Journal of Business Studies, Vol. XLII, No. 2, August 2021

DOI: https://doi.org/10.3329/dujbst.v42i2.59722

Antecedents of Switching Intention of Mobile Phone Subscribers via Mobile Number Portability Service

Md. Nazmul Hossain*
Muhammad Intisar Alam**

Abstract: *This study investigates the switching intention of mobile subscribers in the telecommunication industry of Bangladesh. Data were collected through an online survey with a structured questionnaire from the subscribers of different mobile operators in Bangladesh who have used the Mobile Number Portability (MNP) service. The Binary Logistic Regression Analysis was performed to test the research hypotheses. Results show that among the nine predictors, two variables, including call rate and data cost, are positively correlated with the switching intention of cellphone users in Bangladesh and contribute approximately 41 times and 109 times, respectively. However, three predictors, including internet browsing speed, network strength, and user's gender, do not significantly affect customers' switching intention. Finally, the limitations and managerial implications of the study, along with future research avenues, have been discussed.*

Keywords: *Switching intention, mobile-phone operators, MNP service, network, signal coverage*

Introduction

Bangladesh is an attractive and profitable market for mobile telecommunication because it has a vast customer base containing 168.07 million estimated population (Faraji & Arafat, 2019). The telecommunication industry has become one of the largest business sectors in the country's economy. It is overgrowing after providing a license to the private sector with a fixed number of operators (Islam, Khan, Ramayah, & Hossain, 2011).

The first private mobile operator, Citicell, was founded in 1989, and later other telecommunication operators were given licenses to operate within the country, including Grameenphone Ltd (GP), Robi Axiata Ltd (Robi), Banglalink Digital Communications Limited (Banglalink), and Teletalk Bangladesh Ltd (Teletalk) (Sultana & Shaown, 2018). GP- a joint venture company of Telenor and Grameen Telecom, is the market leader that has strong network coverage of 99% of the country and a market share of 46% of subscribers to 73.470 million, followed by Robi- the second-largest operator having a

*Associate Professor, Department of Marketing, Faculty of Business Studies, University of Dhaka, Email: nhossain01@du.ac.bd

**Associate Professor, Department of Marketing, Faculty of Business Studies, University of Dhaka, Email: intisar_alam@du.ac.bd

30% market share to 47.025 million users in the industry (Databd. co, 2019). Moreover, Robi Axiata Ltd has taken control of Airtel Bangladesh through a merger contract in which Robi owns a 68.7% stake, and Bharti owns 25% (Faraji & Arafat, 2019). Besides, Banglalink, founded in 1995, is the third-largest mobile operator, with 34.022 million subscribers contributing to the industry's 21% market share (Alom, Khan, & Meshquatuddin, 2010). Lastly, Teletalk Bangladesh Limited is the only state-owned telecommunication company established in 2004, which has only a 3% market share of 3.921 million users (BTRC, 2019).

Background and Rationale of the Study

Current studies on the telecommunication operators in Bangladesh are mainly focused on customer buying behavior, customer satisfaction, service quality, and other factors contributing to customer loyalty (Uddin & Akhter, 2012). Recently, customers are getting dissatisfied with the telecommunication operators, which is especially visible after initiating MNP (Mobile Number Portability) by the authoritative body of the Bangladesh government (Mobile Number Portability, 2019). However, the causes of dissatisfaction and the factors influencing customers to switch mobile operators are not still examined sufficiently (Mobile Number Portability, 2019). Besides, according to a report of BTRC, a total of 1,33,621 users have changed their operators during the first four months after initiating the MNP service (The Daily Star, 2019) (See Appendix 01). Thus, it is necessary for the operators to determine the factors affecting customers' switching intention in the telecommunication industry to know whether they will change their operators in the future or not and for what reasons.

Research Objectives

The main objective of this study is to understand and explore the switching intention of cellphone users after initiating MNP services in Bangladesh. There are also other specific objectives which are mentioned as follows.

(i) To know the competitiveness in the telecommunication industry of Bangladesh.

(ii) To explore the main reasons for changing operators.

(iii) To assess the reaction of customers toward mobile number portability service.

(iv) To provide suggestions to the market leader and market challengers to grow and retain market shares.

Literature Review

Keeping customer convenience and service innovativeness in mind, the government of Bangladesh finally launched MNP services to be enabled by the mobile operators on 1st October 2018, and with this, Bangladesh became the 72nd country to install the services available (Choudhury, 2018). The service systems have increased the users' freedom of

choice in switching to any network, retaining the current number unchanged, which was curbed earlier because of the hassle of changing numbers (The Daily Star, 2018). The MNP service system will improve the quality of operations and lead to greater competition in the market. After switching, if any customer wants to the change operator again, they must wait for 90 days (Mobile Number Portability, 2019).

Switching intention is the tendency or willingness to terminate the relationship with the existing service provider (Antón, Camarero, & Carrero, 2007). Switching intention also refers to changing the current company or band's products and services to others, and the switching intention results from unfavorable or unsatisfactory outcomes (Shin & Kim, 2008). There is a strong relationship between satisfaction and switching intention because customers initially evaluate a product and service's performance and then decide to retain or change to a substitute (Calvo-Porral, Faíña-Medín, & Nieto-Mengotti, 2017).

