An Application Of Conjoint Analysis To Explore Customers’ Perceptions On Mobile Number Portability.

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Abstract

Purpose: The primary objective of this research article is to explore the preferential choices of customers opting for mobile number portability. The recent blackout of a leading mobile service provider in India has led to a great disturbance in the minds of the customers and they were forced to opt for mobile number portability. This research article used conjoint analysis to explore the choice of using port option.

Research Methodology/ Approach: Explorative analysis was used to explore the preference of portability. The attributes that are essential for mobile service providers were selected from existing literature. Conjoint analysis cards that consists of attributes of the mobile service provider were encrypted in the cards and the customers were asked to provide a rating score for each card in a 100 point scale. The cards are then used for conjoint analysis with the help of R-Studio software.

Findings: The conjoint analysis on the mobile number portability revealed that the customers prefer their mobile service provider based on three major attributes namely Brand Image, Perceive value for money and benefits for porting. The findings also revealed that the utility value for different brands of the mobile service providers. The customers preferred Vodafone when compared to other mobile service providers followed by Airtel and BSNL.

Practical Implication: The research will be useful for the academicians, policy makers, mobile service providers and also the researchers. The research will be useful for the academicians to understand the psychology of the customers using mobile number portability. The mobile service providers can make use of this research to device strategies that will outsmart competition in the industry. Since the research is using customer level primary data the researchers can use similar type of study to explore the factors influencing the choice of customers in other industries as well. The policy makers like Telephone Regulatory Authority of India can make use of such research to monitor...
mobile number portability and understand the mobile users in a better way. The regulatory authorities can also make use of this research to restrict monopoly trade practices in the nation.

Key words: Conjoint Analysis, Customers’ Perception, Mobile Number Portability.

Introduction

Mobile number portability is implemented and being used in India from the year 2011. The key word porting and mobile number portability has grabbed the attention of the customers in the recent times for one major reason. A pioneer telecom service provider Aircel has filed bankruptcy and was about to quit their services. This has forced the customers to opt for mobile number portability. The mobile number of the customers are now linked to their Aadhar Card, Bank account, ration card, Demat Account etc., in in this scenario the customers may not opt for changing their mobile number. Instead the customers will try using port option as directed by the Telephone Regulatory Authority of India.

When customers decide to use mobile number portability, the next question arises, which mobile network to port. The choice of mobile network providers depends on the perception of the customers towards the mobile service provider. Hence it was intuited that a research is required to identify what drives the choice of mobile service providers and what are the critical factors that influences the perception of the customers towards choosing a mobile network provider.

The above mentioned arguments justifies the need for the research. The analytical tool used for the research was conjoint analysis. The reason for choosing the conjoint analysis is that, it uses a meaningful approach in identifying the factors that drives the choice criteria of the end users. Conjoint data collection is slightly different from the traditional questionnaire based data collection approach and uses utility scores provided by the customers to explore the underlying parameters that made the customers to arrive at that particular score or number. Thus quantifying the decision making approach of each customers. In this research thirty different cards were given to 226 sample respondents and each card has five different attributes with fifteen different levels. Leading to a rich data of six thousand seven hundred and fifty possible data points. These data points provided average importance score for each attribute and utility score for different levels of the attributes which in turn provide rich business and research insights for the mobile service providers and the researchers.

Literature Review

Tomás Gómez Arias. J (1996) in the research article titled “Conjoint based preferential segmentation in the design of a new financial service” presented a conjoint analysis based method of segmentation in building new financial services. The authors collected the data from end users of financial services and provided several meaningful insights about the design of new financial services. The authors also argue that the conjoint analysis can outperforms other analytical techniques and can provide higher level of intra group homogeneity while segmenting the customers based on their utility and preference score. The authors also argue that the interpretation of conjoint analysis will be straightforward and can gain several business insights for new financial service development.

Arboretti, R et al., (2016) in the research article titled “Consumer preferences in food packaging: CUB models and conjoint analysis” attempted to explore the effect of food packaging in choice and preference of customers selecting a food item. The authors argues that the Packaging was considered as an important factor for the consumer final decision of buying fresh food products. The authors also added that packaging is a vital attribute, whichconsumers rely on, when they decide to buy a product. The authors used both conjoint analysis and combined uniform binomial distribution analysis to evaluate packaging of fresh foods. The results reveal that attributes like size/shape of packaging and packaging material and are the important factors that determine the choice criteria of the customers to buy a fresh food product.

