

Effects of Mobile Number Portability: Case of Turkey

Birgul Kutlu

Professor

Bogazici University

Department of Management Information Systems

Hisar Kampus, B203, 34342, Istanbul, Turkey

Abstract

In today's competitive telecommunications environment, a service provider should be able to prepare for changes in customer needs, regulation and technology. The most recent technological change in GSM environment is the Mobile Number Portability (MNP). The aim of this study is to identify and model the factors affecting MNP in Turkey. The questionnaire is developed based on previous researches and is modified according to a pilot study applied to five end-users. It is administered to a total of 1275 Internet users and 1250 usable data are collected. Reliability analysis (Cronbach's alpha) is applied to test internal consistency of the questionnaire. Regression analysis results indicate that overall model is statistically significant, where the factors affecting MNP are age, contract type, operator type, and satisfaction level. This study shows that the specified model can be used by managers of telecommunications service providers in order not to be affected by MNP.

Keywords: Mobile number portability, Turkey, Telecommunications service providers

1. Introduction

Mobile Number Portability (MNP) facilitates mobile phone users to keep their mobile phone numbers while changing from one mobile network operator to the other. MNP has been introduced in many countries, starting with Singapore in 1997 (LoyaltySquare, 2013) followed by UK, Netherlands and Hong Kong in 1999. Since then the number has been approximately 62 in 2013 (WikiMNP, 2013). International benchmarks show a high variation in MNP impact across the different markets ranging from 0.36% in Portugal to 14.76% in Hong Kong (LoyaltySquare, 2013).

Turkey is one of the largest telecommunications market in Central and Eastern Europe, the Middle East and Africa, driven by its large and relatively wealthy population. The mobile market has been exhibiting significant growth over the past few years with the total number of subscribers surpassing 67.16 million, implying a 89.9% penetration rate as of 2012 (BTK, 2013). In-line with increasing value added data services, it is expected that mobile penetration will reach 110% in the long term, which is conservative when compared to other major countries in the region. There are 3 companies in the mobile market where the leading company has 52% market share and the other two follows by 28% and 20% (MobileMarket, 2013).

The most important development in Turkish telecommunications market was the implementation of MNP in November 2008. Following the implementation, competition in the market has increased dramatically. Based on the latest public data, third company was the clear leader in terms of net subscriber addition related to MNP, while the second company has been a net subs loser. According to research reports, more than 60 million numbers have been changed by 29.2 million subscribers representing 43.4% (NTS, 2013).

Mobile operators were expected to focus on improving service quality and offering customer-oriented services in order to improve customer satisfaction and to build long-term relationships with customers. The reasons for poor portability performances included bureaucratic obstacles created by the operators and the costs of porting (Khan, 2010). For example, in France ARCEP reduced the process to 2 days in order to increase number portability (ARCEP, 2012).

There are also other factors affecting MNP such as age, education, number of mobile phones, contract type, etc. specified in previous studies (Table 1).

Table 1: Literature Survey on Factors Affecting Number Portability

Factors Affecting Number Portability	References
Satisfaction	Habib et al. (2011), Kagwathi et al. (2013), Kim et al. (2004), Buehler et al. (2006); Barnhoorn (2006), Shin (2006),
Age	Maicas et al. (2009), Shin (2006), Tihamiyu & Mejabi (2012)
Postpaid/Prepaid	Khan (2010), Levin (2006), Oliver (2009)
Education	Shin (2006)
Dominant operator	Buehler et al. (2006); Smura (2004), Levin (2006)

Literature specifies that:

1. Customers experiencing a high level of satisfaction are likely to remain with their existing providers and maintain their subscription (Kagwathi et al., 2013; Kim et al., 2004). The finding that service quality is not as significant a factor as switching cost suggests that subscribers are likely to remain with their current carriers even when they experience only a low level of service satisfaction (Habib et al., 2011; Shin, 2006). Some studies found that customers stay in the service even though they have not satisfied or low level of satisfaction (Buehler et al., 2006; Barnhoorn, 2006).
2. Older customers have a lower probability of adopting MNP (Maicas et al., 2009; Shin, 2006; Tihamiyu & Mejabi, 2012).
3. Number portability has no relevant impact in the prepaid segment, where subscribers place little weight on keeping their mobile phone number. Customers tend to have prepaid services with multiple operators with resultant low churn rates (Oliver, 2009), MNP usage has been found to be higher among post paid than among prepaid customers (Levin, 2006). MNP usage will be higher among contract customers than among prepaid customers. On average, contract customers will hold on to their mobile phone for a longer time, and therefore will be more attached to it. Normally, business customers are contract customers. Those are more inclined to utilize MNP services, due to number switching costs. Contract customers are able to get phone subsidies. Customers choose to upgrade their phones with other service providers.
4. Education level is positively linked to switching: subscribers with higher levels of education are relatively more prone to switching mobile carriers. However, it is found that gender may not affect subscribers' decisions on switching (Shin, 2006).
5. Dominant GSM operator will lose the most subscribers (Buehler et al., 2006; Smura, 2004; Levin, 2006).