Because of widespread competition and technological improvement, the mobile telecommunication industry has proliferated, and the operators have come up with innovative distribution and communication strategies to attract and retain customers permanently (Hasan & Abdullah, 2013). Moreover, a customer’s choice or selection of an operator largely depends on how well the service providers communicate brand value, service innovation, pricing efficiency, network and coverage, and promotional offers (Das, 2013).

Primarily, the call rate is the main factor that influences the subscribers’ choice and purchase decision of different offers of a particular provider, followed by the network strength or availability of the operator (Ahmed, 2014). Besides, good customer care service is crucial for building and managing long-term customer relationships (Sinisalo & Karjaluoto, 2007). Although initial cost or subscription fee is not a dominating factor, lower cost or fee can attract new customers (Samanta, Woods, & Ghanbari, 2008). From the context of Bangladesh, the operators in the telecommunication industry are enhancing their service standards and quality to make their existing customers loyal to them; where the leading indicators needed to implement for ensuring satisfaction are integrated communication, lower prices, supporting services including SMS, MMS, bill pay, mobile banking, simplicity and convenience, and service (Hossain, 2013).

Moreover, service providers need to adopt marketing practices to provide innovative, reliable, competitive, and consistent customer service to be satisfied (Rahman, 2014). Additionally, the factors contributing to satisfaction or dissatisfaction are charges of services or cost of a voice call, network strength and accessibility, additional services, and social welfare activities (Ahmed, 2014).

Additionally, the price is the amount charged by the company against the services provided, representing quality and value to the customers, and customers must be treated with a fair price; otherwise, they do not purchase a service repeatedly (Ng-Kruelle, Swatman, Rebne, & Hampe, 2002). Furthermore, the brand image of the mobile operators is essential to keep the relationship going with the customers as the brand image creates a mental disposition that helps to form an expectation (Haque & Kalam, 2011).

Current studies on the factors affecting the selection of mobile operators mentioned that company reputation and call rate strongly influence the choice of a cellular mobile operator in the context of Bangladesh (Alom, Khan, & Meshquatuddin, 2010). Although it is claimed that value-added services and customer care services have favorable influences on selecting an operator, network, and signal coverage, they have the most negligible effect among other variables to choose a brand or company (Uddin, Kalam, Uddin, & Jaman, 2019).

Research Framework and Hypotheses

Monthly Mobile Expense: Subscribers of mobile operators have to pay for both fixed and variable call rates, SMS (Short Message Service), video calls, and value-added services, which can influence their switching intention in terms of mobile operators (Xin-yang & Yuan-rong, 2009). Thus, it is evident to examine how the monthly mobile expenses of the customers affect their switching intention in the context of Bangladesh.

H_1: Monthly mobile expense has a significant impact on switching intention.

Mobile Operators: Since the government of Bangladesh has enacted MNP service, it will facilitate more competition in terms of customer service, call rate, and data package among the operators serving in this country, including GP, Robi, state-owned Teletalk, and Banglalink (Ahmed, 2014). GP is the market leader in the telecom industry, and the monopoly of GP in case of call rate and data pack is challenged by Robi, state-owned Teletalk, and regulations from the Ministry of Posts, Telecommunications, and Information Technology (Ahmed, 2010). Thus, it is hypothesized that GP's subscribers have more switching tendencies than other operators in Bangladesh.

H_2: Performance of current operator is related to the switching tendency of mobile phone users.

Call Rate and Data Cost: Pricing is the amount of money paid by the consumers for mobile services, including call rate, tariff, and data or internet browsing fee where call rate and data cost are one of the most influencing factors of customer satisfaction which in turn indicate switching intention (Rao & Chandra, 2013). However, it is also argued that mobile operators often charge consumers by unregulated call data and data packages, leading the customers to get attracted to lower prices (Klein & Jakopin, 2014). Thus, it is

assumed that a higher call rate and data cost can contribute to higher switching intention among Bangladeshi subscribers of mobile operators.

H_3: Higher call rate has a positive effect on switching intention

H_4: Higher data cost has a positive effect on switching intention

Network Strength and Speed of Internet Browsing: The availability and strength of a mobile network play an important role in selecting an operator (Saravanan & Sudhakar, 2018). Besides, it is claimed that internet browsing speed shapes consumers' patronage level for a particular cell phone operator, which varies from time to time (Church, Smyth, Cotter, & Bradley, 2007). Thus, it is assumed that higher network strength and internet browsing speed will have a lower switching tendency among mobile subscribers in Bangladesh.