Dauda, S et al., (2016) explored the quality of service and customer satisfaction with the help of conjoint analysis with Nigerian Bank Customers. The authors applied the concept of conjoint analysis in analyzing the customer satisfaction, the authors also suggested that bank management should focus on reduction of transaction errors and waiting time which has a direct influence on the
satisfaction on customers. Therefore the banks has to focus on reducing transaction errors and waiting time of the customers.

Nataraj et al., (2018) explored the determinants of mobile number portability with the help of classification and regression tree analysis. The authors identified that the variables like switching barriers, service quality of the mobile service provider, level of awareness of mobile number portability, perceived usefulness and perceived ease of use about the mobile service provider and perceived reputation of the telecom service provider has a direct influence on determining the mobile number portability of the customers. The authors also added that the variable switching barrier has a significant influence on mobile number portability decision. The result of the classification and regression tree was further analyzed with the help of random forest method and it was found that the switching barrier and service quality has a noteworthy implication on mobile number portability decision of the customers.

Research Methodology

Exploratory research was carried out in the study. The key attributes that are essential for mobile number portability were identified from previous literatures namely brand, perceived value for money, customer base of the service provider, network coverage of the service provider and the benefits provided for porting.

Recent blackout of mobile service provider Aircel has forced the customers to opt mobile number portability. The other major service providers in the country were identified to be Airtel, Vodafone, Idea, BSNL and Reliance Jio leading to six different levels in the attribute brand.

The perceived value for money was considered to be the major factor for determining the mobile service providers in most of the research and hence grabbed the attention in the current study as well. The perceived value for money had three levels namely high value for money, moderate value for money and low value for money.

The customer base of the service provider reflects the market leadership of that particular organization. This also boost up the confidence of the customers and helps them choosing their service providers. The two levels of the customer base used in this research are high customer base and low customer base.

The network coverage provided by the mobile service provider was found to be the next important attribute in the customers’ preference of choosing mobile number portability. Three distinct levels of this attributes are identified to be complete coverage in metro cities alone, complete coverage in rural areas alone, complete coverage in both metro and rural areas.

In order to attract customers from Aircel Blackout, the other mobile service providers used several strategies. One among such strategies is providing benefits for porting, the benefits includes plastic mug, wheat flour, coffee mug to potential customers. The presence of this benefit for porting was also considered as an attribute for determining mobile number portability with two distinct levels.

Hence there was a combination of 6x3x2x3x2 levels of five different attributes leading to one hundred and eight different combinations. Among these one hundred and eight different combination of the attributes and levels thirty different combinations were selected which acted as the representative sample the entire population.

The attributes are then encrypted in thirty different cards and the bunch of thirty cards is given to the sample respondents. The sample respondents were asked to provide scores in a hundred point scale for the cards based on their perception towards the attributes in each card. The scores are then recorded in an excel sheet and were used for analysis.

Conjoint analysis was used in this research. The utility score provided by the customers were used in analysis. Snowball sampling method was followed and customers who used mobile number portability recently were identified through mutual networks. A sample of 226 respondents were collected using the conjoint cards. Thirty different cards were given to the customers and were asked to provide score based on the sample respondents perception on utility of each card in a 100 point scale.
The collected data was then recorded in Microsoft Excel sheet. The data was then analyzed using conjoint package in R-Studio. The utility score was then subjected to bifurcation analysis and each attributes were analyzed separately to gain insights. The results of the same was depicted in analysis part of this article.

Analysis

Analyzing the collected data revealed insights about the consumer preferences of using mobile number portability. The estimates of the identified attributes are shown in table 1. From the t-value it is clear that brand, perceived value and benefits for porting were the important factors in determining mobile number portability.

The probability of having values greater than the critical value was found to be significant at 0.001 level. Therefore the results of conjoint analysis revealed that brand image, perceived value for money and benefits for porting has a direct positive impact on mobile number portability.

Table 1: Table Showing Conjoint Analysis Output for the model and Estimates.

| Coefficients:                      | Estimate | Std. Error | t value | Pr(>|t|) |
|------------------------------------|----------|------------|---------|----------|
| (Intercept)                        | 64.2796  | 3.4708     | 18.52   | 0.000*** |
| factor(x$BRAND)1                   | 9.5537   | 6.444      | 16.483  | 0.000*** |
| factor(x$BRAND)2                   | 4.2836   | 7.918      | 6.541   | 0.000*** |
| factor(x$BRAND)3                   | 2.5926   | 6.8678     | 6.377   | 0.000*** |
| factor(x$BRAND)4                   | 2.9129   | 5.8088     | 6.087   | 0.000*** |
| factor(x$PERCEIVED.VALUE)1        | 1.6006   | 5.3276     | 6.571   | 0.000*** |
| factor(x$PERCEIVED.VALUE)         | 0.4726   | 5.441      | 6.571   | 0.000*** |
| factor(x$BENEFITS.FOR.PORTING)1   | 0.1662   | 3.7922     | 6.087   | 0.000*** |

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error of the collected data from the sample respondents was found to be 1.17 with 22 degrees of freedom. The multiple R-squared score on conjoint analysis was found to be 0.7488 and the adjusted R-squared value was found to be 0.5774. The F-statistic value was calculated to be 7.041 on 7 and 22 DF, p-value: 0.000. Therefore it can be inferred that the model is significant at 0.001 level.

