Consumer's Pattern and Behavior toward the Usage of Mobile Banking

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Abstract

The study aims to identify factors that influence mobile banking users toward the usage of mobile banking and to detect mobile banking user's groups having long term usage behavior. In order to achieve our goals we prepared a questionnaire to collect data. We considered judgmental sampling design for convenience and selected 90 samples from mobile banking users in areas of Bangladesh. Face to face interviews have been taken place to each selected respondents. We analyzed data consequently by statistical methodology factor analysis, regression analysis, one way analysis of variance and correspondence analysis. The study finds factors availability of service point, cost of service, security of service and social influence are significant and have positive influence on user's attitude toward mobile banking. The study also finds socioeconomic class and age of respondents as significant demographic factors. Illiterate, poor and younger age groups have extensive participation with the mobile financial service.

Keywords: mobile banking, significant factors, mobile banking user's pattern, Bangladesh

1. Introduction

With the combination of two most recent technological advancements internet and mobile phone, a new service (mobile data service) is thus enabled and the first such wireless internet commercial transaction is performed by the banking industry (Barnes and Corbitt, 2003). Banking through mobile phone has been common in developed countries for years. It is believed that mobile banking will provide another new channel for banking services, especially to people who are unable to open a bank account in both urban and rural areas. The aim of the service is to bring those people under the umbrella of banking service that is away from banking facilities. Through Mobile banking one can avail various services i.e.; utility bill payment, Fund transfer, shopping, cash withdrawn from selected ATM or Cash point and many more exciting facilities.

Like in many other countries, people in Bangladesh started believing in mobile banking, which was introduced on 15th May, 2011 by Dutch Bangla Bank Ltd (DBBL). BRAC Bank introduced the service on July 21. Mercantile Bank and Trust Bank are also introduced mobile banking

throughout the country with the help of the government union information centers. A total of 12 banks are in the race to introduce the service, while two are in the final lap of implementation. It was possible for approval from Bangladesh Bank and the telecommunication operators have also come forward to help the banks. There are around 160 million people in Bangladesh, of which only 13% have bank accounts whereas more than 95% are mobile phone user's (Islam, 2013). Banks can now offer the banking services to rural and unbanked population through mobile phone. If the banks can reach out to the unbanked people, the dream of more people having bank accounts can be fulfilled. Mobile banking is growing at a remarkable speed around the world. In the process it is creating considerable uncertainty about the appropriate regulatory response to this newly emerging service. Researchers set out a framework for considering the design of regulation of mobile banking. By unbundling payments services into its component parts, mobile banking provides important lessons for the design of financial regulation more generally in developed as well as developing economies (Klein and Mayer, 2011).

The impact of cultural differences between countries on the effectiveness and efficiency of IT deployment has been recognized as a research issue worthy of investigation (Srite and Karahanna, 2006).

Internet banking has great potential for banks to reduce costs (Frazer et al., 2007) and with the proliferation of mobile devices banks have an opportunity to develop cost effective service channels. Ahmed et al. (2012) said, all people know that its cost is not higher than traditional banking. Around 56% respondents say its cost is lower, 20% say same and 24% say it is affordable than traditional banking in Bangladesh. A positive aspect of mobile phones is that mobile networks can reach remote areas at low cost.

Mobile banking is making people's life easy and people don't have to go long way for financial transaction. According to Ahmed et al. (2012) Mobile banking is available anytime, anywhere throughout Bangladesh. So it can save one's time. But all people not think the same. About 70% respondents think that mobile banking can save their time, whereas 30% think it cannot save time. He also said mobile banking is convenient, affordable and it is much more effective in developing savings habits, it will make access to banking and advanced payment transactions at affordable cost. He also said 70% respondents think mobile banking is fully secured but about 30% respondents say it is not secured as they cannot fully trust on online banking than traditional banking system.

According to Schofield and Kubin (2002), the telecommunication's industry worldwide has scrambled to bring what is available to networked computers to mobile devices. The outsourcing of certain key activities to mobile operators deserves further attention, as mobile operators can, under specific circumstances, become deeply involved in mobile banking (Weber and Darbellay, 2010).

Dahlberg et al. (2008) said consumer perspective of mobile payments as well as technical security and trust are best covered by contemporary research. The impacts of social and

cultural factors on mobile payments, as well as comparisons between mobile and traditional payment services are entirely uninvestigated issues.

Mobile Banking is considered to be one of the most value added and important mobile service available. Arcrafs current research examined technological changes in mobile networks and innovative attributes of Mobile Internet. It has advanced the theoretical framework of innovation in service to develop a customer centric analysis of m banking value proposition. His article goes on to discuss critical factors in the diffusion of m Banking and explores reasons of failure and further prospects of success (Ayadi, 2005).