H_5: Higher speed of internet browsing has a negative influence on the switching intention

H_6: Higher network strength has a negative impact on the switching intention

Customer Care Service: Mobile operators can interact directly with the subscribers through various types of customer services, including complaint resolution of the customer, SIM (Subscriber Identity Module) replacement, calling the manager, reporting and information about services, and others (Islam, 2012). Customer service also paves the way for companies to reach and manage customers personally (Peppard & Rylander, 2006). Besides, effective customer service is also a source of competitive advantage, and companies can have a lower switching tendency by leveraging good quality customer service (Saha, Islam & Hoque, 2016). Thus, it is assumed that better customer service will have a lower switching tendency among mobile subscribers in Bangladesh.

H_7: Higher level of customer service has a negative influence on switching intention

Gender

It is mentioned that the gender of people can affect their cell phone usage pattern (Blumenstock & Eagle, 2010). This claim is also supported by other studies where it is found that consumers' purchase intention is significantly affected by their gender in the context of the telecommunication market (Sarraute, Blanc, & Burroni, 2014). Thus, it is assumed that mobile subscribers' gender can strongly influence their switching intention among the different operators in Bangladesh.

H_8: Gender has a positive effect on switching intention

Number of SIM Cards

In telecommunication service, customer patronage depends on how effectively and efficiently the operators provide the promised benefits that meet or surpass customer

expectations (Nkpurukwe, Amangala, & Wali, 2020). Moreover, subscribers sometimes use more than one sim card to determine and compare the offers of different mobile operators and eventually switch from one operator to another and spread negative word-of-mouth in the market (Sutherland, 2009). Therefore, it is rational to examine how several sim cards affect the subscribers' ultimate switching intention in the context of Bangladesh.

H_9: Having multiple SIM cards have a significant impact on the switching intention

Research Framework

The conceptual framework of this study is constructed with nine independent variables that may affect the switching intention of cellphone users which is shown in the Figure 1:

