

# The influencing factors of mobile number portability willingness for Yunnan mobile users

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## **Abstract**

Following the Tianjin and Hainan province, in September 2014, Ministry of Industry and Information technology announced to implement the pilot project of mobile number portability in Yunnan, Jiangxi and Hubei provinces. However, the implementation effect of the pilot project in Yunnan is not good, the success rate of mobile number portability is low. In this paper, we conduct empirical analysis through questionnaires, it is found that customer satisfaction is the main factor affecting the willingness of mobile number portability, followed by the using habits and value perception; switching costs, competitive attraction and network quality also have a significant impact on the mobile number portability. Based on the research conclusion, we put forward the corresponding countermeasures and suggestions, so as to achieve good effect for the implementation of the mobile number portability policy in Yunnan telecom industry.

**Key words:** *Mobile users; mobile number portability; willingness; influencing factors*

## **1 Introduction**

Mobile Number Portability (MNP) is that mobile users can convert to other operators and enjoy their products and services without changing users' telephone numbers. It means that the use right of the telephone number transfers from the operator to mobile users, which not only improves the consumers welfare and promotes the full use of the number resources, but also promotes effective competition in the telecom market and make the imbalanced telecom market better.<sup>2</sup>

Since the MNP policy has implemented in Yunnan, it has been widely concerned by users. In May 2016, the number of mobile phone users in Yunnan was 381.795 million, but only 5.69 million people have successfully completed the MNP. In Yunnan, The success rate of users' applications for the MNP is low, and the pilot is not going very well. In order to effectively implement the MNP policy and implemented nationwide, in this paper, questionnaires are used to analyze the MNP factors of Yunnan mobile users, and some corresponding countermeasures are put forward according to the empirical results.

## **2. Influence factors of MNP willingness**

### ***2.1 Switching cost***

The switching cost in this paper refers to all cost that mobile users switch from one operator to another operator and enjoy the services they provide by MNP. Switching costs have a direct impact on the MNP willingness. When mobile users transfer from one operator to another operator, the process of MNP must bear certain cost, including not only the money and time for the business, but also the learning cost, psychology and interpersonal relationships, which will greatly reduce the MNP willingness of mobile users. The MNP will have a greater impact on the telecom market. For their interests consideration, the telecom operators will take various measures to prevent the loss of customers, for example, increasing the charge of the MNP, delaying business processing time and setting up a variety of switching barriers, which will limit the user's choice, even lead users to give up MNP.

### ***2.2 Competitive attraction***

Competitive attraction is the degree which customers are attracted by alternative competitors in the external market. When the numbers of external operators are larger, mobile users perceive greater benefits from other operator that they will switch to others. As a rational person, most mobile users will compare their operators with others, so as to make reservation or conversion options. For example, when an operator provides a unique service, if the number of competitors who can provide such services is small or other operators can not provide the same service, then the customers will compare the current operators with others. If the other operators who provide services or products which are not have enough competitive attraction, the consumers will not choose to switch, and vice versa.

### ***2.3 Using habit***

At present, with the rapid development of internet and mobile communication technology, mobile communication service has become an important part of people's daily life, and consumers have also formed the habit of using original mobile communication products and services. Therefore, under the circumstances that the telecom industry has not changed dramatically, consumers will not actively choose the MNP, but they will continue to enjoy the services that the current operator provide for them. As an invisible obstacle, this inertia of consumers weakens the motivation of the MNP, inhibits the consumer's willingness of the MNP.

### ***2.4 Customer satisfaction***

According to the definition of Philip Kotler, customer satisfaction is a sensation that the mobile users compare the perceived value of the product and service which provided by operator with its expected value. If we express as a function, it refers the difference between the users' perception after receiving the product or service and the pre-expectation. When consumers compare the post-perception of the product and service provided by the operator with the pre-expectation, they will show satisfaction or dissatisfaction, which affects the willingness of repeating the purchase and enjoying their service. If

the mobile users are satisfied with all aspects of the current operators, they will not consider selecting other operators, and form loyalty for operators, which has a negative impact on the willingness of the MNP.