Since much of literature's are not found related to mobile banking in Bangladesh. In this regard, this paper attempts to alleviate the research gap. Thus on the basis of the above literatures the paper aims:

Objectives

To identify factors which have significant effect on user's attitude towards the usage of mobile banking in Bangladesh.

To detect long term mobile banking user's groups according to their demographic factors age, socioeconomic class and education level.

In section 3 we develop research hypotheses. Section 4 explains research methodology with describing questionnaire design, sampling design and statistical analysis. In section 5 we brie y discuss finding of the study based on collected data. Statistical analysis that require achieving our objectives. Section 6 we make discussion based on survey results. Finally, section 7 reviews all steps and concludes.

3. Development of the research hypotheses

On the basis of literatures discussed above and objectives of the study the following hypotheses have been developed:

3.1. Availability

$H_{1:0}$: Availability of service points don't have any effect on user's attitude toward usage of mobile banking.

$H_{1:1}$: Availability of service points have effect on user's attitude toward usage of mobile banking.

3.2. Cost

$H_{2:0}$: Cost of service doesn't has any effect on user's attitude toward the usage of mobile banking.

$H_{2:1}$: Cost of service has effect on user's attitude toward the usage of mobile banking.

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3.3. Convenience

$H_{3:0}$: Convenience of service doesn't has any effect on user's attitude toward the usage of mobile banking.

$H_{3:1}$: Convenience of service has effect on user's attitude toward the usage of mobile banking.
3.4. Security

$H_{4:0}$: Security of service doesn't has any effect on user's attitude toward the usage of mobile banking.
$H_{4:1}$: Security of service has effect on user's attitude toward the usage of mobile banking.

3.5. Retailer's Support

$H_{5:0}$: Retailer's support doesn't has any effect on user's attitude toward the usage of mobile banking.
$H_{5:1}$: Retailer's support has effect on user's attitude toward the usage of mobile banking.

3.6. Service Quality

$H_{6:0}$: Service Quality doesn't has any effect on user's attitude toward the usage of mobile banking.
$H_{6:1}$: Service Quality has effect on user's attitude toward the usage of mobile banking.
3.7. Social Influence

$H_{7:0}$: Social influence doesn't has any effect on user's attitude toward the usage of mobile banking.
$H_{7:1}$: Social influence has effect on user's attitude toward the usage of mobile banking.

3.8. Gender

$H_{8:0}$: No differences between the means of attitude on gender of mobile banking users.
$H_{8:1}$: Significant differences between the means of attitude on gender of mobile banking users.
3.9. Age Group

$H_{9:0}$: No differences between the means of attitude on age group of mobile banking users.

$H_{9:1}$: Significant differences between the means of attitude on age group of mobile banking users.
3.10. Education

$H_{10:0}$: No differences between the means of attitude on education level of mobile banking users.

$H_{10:1}$: Significant differences between the means of attitude on education level of mobile banking users.

3.11. Socioeconomic Class (SEC)

$H_{11:0}$: No differences between the means of attitude on socioeconomic class of mobile banking users.

$H_{11:1}$: Significant differences between the means of attitude on socioeconomic class of mobile banking users.

4. Research Methodology

4.1. Questionnaire Design

A self-administered, closed questionnaire used in the survey. The questionnaire was organized in three parts: the first part had respondents answer questions about their usage pattern of mobile banking, the second part dealt with their opinion and attitude regarding mobile banking, and the third part was made up of demographic questions. Subjects were promised confidentiality and anonymity and were required to indicate their agreement or disagreement with a set of statements using a five point's likert scale.

4.2. Sample Size and Sampling Design

The sampling has been conducted in three geographical areas Dhaka, Tongi and Narayongonj in Bangladesh. Our population of interest was individual's currently using mobile financial service. A sample of size 90 has been selected from the population of interest by using judgmental sampling design. As the part of quantitative research, face to face interview has been taken place for each sampled units.

4.3. Statistical Analysis

We conducted a number of statistical analyses in order to achieve our objectives. A very common question is whether it is legitimate to use likert scale data in parametric statistical procedures that require interval data, such as Linear Regression, ANOVA, and Factor Analysis (GRACE-MARTIN, 2014). The issue is that despite being made up of numbers, a likert scale item is in fact a set of ordered categories. According to Norman (2010) parametric statistics can be used with likert data, with small sample sizes, with unequal variances, and with non-normal distributions, with no fear of coming to the wrong conclusion". These findings are consistent with empirical literature dating back nearly 80 years. GRACE-MARTIN (2014) suggested that if we do choose to use likert data in a parametric procedure, make sure we have strong results before making claims. Use a more stringent alpha level, like .01 or even .005, instead of .05. If we have p-values of .001 or .45, it's pretty clear what the result is, even if parameter estimates are slightly biased". We considered tolerating maximum 1% of error in testing statistical hypothesis.