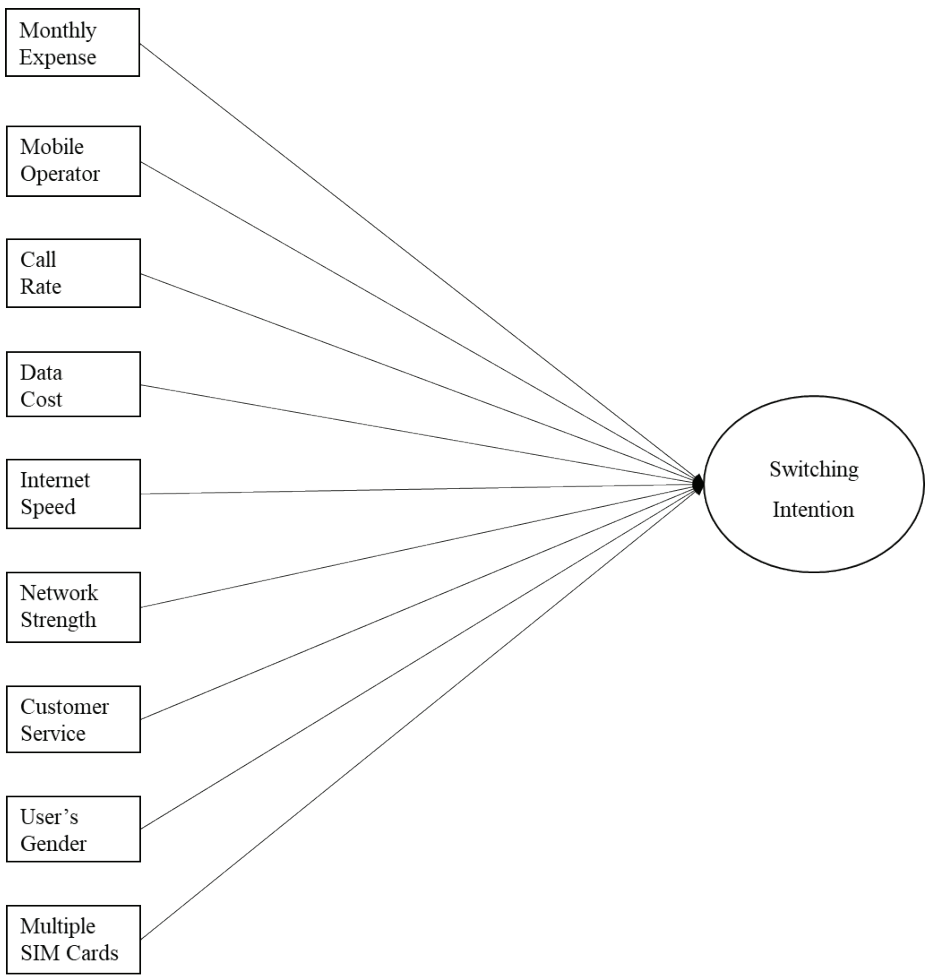


Figure 1: *Research Framework*

Research Methodology

Sampling and Data Collection

The population of this study includes the total cell phone users in Bangladesh who have switched to new operators after initiating the MNP service. For the convenience of the researchers, this study has been conducted on a convenient sample of Dhaka-based mobile phone subscribers, including all age groups and genders, who have switched from their past operators to newer ones using the MNP service. The sample respondents are primarily students who live in Dhaka city and are users of different mobile operators, including GP, Robi, Banglalink, and Teletalk. Dhaka was chosen as the location of the study since the number of cell phone users is higher in Dhaka than in other cities of Bangladesh (Hossain, Haque, & Aabed, 2011). The Snowball sampling technique was adopted in this research because of the time and cost convenience of the researchers and to select the most convenient as well as appropriate respondents to participate in the study through the referrals of respondents themselves. Data were collected through a survey that was administered online, and a self-designed structured questionnaire was distributed to the target respondents via Google form. Since the Snowball sampling technique was used, the researchers initially contacted twenty-five respondents as a convenience sample based on his Facebook network. The subsequent respondents were selected through the referrals of these initial twenty-five respondents in their own Facebook network. Moreover, they were also requested to forward the survey weblink to the other acquainted Dhaka-based MNP service users. This process was continued until the end of the data collection process.

The total number of users who have switched to new operators in Bangladesh during 2019 is around 1,33,621 during the initiation of the MNP service in Bangladesh (The Daily Star, 2019). Cochran's sample size determination formula was used in this study for sample size calculation since it allows the researchers to calculate an ideal sample size from a finite population given a desired level of precision, desired confidence level and the estimated proportion of the attribute present in the population (Cochran, 1963). When the population size is finite and smaller in comparison to a large population (See Appendix: A), the sample size was determined by the following Cochran's (1963) sample size determination formula, developed to calculate a proportional representative sample as follows:

$$n_0 = \frac{Z^2 pq}{e^2}$$

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where e is the desired level of precision (10%), p is the estimated proportion (35%) of an attribute present in the population, and q is 1-p. Besides, *Z* is the selected critical value of the desired confidence level (95% confidence); N is the population size, and *n* is the sample size. Based on this formula, 384 respondents were considered satisfactory to conduct the study.

To collect the data, 500 respondents from the different locations of Dhaka were conveniently approached. Among them, 467 respondents were willing to respond to the survey. Out of 467 respondents, 12 respondents did not use any cell phone. Since this study was conducted basically for measuring the switching intention of the cell phone users, data were not collected from those 12 respondents, and 44 respondents did not complete the survey questionnaire. Therefore, 411 respondents responded to the survey, and the final sample size is 411, which satisfies the minimum sample size of 384 respondents as calculated in the above-mentioned sample size calculation.

The pre-testing of the questionnaire was also done on a sample of ten respondents during the second week of February 2020. A pilot survey was conducted among these ten respondents to know how they understand, interact and give their opinion. The respondents were college and university students located in Dhaka. Their feedback was considered to review the questionnaire. Finally, the questionnaire is modified based on the pilot survey before commencing the actual data collection.

Data Analysis Tools and Methods:

To measure the extent of influence of different variables, both five-point Likert scale questions were coded as a continuous variable, and general questions were coded as a categorical variable. The five-point Likert measurement consists of the least form as 1 to the highest form as 5. After collecting primary data from the respondents, hypotheses were formulated and tested using 0.05% significance level. All the data collected is analyzed and interpreted by applying the 'Fit Binary Logistic Model and statistical software, Minitab 18.

Analysis and Findings

Hypothesis Testing: To determine the results of the hypothesis, whether accepted or rejected, a 'Fit Binary Logistic Model' is applied. For this testing, the significance level is at 5% or 0.05 (α= 0.05). Whether to accept or reject the hypotheses generated in the earlier stage, the decisions have been made comparing the *P*-value of the independent variables and the level of significance in this model. The coefficient of the predictor or independent variables is used to know whether the response variable is more likely or less likely to happen against the changes in the independent variables. On the other hand, how much effect the predictor variables have, is determined by the odds ratio (OR). The

results of hypotheses testing, including coefficient, odds ratio, confidence interval (95%), and *P*-value, are shown in Table 1.

Table 1: Results of Hypothesis Testing

H	Variable	Coef.	OR	95% CI	P-value	Result
1	Monthly Mobile Expense	-2.19	0.11	(0.0121, 1.0415)	0.021	Accepted
2	Mobile Operator	-1.71	0.18	(0.0270, 1.2037)	0.024	Accepted
3	Call Rate	3.71	40.84	(1.2422, 1343.2017)	0.002	Accepted
4	Data Cost	4.69	109.19	(0.5737, 20781.2245)	0.008	Accepted
5	Internet Speed	-0.59	0.55	(0.0624, 4.8845)	0.591	Rejected
6	Network Strength	-1.59	0.20	(0.0210, 1.9857)	0.129	Rejected
7	Customer Service	-6.58	0.14	(0.0000, 0.1526)	0.001	Accepted
8	User's Gender	-2.23	0.10	(0.0000, 5294.6277)	0.636	Rejected
9	Multiple SIM Cards	4.27	71.81	(0.4939, 10440.9694)	0.033	Accepted

Coef. = Regression Coefficient, OR = Odds Ratio, CI = Confidence Interval.