### ***2.5 Network quality***

Network quality is the quality of communication services and products that the mobile operators offer connect quality, network coverage and internet speed. In 21st century, people have entered the internet age. Great changes have taken place in the dissemination and exchange of information, and consumers' requirements have also increased for mobile communication technology and network quality. In the choice of operators, mobile users will take full account of these factors, such as voice, signal, network speed and other network quality problems ,which will directly affect the satisfaction of mobile users. Severe network quality problems will cause mobile users to make bad comments on the operator or even lead to customer churn.

### ***2.6 Value perception***

Value perception refers to perceived service quality and perceived price. Gronroos defined the perceived quality of service as a comparison between the customer's expected service and the actual perceived service in 1982. When the customer's expected service was superior to the actual service, the customer's perceived service quality was worse, and vice versa. Similarly, the perceived price is the comparison between the actual price of the product or service provided by the operator and the expected price of the consumer. When the actual price was higher than the expected, the perceived price of the consumer was so high that the consumer may no longer buy the product or service, and vice versa. In short, the value perception of this article is a psychological evaluation process that mobile users compare the quality and price offered by the operator with the cost they paid. When the value perception of mobile users is balanced, they will not choose to convert to other network.

## **3. Investigation on the influencing factors of MNP willingness for Yunnan mobile users**

The MNP survey includes 7 types of research variable that are respectively composed of 6 issues about switching cost, 3 issues about competition attractiveness, 4 issues about using habit, 4 issues about customer satisfaction, 3 issues about network quality, 4 issues about value perception and 3 issues about the MNP willingness, that is totally 27 issues.

### ***3.1 The data analysis of questionnaire***

The questionnaire uses the method of combining online with offline, including the network questionnaire and paper questionnaires. 300 questionnaires are distributed, 274 valid questionnaires are collected, which is an 92% effective rate.

In the 274 valid questionnaires, 60.2 of Yunnan mobile users did not consider the MNP ,but the sample sizes(28.3%) who are willing to implement the MNP are more than two times as much as the sample sizes(11.5%) who are not willing to implement, indicating that the willingness of MNP is relatively

strong.

### ***3.2 Reliability analysis***

We use the internal consistency coefficient of the Cronbach's Alpha test scale which commonly used by academia as a standard to analyze the reliability of the questionnaire. If the internal consistency coefficient is more than 0.7, which indicates that the scale is reliable. The reliability test of 7 variables and 27 scales are carried out, it shows that the overall reliability of the questionnaire is 0.903, the overall reliability of the questionnaire reaches a high degree of consistency. In the reliability test, the hierarchical plane of internal consistency reliability standard coefficient is different from the whole scale. In the hierarchical plane, if the coefficient is more than or equal to 0.6, the credibility is okay; more than or equal to 0.7, it is high; more than or equal to 0.8, it is higher; more than or equal to 0.9, it is the highest.

#### ***3.2.1 Switching cost***

The Cronbach's Alpha coefficient of the switching cost is 0.776, the reliability is higher, and the coefficient of each scale is more than 0.7, the reliability is relatively high.

#### ***3.2.2 Competitive attraction***

The Cronbach's Alpha coefficient of the competitive attraction is 0.837, which indicates that the reliability is higher, The coefficient of each scale is greater than 0.7, and even some reach 0.8, the reliability is relatively high.

#### ***3.2.3 Using habit***

The Cronbach's Alpha coefficient of the using habit is 0.818, the reliability is higher, and the coefficient of each scale is greater than 0.75, the reliability is relatively high.

#### ***3.2.4 Customer satisfaction***

The Cronbach's Alpha coefficient of the customer satisfaction is 0.902, the reliability is particularly high, and the coefficient of each scale is more than 0.85, the reliability is high.

#### ***3.2.5 Network quality***

The Cronbach's Alpha coefficient of the network quality is 0.822, the reliability is higher, and the coefficient of each scale is more than 0.75, the reliability is relatively high.

#### ***3.2.6 Value perception***

The Cronbach's Alpha coefficient of the value perception is 0.753, the reliability is moderate. The coefficients of each scale is not high, but all are more than 0.65, which is in the minimum acceptable range, it does not need to be revised.

