Regularity Authority of India) which are beneficial for the new startup companies popularly called as MVNOs (Mobile virtual networks) e.g. Aerovoyce, Microtalk etc., which could discriminate customers like Pan MNP customers and could build systematic strategic plan according to customer's choice and could implement the same. In other words, this research would bring a cost cutting benefit for such type of startup companies whose financial position is limited.

### XII. SCOPE FOR FUTURE RESEARCH

There are various scopes for research scholars to explore such type of research in another service area like – Cable TV, Gas connection and Landline telephone connection where people might be interested to keep their existing service, changing to more efficient service providers of related field. Also such research work should be incorporated in other cities of India and abroad.

## CONCLUSION

Our result shows that Tariff components, Non Technical components, VAS components and Technical components play an important role in the formation of positive attitude for Pan MNP, whereas Low efficiency of Operator and Procedural delay during conversion process plays a role in building negative attitude for Pan MNP amongst the Cellular customers in Kolkata region.

But overall the Cellular customer's attitude for Pan MNP in Kolkata is favorable. Also, previously we thought that a very less number of people would be benefitted by the advantage of Pan MNP and it would not be an economically good option for service provider's point of view, but after seeing the Census data (2011) it becomes clear that there is a manifold opportunity for the service provider to grab the new interstate customers of India which would certainly generate revenue for the telecom operators. It would be a very good option for the startup companies like Aerovoyce, Microtalk etc. to grab a selected portion of customers and formulate their policy accordingly. So Telecom operators should not treat the Pan MNP as a threat rather they should see this as an opportunity.

## REFERENCES

- [1]. National Telecom Policy, No. 2-8/2012-Policy-I, 2012.
- [2]. Retrieved from <https://telecomtalk.info/traai-mnp-requests-in-large-number-5-91-million-requests-registered-july2017/168040/>
- [3]. Retrieved from <https://www.censusindia.gov.in/2011census/2011-D05-00-prov.xls>.
- [4]. B K Suthar, Dr. Jitendra K. Sharma, Dr. Anant Gwal, "A Study on Cellular customer Behavior after Mobile Number Portability with reference to Gujrat Telecom Circle," *Baoddhik*, vol-3, no-2, May-August, 2012.
- [5]. Jessy John, "An Analysis of Customer Loyalty in Telecom sector: Special reference to Bharat Sanchar Nigam Limited. India," *African Journal of Marketing Management*, vol-3(1), 2011, pp 1-5.
- [6]. Pratik Sinh, Suresh Sinh Vaghela, "Customer Preference for Mobile Number Portability," *International Journal of Management and Social Sciences Research*, vol-1, no-3, 2012.
- [7]. Nishat Anjum, Prof. Rajeshvar Lal Dua, "Evolution of Mobile number portability," *International Journal of Engineering Research and Technology*, vol-1, issue-5, 2012.
- [8]. Atiya Faiz Khan, "Mobile Number Portability: Challenges and Solution," *Journal of Emerging Trends in Computing and Information Sciences*, vol 2, special issue, 2010.
- [9]. Ashish Siwach, Shweta Khullar, "Mobile Number Portability in India," *International journal of Computer Application*, 2011.
- [10]. Telecom Regulatory Authority of India, "Pre-Consultation Paper on Full Mobile Number Portability," Feb, 2013.
- [11]. Cellular Operators Association of India, Responded to TRAI, "Pre- Consultation Paper on Full Mobile Number Portability," 2013.
- [12]. Krishnan V, Bhaswar Sanyal, "Mobile number portability: Riding the wave," White paper, Tech Mahindra Ltd, 2011.
- [13]. Rafique Ahmed Khuhro, Dr. Sarwar M Azhar, Dr. Nijad Ahmed Bhutto, Irshar Hussain Sarki, Imran Arshad Shaikh, "Customer Satisfaction after Mobile Number Portability" *Interdisciplinary Journal of Contemporary Research in Business*, vol-3 no. 8, 2011.
- [14]. Stefan Buehler, Justus Haucap, "Mobile Number Portability." *Journal of Industry, Competition and Trade*, 2004.
- [15]. Mohammad Chuttur, "Overview of Technology Acceptance model: origin, development and future directions," *Sprouts: Working paper on Information systems*, 9 (37), 2009, <http://sprouts.aisnet.org/9-37>.
- [16]. Arijit Ghosh, Samrat Roy, Gautam Bandyopadhyay, Kripasindhu Choudhuri, "Forecasting BSE Sensex under optimal condition: An investigation post Factor analysis," *Journal of Business Studies quarterly*, vol 3, no 2, 2011, pp 57-73.
- [17]. Sreya R. and P.T. Raveendran, "Effect of Shopping Orientations on Attitude Towards Online Shopping- A Multiple Regression Approach," *Management Insight*, vol. xii, no. 2, Dec, 2016.
- [18]. Hair, Tatham, Babin, Anderson, Black, *Multivariate Data Analysis (Sixth Edition, India, Prentice-Hall, 2007)*.
- [19]. Davis, F. Bagozzi, R. and Warshaw, R. "User Acceptance of Computer Technology: A Comparison of Two Theoretical Model," *Management Science*, vol 35, 1989, pp. 982-1003.
- [20]. Legris, P. Ingham, J. Collerette, P. "Why do people use Information Technology? A Critical Review of the Technology Acceptance Model," *Information & management* 40(2003), pp- 191-204.
- [21]. Jamuna Prasad, Jaipal Singh Tomar, "Mobile Number Portability: Salient Features," *The Indian Journal of telecommunication*, vol/Issue-59/5, 2011.
- [22]. Retrieved from [https://www.esomar.org/uploads/public/knowledgeandstandards/codesguidelines/ESOMAR\\_Guideline-for-conducting-Mobile-Market-Research.pdf](https://www.esomar.org/uploads/public/knowledgeandstandards/codesguidelines/ESOMAR_Guideline-for-conducting-Mobile-Market-Research.pdf)
- [23]. Jiayin Qi, ling Li, Yuanquan Li, Huaying Shu, "An extension of Technology Acceptance Model: Analysis of the adoption of Mobile data services in China," *System Research and Behavioral science, Syst. Res.* 26, 2009, pp 391-407.
- [24]. Kenny Phan, Tugrul Daim, "Exploring Technology Acceptance for Mobile services," *Journal of Industrial Engineering and Management*, 4(2), 2011, pp 339-360.
- [25]. Mobile Number Portability Tutorial from BRABRAIT, Jabalpur, 2013.
- [26]. MNP interconnection telecom solution Responded to TRAI, "Pre-Consultation Paper on Full Mobile Number Portability," 2013.
- [27]. Nadim Jahangir, Noorjahan Begum, "The role of Perceived usefulness, Perceived easy of use Security and Privacy and Customer Attitude to Engender Customer Adaptation in the Context of Electronic Banking," *African Journal of Business Management*, vol-2 (1), 2008, pp 32-40.
- [28]. Samar Mouakket, "Investigating the factors Influencing Customer's Adoption of Online Banking in the United Arab Emirates," *Journal of International Technology and Information Management*, vol-18, no 3/4, 2009.
- [29]. Syniverse Technologies, Response to TRAI, "Pre-Consultation Paper on Full Mobile Number Portability," Mar.7, 2013.