The above findings show that among the nine predictors, monthly mobile expense, operator, call rate, data cost, good quality customer service, and more than one SIM have a significant association with the dependent variable, switching intention. On the other hand, speed of internet browsing, network strength, and gender do not have any significant association with switching intention because the *p-value* of these three variables is greater than 0.05 or 5%. Thus, the H_5, H_6, and H_8 are rejected.

To illustrate, if the monthly mobile expense of people increases by one level, they are less likely to change their operator in the future since the coefficient of monthly mobile expense is negative (-2.19). The odds ratio is 0.11, which means customers are 0.11 times less likely to switch their operators with the increase in monthly mobile expenses.

Besides, those who use Grameenphone have high tendency to switch than other operators and the odds ratio suggest that the customers of Robi, Banglalink and Teletalk are 0.18 times less likely to switch than GP The coefficient is negative -1.713 which also supports the interpretation of odds ratio. Grameenphone is placed at the first level and coded as 1.

Moreover, the coefficient of call rate is 3.71, which indicates that switching intention is more likely to increase with the increase in call rate. Thus, telecommunication customers are more likely to switch operators if the call rate increases and call rate is accounted for 40.85 times higher toward switching intention.

Additionally, the coefficient of data cost is 4.69, which suggests that the higher the data cost of operators is, the higher the switching intention of the customers. The odds ratio for data cost is 109.19 which suggests that for one additional level of data cost that an operator charges, the customers' switching tendency will increase by 109 times.

Furthermore, the coefficient of quality of customer service is -6.58, which suggests that a higher level of customer service has fewer probabilities that the customers will switch. The odds ratio, 0.0014, indicating that increasing the level of customer service, subscribers of cellphone operators are 0.0014 times less likely to switch their current brand.

Finally, the odds ratio for 'Multiple SIM Cards' indicates when customers have more than one SIM they are 71.81 times more likely to switch than those who do not have multiple SIM cards. However, three predictors, including internet browsing speed, network strength, and user's gender, do not significantly affect customers' switching intention via MNP services.

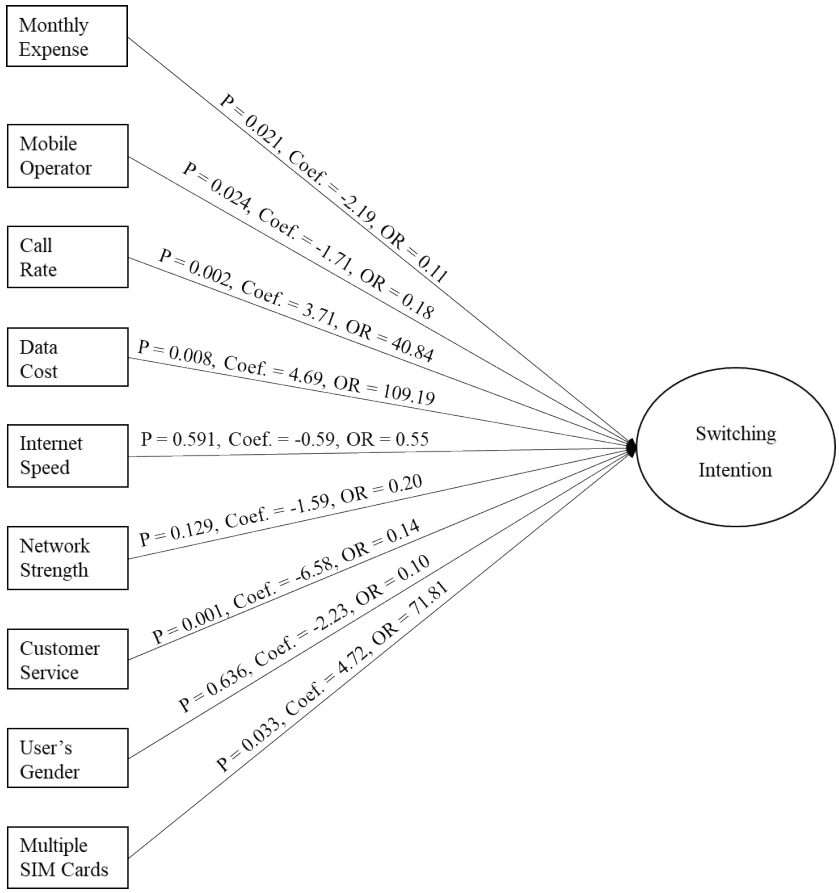
Model Summary and Goodness-of-Fit

The model summary is applied to determine how well the model used in this study fits the data formats. The higher the value of deviance R^2, the better the model fits the data. In the result, 83.45% of the deviance in the response variable is explained by this "Fit Binary Logistic Model". Thus, the value of the deviance R^2 shows that the model has a good fit to the data (See Appendix: B).