### **3.3 Validity analysis**

In this paper, the factor loadings in factor analysis is used to carry out the validity analysis. Before the factor analysis, the KMO (Kaiser-Meyer-Olkin) and Bartlett sphericity tests are required for the data. The value of KMO represents a ratio between the correlation coefficient and the partial correlation coefficient. the greater the KMO value is, the better the correlation is, the more common factors between variables and the more suitable for factor analysis.

The KMO value of the questionnaire is 0.881, indicating that there are many common factors between variables. The sphericity test value of Bartlett is 4034.896, and the degree of freedom is 351 (Sig=0.000). The result shows that the test is significant, indicating that there are common factors among the scales, which is suitable for factor analysis.

The KMO values of all variables are more than 0.7, indicating that the correlation is good. The sphericity tests of Bartlett are all passed, and the test is significant at the significant level of 0.001.

After completing the KMO and Bartlett test of the questionnaire and the variables, we use the maximum variance rotation method to carry out factor analysis on the scale data, and use the factor loadings to carry out the validity test. The result shows that customer satisfaction is the main factor affecting the MNP willingness, followed by the using habit and value perception; conversion cost, competitive attraction and network quality also have an important impact on the MNP willingness.

## **4 Policy recommendations**

### **4.1 Government perspective**

#### *4.1.1 strengthening the publicity and promotion of the MNP policy, improving the awareness degree of MNP*

According to the descriptive statistical analysis of the questionnaire data, we can see that the majority of mobile users in Yunnan do not know the MNP, not to mention the fact that they will not choose the operator to carry out the business of MNP. Therefore, the government should strengthen the publicity and popularization in cities of Yunnan, improve the awareness degree of mobile users for the MNP policy, fully mobilize the enthusiasm of local operators, and regulate the publicity of major operators to maintain the knowing and choosing right of mobile users.

#### *4.1.2 Lowering the barriers of MNP policy, relaxing the restrictions of MNP*

There are many restrictions for the processing of the MNP, such as not converting with bundled contract and in the period of protocol packages, not converting interstate and not accessing with bill, these restrictions reduce the MNP enthusiasm of mobile users. In addition, the operators set up complex procedures to prevent users from converting to other network and reduce the success rate of the MNP. The government needs to lower the barriers of MNP at the policy level as much as possible, and impose tough penalties on operators' obstructive behavior.

#### *4.1.3 Strengthening the regulation with operators, preventing vicious competition*

The implementation of the MNP will have a certain impact on the current telecom market structure,

three operators will take appropriate countermeasures for their own interests. On the one hand, the dominant operator will try to retain existing users in order to stabilize the market position, on the other hand, in order to compete for market share, the vulnerable operator will seize the opportunity to attract users to convert network. Government should formulate effective regulatory measures against the policy of the MNP, establish relevant complaints institutions, and maintain fair competition of the telecom market.

## ***4.2 Operator perspective***

### ***4.2.1 Improving customer's satisfaction, cultivating loyal users***

As an important factor affecting the MNP willingness, customer satisfaction is important for operators to retain existing users. So the operator should pay attention to the user's satisfaction and the factors that caused the dissatisfaction, conduct customer satisfaction management, solve the service problems and the complains timely, constantly improve customer satisfaction, form customer loyalty ,and prevent the loss of customers.

### ***4.2.2 Increasing the competitive attraction , enhancing the brand image***

In order to attract other operators' users to convert network, operators should actively take the offensive strategy, increase the investment of competitive attraction, seize the opportunity , fully play their service advantages ,optimize the user structure, continue to spread the concept of corporate culture, establish a good corporate image, and build their own professional brand image.

### ***4.2.3 Improving the network quality, building excellent network***

Network is the foundation of the operator's core competitiveness. with increasing mobile users' requirements for the operator's call quality, communications services performance like network coverage and Internet access and communication product quality, operators should focus on increasing internet investment and network technology improvement, improve network construction and network maintenance capabilities, eliminate the blind spots of network coverage, build an excellent network of professional communications.

### ***4.2.4 Enhancing customer's value perception , focusing on service quality and prices level.***

Mobile users will evaluate the perceived service quality and perceived price for the products or services provided by the operator, the continued use willingness will be affected by these evaluations. Operators need to cater to the individual demand of users, pay attention to and subdivide different target markets, optimize service quality, adjust the prices level to obtain the acceptance of mobile users.

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