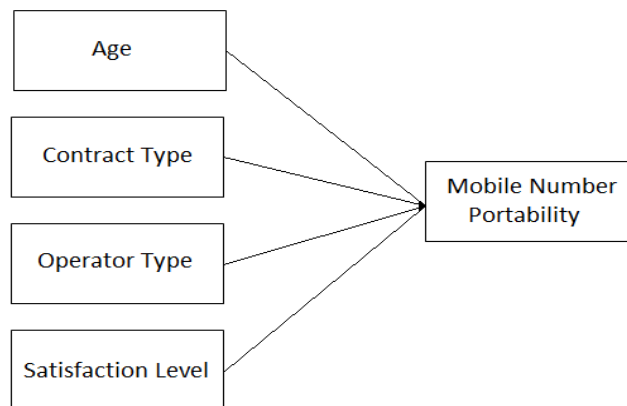
Since 92% of respondents have a university degree, the effect of education level is disregarded in this study. The aim of this study is to reveal the factors affecting mobile number portability.

2. Methodology

2.1 Conceptual Model and Research Hypothesis

The proposed research model, based on the literature review of factors that affect MNP, is presented in Figure 1.

Figure 1: Research Model



The model is made up of the hypothesis: Age, contract type, operator type, and satisfaction level have unique effect on MNP.

2.2 Data Collection

The aim of this study is to analyze the effects of number portability in Turkey by conducting a survey that consists of 18 questions. The survey is developed based on previous researches and theories as well as interviews with mobile sector experts. A pilot survey was administered with five end-users to revise and complement survey questions. The survey is prepared in 2 parts. The first part contains questions to obtain respondent's background data (age, education, gender, income, etc.) whereas second section contains questions to determine mobile usage (contract type, number of lines, etc.) of the respondent. The data for this study are gathered on-line, which is formed through Google Documents application based on the survey prepared. A total of 1250 usable data are collected from 1275 respondents.

2.3 Reliability Analysis

The first step in this analysis is to assess the reliability of the survey using Cronbach's Alpha test (Table 2). The value 0.796 (> 0.7) shows that the reliability of the questionnaire is high.

Table 2: Reliability Results

Factor	Number of Items	Cronbach's Alpha Value
Survey items	18	0.796

3. Results

The results for the background data of the respondents can be found in Table 3. The user group can be specified as young (75.7% of age less than 36) and well educated (92.0% with a university degree).

Table 3. Background Data of the Respondents (n=1250)

Characteristics	Percentage (%)
Gender	49.0
Male	51.0
Female	
Age (year)	0.7
Under 18	18.8
18 – 25	56.2
26 – 35	20.2
36 – 50	4.1
Over 50	
Education level	1.0
Primary school	7.0
High school	60.4
University	31.6
Postgraduate university	
Number of mobile phones	63.7
1	29.9
2	4.3
3	2.1
>3	
Years using mobile phone	0.5
1-2	2.6
3-5	96.9
>5	
Number of lines	58.6
1	35.9
2	5.5
3	
Type of line	55.1
Postpaid	30.2
Prepaid	14.7
Both	

The majority of the sample is using mobile phones more than 5 years with 96.9%. Most of the participants have only one mobile phone (63.7%) whereas 29.9% have 2 mobile phones. Similar to mobile phone ownership, most of the sample has only one line (58.6%) or two lines (35.9%). 55.1% of the participants have postpaid and 30.2% have prepaid lines, while 14.7% have both postpaid and prepaid lines.

Out of 1250 subscribers 977 (78.2%) did not want to port their numbers, 139 (11.1%) have already ported where 134 (10.7%) have been thinking.

Regression is used to estimate the unique effect of age, contract type, operator type, and satisfaction level on MNP. The regression analysis is summarized in Table 4.

Table 4: Regression Results

Predictor Variable	Standardized Coefficient (β)	t-value (p-level)
Age	-0.122	-2.94 (0.004)
Contract Type	0.111	2.70 (0.007)
Operator Type	0.082	4.91 (0.000)
Satisfaction Level	-0.252	-3.43 (0.001)
F (p-level) = 13.06 (0.000)		
R ² (R ² adjusted) = 0.170 (0.157)		

Results in Table 4 show that overall model is statistically significant (<0.05) and explains 17% of the mobile number portability, and therefore the hypothesis is accepted. Coefficients for age, contract type, operator type, and satisfaction level are all statistically significant and their signs are also in the direction as expected. Moreover, it can be seen that satisfaction level has the greatest impact on MNP ($\beta = -0.252$) and age as being the second ($\beta = -0.122$). The negative sign indicates that satisfied users and older people are unlikely to port their numbers. The main reasons for operator change were specified as: cheap rates (14.2%), suitable packages (7.4%) and campaign promotions (6.2%).