The Goodness-of-Fit test is used to know whether the predicted probabilities have a deviation from the observed probabilities in such a manner that the binomial distribution fails to predict. Though all the three tests, Deviance, Pearson, and Hosmer-Lemeshow, have a greater *p*-value than the selected significance level of 0.05, the Hosmer-Lemeshow is the most trustworthy in binary response because it doesn't affect by the number of trails per row. The *p*-value of the Hosmer-Lemeshow test is 0.974, which is greater than the usual significance level of 5% or 0.05, so it can be concluded that the text doesn't provide enough evidence that the model doesn't fit the data or the predicted probabilities has a deviation from observed probabilities (See Appendix: C).

Discussion

Three predictors, including gender, speed of internet browsing, and network strength, do not influence the switching intention of the telecom customers significantly. On the other hand, monthly mobile expense, operator, call rate, data cost, customer service, and having multiple SIM cards have significant associations with switching intention suggested as by the coefficient value and comparison between significance level (0.05) and p-value. Among the predictors, call rate and data cost are the two main reasons to switch operator. The summary of the findings is presented in the Figure 2:



P = P-value, Coef. = Regression Coefficient, OR = Odds Ratio.

Figure 2: *Summary of the Research Findings*

In the case of Mobile number portability, past studies focused on different geographical contexts including North America, Europe and Asia (Bühler, Dewenter, & Haucap, 2006; Shin, 2007; Shin & Kim, 2007). In the European context, previous studies examined the implementation process of the mobile number portability (MNP) as well as the competitive effects and implementation costs of it (Bühler, Dewenter, & Haucap, 2006). Besides, in the USA context, another study investigated the effect of mobile number portability (MNP) by focusing on subscribers' perceptions and behaviors towards MNP (Shin, 2007). Moreover, in the Asian context, past studies seek to investigate the effect of mobile number portability (MNP) on mobile subscribers by focusing on subscribers' perception and behavior related to MNP in Korea as well as (Shin, & Kim, 2007) as well as the determinants of customer switching towards mobile number portability in India (Chadha & Bhandari, 2014). However, none of the studies were focused on Bangladeshi

context. Thus, this study empirically fills up the research gap in the perspective of mobile number portability service for Bangladesh. The findings of this research also corroborate the results of the past research where it is found that network quality, tariff or call rate (Chadha & Bhandari, 2014) and switching costs or mobile expenses (Shi et al., 2010) significantly lead to switching of a mobile services operator.

Speaking from the past perspective, one article described and analyzed mobile number portability through routing mechanisms and cost recovery issues from a technical perspective (Lin, Chlamtac, & Yu, 2003). However, it did not focus on the market-driven factors from marketing perspective. Another paper was also conducted to investigate the effect of MNP on switching costs of the customers in mobile phone services (Maicas, Polo, & Sese, 2009). However, it was not focused on the ultimate switching intention of the subscribers. Thus, this study empirically fills up the research gap in the perspective of mobile number portability services for customers' switching intention through the lens of the market-driven factors. From the context of Bangladesh, a few studies were also conducted to identify the factors affecting brand switching behavior of the subscribers, switching barriers as well as customer retention (Rahman & Chowdhury, 2022; Masud-Ul-Hasan, 2016; Al Jamil et al., 2015). However, these studies broadly focused only on the brand or operator switching behavior of the subscribers rather than the switching intention of the customers through MNP services. Therefore, this empirical study fills up the research gap in the perspective of Bangladeshi subscribers switching intention through the lens of mobile number portability services. All in all, this study's findings have important implications for cellular phone operators to tailor their services and strategic priorities for maximizing customer satisfaction, loyalty, and retention to gain market growth and higher returns.

Recommendations

The two main influencing factors of switching intention are call rate and data cost. Hence, the operators should adjust their cost structure and pricing policy considering the price-sensitive nature of the customers in Bangladesh. The study also suggests that the customers whose monthly mobile expense is lower are more likely to switch. Thus, the operators should adopt segmentation and targeting strategies to customize their offerings according to customers' expectations. Besides, the percentage of customers who want to switch is 63% of GP, 22% of Banglalink, 14% of Robi, and 1% of Teletalk. Therefore, GP is undergoing a threat of losing significant market share. Other specific suggestions for the mobile operators based on the findings from this study are as follows.

- GP should focus on customer relationship management strategy by updating their positioning. This can be done by offering lower call rates, bonuses for call rate and data purchases, and free talk time. The company should give special

attention to pricing policy, such as accuracy of data cost, taxation, appropriate data pack, and charging as per promises.

- As Robi has gained more customers than all other operators, it should improve its network coverage and customer care service to retain the customers and attract more customers in the future. The company should also increase customer convenience, including more recharge points, customer care centers, value-added services, etc.
- Banglalink also needs to reposition its marketing and promotions strategy by offering innovative services and improving network cells and stations. As the number of customers of the operator is declining, it should provide sales promotions like price packs or bonuses, cash refunds, prizes, price offs, etc., to attract new customers.
- Teletalk must establish more network and service center stations. The company should increase its brand awareness and image by providing consistent and reliable services. The government should also lower the call rate, taxes, and tariffs to grab market share from other firms. Moreover, the service delivery systems should be developed so that the customer can get more convenience than before.