The importance plot in conjoint analysis is depicted in Figure 1. The different attributes are listed in the x axis of the plot and the average important of the attributes is plotted in Y axis of the plot. Among the three attributes brand was considered to be the most important attribute when compared to perceived value and benefits for porting. The benefit for porting was considered to be the least important significant attribute.
The utility score for different brands were plotted in Figure 2. The utility score revealed that the sample respondents value Vodafone as a preferable brand for switching intention followed by Airtel. The mobile service providers Idea, BSNL and Reliance Jio showed negative utility when compared to Airtel and Vodafone. Therefore these mobile service providers has look into their branding and positioning strategies in the minds of the customers.

The utility score for perceived value provided by mobile service providers for the money spent by the customers is shown in figure 3. As expected the sample respondents provided greater utility score for high perceived value for money and provided low utility score for low perceived value for money. Therefore the mobile service providers has to make sure that the customers perception for every rupee spent is given back to them with various benefits in order to sustain in the industry.
The utility plot for porting benefits was depicted in figure 4. The sample respondents provided positive utility score if the mobile service provider is offering porting benefits. Similarly, the sample respondents gave a negative utility score if the mobile service providers did not provide any porting benefits. Therefore, it can be inferred that the telecom industry players have to involve in promotional activities if they want to pull in new customers in their market share from their competitors. Thus promotions play a key role in building an organization.
Discussion

The importance plot in conjoint analysis is depicted in Figure 1. The different attributes are listed in the x axis of the plot and the average important of the attributes is plotted in Y axis of the plot. Among the three attributes brand was considered to be the most important attribute when compared to perceived value and benefits for porting. The benefit for porting was considered to be the least important significant attribute. The utility score for different brands were plotted in Figure 2. The utility score revealed that the sample respondents value Vodafone as a preferable brand for switching intention followed by Airtel. The mobile service providers Idea, BSNL and Reliance Jio showed negative utility when compared to Airtel and Vodafone. Therefore these mobile service providers has look into their branding and positioning strategies in the minds of the customers. The utility score for perceived value provided by mobile service providers for the money spent by the customers is shown in figure 3. As expected the sample respondents provided greater utility score for high perceived value for money and provided low utility score for low perceived value for money. Therefore the mobile service providers has to make sure that the customers perception for every rupee spent is given back to them with various benefits in order to sustain in the industry. The utility plot for porting benefits was depicted in figure 4. The sample respondents provided positive utility score if the mobile service provider is offering porting benefits. Similarly the sample respondents gave a negative utility score if the mobile service providers did not provide any porting benefits. Therefore it can be inferred that the telecom industry players has to involve in promotional activities if they want to pull in new customers in their market share from their competitors. From the results of the analysis it can be inferred that promotions play a key role in building an organization.

The other attributes considered in the study such as customer base of the mobile service provider and the network coverage in city, rural and remote areas did not show significant results as per the statistical tool used in analysis but these attributes also play a key role if a customer is searching for new mobile service provider instead of porting from one mobile service provider to the other one.

Limitations/ Scope For Further Research

The research is carried out during the period of black out of a major telecom service provider Aircel. Hence the perception of the customers might have been affected based on their emotions towards their previous service provider. In future the researchers can dodge this effect by collecting sample at different time period and can provide an integrated view about the perception of the customers over a longer period of time.

The research was carried out in mobile service provider’s space and hence the results of the study cannot be generalized to other industries. In future the researchers can perform similar kind of analysis in other industries like tourism, hospitality industry, financial institutions, Educational institutions etc.

Conclusion

The research will be useful for the academicians, policy makers, mobile service providers and also the researchers. The research will be useful for the academicians to understand the psychology of the customers using mobile number portability. The mobile service providers can make use of this research to device strategies that will outsmart competition in the industry. Since the research is using customer level primary data the researchers can use similar type of study to explore the factors influencing the choice of customers in other industries as well. The policy makers like Telephone Regulatory Authority of India can make use of such research to monitor mobile number portability and understand the mobile users in a better way. The regulatory authorities can also make use of this research to restrict monopoly trade practices in the nation.
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