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4.3.1. Cronbach's Alpha: Reliability of Scales

To evaluate the reliability of hypothesized variable of interest we use Cronbach's Alpha. Cronbach's alpha is a numerical coefficient of reliability. Computation of alpha is based on the reliability of a test relative to other tests with same number of items, and measuring the same construct of interest (Hatcher, 1994). Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors. The higher the score, the more reliable the generated scale is. Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature.

4.3.2. Factor Analysis

To validate the variables of interest we conduct exploratory factor analysis with factor extraction method, principle component analysis (PCA). Factor analysis is a statistical method used to study the dimensionality of a set of variables. The observed variables are modeled as linear combinations of the potential factors, plus `error' terms. The information gained about the inter dependencies between observed variables can be used later to reduce the set of variables in a data set (Wikipedia, 2014b). Though factor analysis serves several related purposes we limit our thinking just on the validity of variables by examining proportion of variance extracted and factor loading.

4.3.3. Correlation Analysis

To identify significant predictors on user's attitude towards the usage of mobile banking service, we conduct correlation analysis to measure association. Correlation analysis a measure of association between two variables that indicates both the direction and degree to which they covary with one another from case to case, without implying that one is causing the other. This analysis is an indication of whether correlation between predictors and dependent variable is existed or not. If the analysis reveals correlation, a further analysis is required to determine cause and effect which can be done by regression analysis.

4.3.4. Multiple Regression Analysis

To model the single dependent variable and several predictors we use multiple linear regressions. Regression model for $i = n$ observations can be stated as:

$$AU_i = \beta_0 + 1\,ASP_i + 2CS_i + 3QS_i + 4SI_i + 5CS_i + 6SS_i + 7RS_i + \varepsilon_i$$

where

AU is the user's attitude toward the usage of mobile banking
ASP : Availability of service point

CS : Cost incurred during taking banking service

QS : Quality of service

SI : Social influence in taking or using mobile banking

CS : Convenience or accessibility of service

SS : Overall security of service

RS : Retailers support in order to take mobile banking service.

Ordinary least square regression is used to estimate parameters by minimizing error sum of square. Adjusted R^2 is used for assessing the goodness of t of the model. The value of adjusted R^2 lies from 0 to 1. The value of adjusted R^2 close to 1 is an indication of well fitted model.

4.3.5. Analysis of Variance (ANOVA)

A One-Way ANOVA is a statistical technique by which we can test if three or more means are equal. It tests if the value of a single variable differs significantly among three or more levels of a factor. We used analysis of variance to identify whether is statistically significant difference exist among user's attitude toward the usage of mobile banking service by demographic factors.

4.3.6. Correspondence Analysis

We were interested to identify respondents group according to their demographic factors having extensive partaking in mobile banking usage. In light to do this, we conducted correspondence analysis between demographic factors along with their age on mobile banking. Correspondence analysis is a statistical technique that provides a graphical representation of cross tabulations (which are also known as cross tabs or contingency tables).

5. Findings

The demographic pro le of respondents presented in table 1 indicates that 93% of respondents are male and 7% are females. 87% percent of all respondents are below the age of 35, 13% of respondents are between the ages 36 and 50. In terms of educational back-ground 13% of respondents are illiterate, 17% respondents have secondary level education while 47% have graduation level educational background or higher. With respect to socioeconomic class, about 63% of respondents are poor, rest of are middle class and rich group.

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Table 1: Demographic Profiles of Mobile Banking User's

Attributes	Categories	Percentage
Gender	Male	93%
	Female	6%
Age Group	21-25 years	53%
	26-30 years	27%
	31-35 years	7%
	36-40 years	7%
	41-45 years	3%
	46-50 years	3%
Education level	Illiterate	30%
	Primary	3%
	Secondary	17%
	Higher Secondary	13%
	Graduation or Higher	37%
Socioeconomic Class	Poor	63%
	Middle Class	14%
	Rich	23%

5.1. Reliability

Reliability of data is tested using the Cronbach's alpha. The results shown in 2 indicate that the data collected on likert scale from the survey are reliable and suitable for analysis of user's attitude towards the usage of mobile banking. According to [14] the value of Cronbach's alpha above the threshold 0.70 is acceptable. The inter-item consistency measured by Cronbach's alpha for variables are all above the threshold (0.70).