Limitations and Future Research Directions

This study has some limitations which can be studied further. As discussed earlier, the primary data is collected from a convenient sample in Dhaka city only through a non-probability sampling technique. Thus, the findings cannot be generalized across different regions in Bangladesh. Further research can be conducted on a larger sample of respondents covering broad territory, considering both rural and urban areas through probability sampling. Besides, this study includes only nine variables, but some other variables, including age, educational background, and valued added services, may influence the switching intention of mobile customers. Therefore, further research can be executed, including the mentioned variables, to get more insights into the switching intention of the customers. Additionally, most of the respondents of this study are students, and only a few are service providers. Since it is assumed that people of all occupations use mobile phones and mobile telecommunication services, future study should include respondents of diverse occupational backgrounds. Lastly, as the two major service providers including GP and Banglalink has already lost significant number of subscribers, more research has to be carried out in future to figure out the performance and effectiveness of different marketing tools and strategies adopted by the existing operators including advertising, public relations, segmentation, targeting and discount pricing.

Conclusion

This study was conducted to know the main factors influencing the switching intention of the mobile subscribers where it is found that higher call rate and data cost play the most significant role in switching to a particular operator. On the other hand, lower monthly mobile expenses and poor customer care service also persuade people to switch their operators. Besides, the switching intention is not affected by gender differences and internet browsing speed. Although the strength of the network is not statistically significant, the poor network can lead customers to switch operators. To conclude, the findings of this study have provided valuable insights into the factors contributing to the higher switching intention of cell phone users that can facilitate future academic research and mobile operators for making more rational strategies in the context of the Bangladeshi telecom market.

References

Alom, K., Khan, A., & Meshquatuddin, A. N. M. (2010). Selection of cellular operators in Bangladesh: An empirical analysis. *International Journal of Mobile Marketing*, 5(2), 114-125.

Ahmed, A. (2010). An Analysis of Market Performance of Mobile Phone Operators in Bangladesh. *SSRN Electronic Journal*. doi: 10.2139/ssrn.1613285

Ahmed, S. (2014). Consumers' Expectations from the Mobile Telecommunication Operators: Bangladesh Perspective. *DU. Journal of Marketing*, 15, 16-18.

Antón, C., Camarero, C., & Carrero, M. (2007). The mediating effect of satisfaction on consumers' switching intention. *Psychology & Marketing*, 24(6), 511-538.

BTRC. (2019). Mobile Phone Subscribers in Bangladesh. Retrieved from http://www.btrc.gov.bd/content/mobile-phone-subscribers-bangladesh-february-2019

Blumenstock, J., & Eagle, N. (2010, December). Mobile divides: gender, socioeconomic status, and mobile phone use in Rwanda. In *Proceedings of the 4th ACM/IEEE International Conference on Information and Communication Technologies and Development* (pp. 1-10).

Calvo-Porral, C., Faíña-Medín, A., & Nieto-Mengotti, M. (2017). Satisfaction and switching intention in mobile services: Comparing lock-in and free contracts in the Spanish market. *Telematics and Informatics*, 34(5), 717-729.

Choudhury, A. (2018). Mobile number portability of Robi Axiata ltd.: acquiring more customers and sustain the existing market during the era of mobile number portability.

Church, K., Smyth, B., Cotter, P., & Bradley, K. (2007). Mobile information access: A study of emerging search behavior on the mobile Internet. *ACM Transactions on the Web (TWEB)*, 1(1), 4-es.

Cochran, W. G. (1963). Sampling Techniques, New York, 1953. *Statistical Surveys E. Grebenik and CA Moser*.

Das, S. (2013). Customer Satisfaction of Mobile Operators in Bangladesh. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2353433

Databd.co (2019). Telecommunication Industries. Retrieved from https://databd.co/profiles/industries/profile-telecommunication

Faraji, M., & Arafat, Y. (2019). An Evaluation of Service Convenience and Customer Satisfaction among Mobile Subscribers in Bangladesh.

Haque, A. N., & Kalam, A. (2011). Customer Satisfaction Mobile Phone Services: An Empirical Study on Grameen Phone (GP) and Banglalink (BL) in Bangladesh. *International Business Management*, 5(3), 140-150.

Hasan, M. K., & Abdullah, A. S. M. (2013). Measuring Consumers Satisfaction towards the Services of Mobile Phone Operators in Bangladesh. *International Journal of management Science*, 1(11), 436-444.

Hossain, M., Haque, M., & Al Aabed, A. (2011). An investigation on cell phone subscribers of Dhaka City, Bangladesh: are they happy and loyal? *Independent Business Review*, 70-90.

Hossain. (2013). Influence of Customer Satisfaction on Loyalty: A Study on Mobile Telecommunication Industry. *Journal of Social Sciences*, 9(2), 73-80. doi: 10.3844/jssp.2013.73.80

Islam, M. A., Khan, M. A., Ramayah, T., & Hossain, M. M. (2011). The adoption of mobile commerce service among employed mobile phone users in Bangladesh: self-efficacy as a moderator. *International Business Research*, 4(2), 80.