4. Discussion

In today's competitive telecommunications environment, a service provider should be able to prepare for changes in customer needs, regulation and technology. The most recent technological change in GSM environment is the Mobile Number Portability (MNP). For this reason the factors affecting MNP have become an important issue to be explored for telecommunications service providers. In this study, in order to determine the factors affecting MNP, a research model is developed. In this model, age, contract type, operator type, and satisfaction level are used as independent variables. The empirical findings, on the basis of data collected, show that these factors have significant effect on MNP and explain 17% of it. In general, the findings of the study support and merge the findings of the previous studies as: Older customers are unlikely to adopt MNP, customers experiencing a high level of satisfaction are likely to remain with their existing providers and maintain their subscription, number portability has no relevant impact in the prepaid segment, and dominant GSM operator has lost the most subscribers.

Although the empirical findings of the study seem useful, the limited size and nationality of the dataset make it difficult to draw any generalized conclusions. Therefore, as future study, considering that this study is concentrated on population of Turkey which is a developing country, this research can also be undertaken with a more representative sample size and also in other countries.

Overall, besides its limitations, it can be concluded that the model of this study can assist managers of telecommunications service providers for enhancing their understanding of the factors affecting mobile number portability and for improving their services.

References

- ARCEP (2012). Mobile number portability in the overseas market. [Online] Available: http://arcep.fr/index.php?id=8571&type=98&L=1&tx_gspublication_pi1%5Btypo%5D=&tx_gsactualite_pi1%5Buid%5D=1562&tx_gsactualite_pi1%5BbackID%5D=1&cHash=b8d4b5eab5c5761c29cc37e4028ad006 (October 30, 2013).
- Barnhoorn, C. (2006). Mobile number portability - how loyal are you to your network? [Online] Available: http://www.themarketingsite.com/live/pagebuilder/components/ensight/content_toolbox_print.php?Item_ID=5920&Language=en&Category_ID= (October 30, 2013).
- BTK (2013). Electronic communications markets in Turkey. [Online] Available: http://eng.btk.gov.tr/dosyalar/2012-3-English_25_12_12.pdf (October 30, 2013).
- Buehler, S., Dewenter, R., Haucap, J. (2006). Mobile number portability in Europe. *Telecommunications Policy*, 30, 385-399.
- Habib, F.Q., Salleh, A.H.M., Abdullah, N.L. (2011). Service switching among mobile phone users. 2nd International Research Symposium in Service Management, Indonesia.
- Kagwathi, G.S., Kamau, J.N., Njau, M.M., Kagiira, E.K. (2013). Factor influencing mobile number portability in Kenya: The case of Africa Nazarene University. 1st Annual International Interdisciplinary Conference, Portugal.
- Khan, A.F. (2010). Mobile number portability: Challenges and solutions. *Journal of Emerging Trends in Computing and Information Sciences*, 2, 1-6.
- Kim, M.K., Park, M.C., Jeon, D.H. (2004). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. *Telecommunications Policy*, 28, 145-159.
- Levin, D.C. (2006). Mobile number portability – Impact assessment. [Online] Available: http://www.il-synergy.com/english/articles/articles-eng/12%20-%20Mobile%20Number%20Portability_%20Impact%20Assessment.pdf (October 30, 2013).
- LoyaltySquare (2013). [Online] Available: http://loyaltysquare.com/number_portability.php (October 30, 2013).
- Maicas, J.P., Polo, Y., Sese, F.J. (2009). Reducing the level of switching costs in mobile communications: The case of mobile number portability. *Telecommunications Policy*, 33, 544-554.
- MobileMarket (2013). [Online] Available: <http://www.pazarlamasyon.com/2013/05/turkiyede-gsm-pazari/> (October 30, 2013).
- NTS (2013). [Online] Available: <http://www.nts.gov.tr/> (October 30, 2013).
- Oliver, L. (2009). Number portability in emerging markets. [Online] Available: <http://www.icc-uk.com/download/papers/NP-in-Emerging-Markets.pdf> (October 30, 2013).
- Smura, T. (2004). Mobile number portability: Case Finland. [Online] Available: http://www.smura.fi/downloads/Smura_2004_MNP.pdf (October 30, 2013).
- Shin, D. H. (2006). A study of mobile number portability effects in the United States. *Telematics and Informatics*, 24, 1-14.
- Tiamiyu, O.A., Mejabi, O.V. (2012). Evaluation of subscriber attitude to mobile number portability implementation in Nigeria. *Journal of Emerging Trends in Computing and Information Sciences*, 3(4), 526-533.
- WikiMNP (2013). Mobile number portability. [Online] Available: http://en.wikipedia.org/wiki/Mobile_number_portability (October 30, 2013).