Islam, R. M. D. (2012). Application of SERVQUAL model in customer service of mobile operators: a study from the context of Bangladesh. *European Journal of Business and Management*, 4(1), 47-54.

Klein, A., & Jakopin, N. (2014). Consumers' willingness-to-pay for mobile telecommunication service bundles. *Telematics and Informatics*, 31(3), 410-421. doi: 10.1016/j.tele.2013.11.006

Mobile Number Portability. (2019). Retrieved from http://www.mobilenumberportability.com/bd

Ng-Kruelle, G., Swatman, P. A., Rebne, D. S., & Hampe, J. F. (2002). The price of convenience: Privacy and mobile commerce. *Quarterly Journal of Electronic Commerce*, 3, 273-286.

Nkpurukwe, O. I., Amangala, E. A., & Wali, A. F. (2020). Mobile Marketing Strategies and Customer Patronage of Mobile Telecommunication Services. *International Journal of Marketing Research Innovation*, 4(2), 1-8.

Peppard, J., & Rylander, A. (2006). From value chain to value network: Insights for mobile operators. *European Management Journal*, 24(2-3), 128-141.

Rahman, M. (2014). Factors Affecting Customer Satisfaction in Mobile Telecommunication Industry in Bangladesh. *Business, Management And Education*, 12(1), 74-93. doi: 10.3846/bme.2014.06

Rao, A., & Chandra, S. (2013). *The Little Book of Big Customer Satisfaction Measurement*. New Delhi: SAGE Publications.

Saha, N., Islam, M., & Hoque, A. (2016). Factors Affecting Customers' Satisfaction of Mobile Phone Subscribers: An Empirical Study on Mobile Telecommunication Industry in Bangladesh. *International Journal of Business and Management*, *11*(6), 252. doi: 10.5539/ijbm.v11n6p252

Samanta, S. K., Woods, J., & Ghanbari, M. (2008). Impact of price on mobile subscription and revenue. *Journal of revenue and pricing management*, 7(4), 370-383.

Sarraute, C., Blanc, P., & Burroni, J. (2014, August). A study of age and gender seen through mobile phone usage patterns in mexico. In *2014 IEEE/ACM international conference on advances in social networks analysis and mining (ASONAM 2014)* (pp. 836-843). IEEE.

Saravanan, S., & Sudhakar, P. (2018). Analysis of mobile internet speed, signal strength and FMDH antenna design for improved internet speed. *The Journal Of Supercomputing*. doi: 10.1007/s11227-018-2382-x

Sinisalo, J., & Karjaluoto, H. (2007). Mobile customer relationship management: a communication perspective. *International Journal of Electronic Customer Relationship Management*, 1(3), 242-257.

Shin, D. H., & Kim, W. Y. (2008). Forecasting customer switching intention in mobile service: An exploratory study of predictive factors in mobile number portability. *Technological Forecasting and Social Change*, 75(6), 854-874.

Sultana, Y., & Shaown, J. (2018). A Study on the Board Structure and Composition in the Telecommunication Industry of Bangladesh. *International Journal of Business Strategy*, *18*(2), 59-66. doi: 10.18374/ijbs-18-2.6

Sutherland, E. (2009). Counting customers, subscribers and mobile phone numbers. *Info-The journal of policy, regulation and strategy for telecommunications*, 11(2), 6-23.

The Daily Star (2019, February). 1,33, 621 lakh mobile users switch operators using MNP. Retrieved from https://www.thedailystar.net/business/telecom/news/133621-mobile-users-switch-operators-using-mnp-1702054

The Daily Star. (2018, October). Now you can use any operator keeping same mobile number. Retrieved from https://www.thedailystar.net/business/telecom/mnp-service-in-bangladesh-use-any-mobile-operator-keeping-same-number-1641148

Uddin, M. B., & Akhter, B. (2012). Customer satisfaction in mobile phone services in Bangladesh: A survey research. *Management & Marketing Journal*, 10(1).

Uddin, M. J., Kalam, A., Uddin, M. M., & Jaman, S. M. S. (2019). SMS Advertising and Its Relationship with Customer Purchase Intention of Value Added Services. *Global Journal of Management and Business Research*.

Xin-yang, H. L. Z. Y., & Yuan-rong, Z. C. F. T. (2009). Retrieval model for multi-customer churn: How to maximize generalized customer lifetime value under restriction of expense [J]. *Systems Engineering-Theory & Practice*, 2.

Appendices

A: Total Number of Users Switched to Other Operators

Operators	Joined	Left/Switched to Others
Grameen Phone	12,316	62,317
Robi	93,726	23,911
Banglalink	25,601	45,092
Teletalk	1978	2,301
Grand Total	**1,33,621**	**1,33,621**

Source: *The Daily Star (2019, February). 1,33,621 Mobile Users Switch Operators Using MNP.*

B: Model Summary

R-Sq.	R-Sq.(adj)	AIC
83.45%	76.42%	41.19

C: Goodness-of-Fit Tests

Test	DF	P-Value
Deviance	83	1.000
Pearson	83	1.000
Hosmer-Lemeshow	8	0.974