5.2. Validity

Convergent and discriminant validity are tests of construct validity (Crabbe et al., 2009). Convergent validity is established when the scores obtained by two different instruments measuring the same concept are highly correlated (Cavana et al., 2001). An exploratory factor analysis conducted table 2 using principal component analysis indicates that variance extracted and factor loadings are all within acceptable limits of validity. A recommended threshold of greater than 0.50 for the factor loading is regarded acceptable (Kline, 1998). An eigenvalue larger than one is used for the selection of factors. The factors selected explain 67% of the variance of the variables. The Kaiser-Meyer-Olkin measure of sampling adequacy indicates a

practical level of acceptance (KMO = .826) while the Bartletts test of sphericity checks that the items within the variables are correlated as p = 0.000 < 0.01 thus confirming convergent validity

Table 2: Reliability Test

Factors	Cronbach's alpha	Variance extracted	Factor loading
Likelihood to continue	.799	895	.900
Availability	.813	.837	.904
Cost	.848	.392	.568
Quality of Service	.868	.834	.911
Social Impact	.844	.605	.747
Convenience	.831	.619	.733
Security	.806	.781	.797
Retailer's Support	.869	.399	.625

Note: N = 90

5.3. Testing Significant Variables Influencing User's Attitude

An inter-item correlation analysis table 3 reveals positive correlation but significant relationships between user's likelihood of continuation of mobile banking and most of the predictors are significant at 1% level of significance. Availability of service point (r = 0.86) and security of service (r = 0.80) have strong positive correlation followed by moderate positive correlated variables, convenience of service (r = 0.70), social influence(r = 0.61), cost of service (r = 0.56), retailers support (r = 0.46) and then one weak positively correlated variable quality of service (r = 0.30).

Table 3: Results of correlation analysis for all variables

Factor	AU	ASP	CS	QS	SI	CS	SS	RS
AU	1.00							
ASP	0.86*	1.00						
CS	0.56*	0.44*	1.00					
QS	0.30*	0.18	0.13	1.00				
SI	0.61*	0.59*	0.30*	0.02	1.00			
CS	0.70*	0.71*	0.46*	0.16	0.35*	1.00		
SS	0.80*	0.71*	0.47*	0.34*	0.44*	0.66*	1.00	
RS	0.46*	0.50*	0.17	0.09	0.36*	0.24	0.50*	1.00

Note: *p = 0.01, N = 90

A step-wise regression analysis was conducted to assess the best predictors among the independent variables believed to impact on user's attitude towards the usage of mobile banking. The regression model take adjusted R^2 = 0.85 with standard error of the estimate 0.293. Adjusted R^2 = 0.85 represents the model explains 85% of total variation is an indication of goodness of t of the model.

Table 4: Coefficients of stepwise regression analysis

Factors	Estimate	Standard Error	t	P value
Constant	-.540	157	-3.441	.001*
Availability	.578	.096	6.094	.000*
Cost	.164	.053	3.076	.003*
Quality of Service	.136	.064	2.137	.036
Social Influence	.194	.069	2.796	.006*
Convenience	.046	.079	0.580	.564
Security	.238	.060	3.993	.000*
Retailer's Support	-.013	.036	-0.362	.718

Note: Level of significance = 0.01, N = 90

The table 4 shows regression coefficients along with their standard errors, t statistic and p values. At 1% level of significance, availability of service point (0.000 < 0.01), cost of service (0.003 < 0.01), Social influence (0.006 < 0.01) and security of service (0.000 < 0.01) are significant. Rest of variables are not significant as their p values are greater than 0.01. The results imply that for one unit change in each variables, availability of mobile financial service, cost of service, Social influence and security of service, user's likelihood of continuation of mobile banking will increase positively by 57.8%, 16.4%, 19.4% and 23.8% respectively.

5.4. Influences of Demographic Factors on User's Attitude

Analysis of Variance (ANOVA) is conducted to examine the effect of demographic factors such as gender, age, education and socioeconomic class on attitude. Of particular interest is to find

whether significant differences in attitude can be attributable to demographic groupings and to establish whether sample variances differ from each other.

Table 5: Analysis of variance for Detecting Influences of Demographic Factors

Factors	DF	Mean Square	F Statistic	P value
Gender	1	0.375	0.754	0.387
	89	0.497		
Age Group	10	2.915	23.48	0.000*
	53	0.124		
Education	4	1.540	3.440	0.012
	86	0.447		
Socioeconomic Class	2	3.288	7.593	0.001*
	88	0.433		

Note: Level of significance = 0.01, N = 90

Analysis of variance results for gender show that there is no significant differences of user's attitude (p = 0.387) towards the usage of mobile financial service. The results of ANOVA for mobile banking user's indicate significant differences in the average of attitude (p = 0.000) based on user's age group. Analysis of variance results also show that, there is no significant difference in the average of attitude (p = 0.012) on the education level of respondents. For socioeconomic class, there is a significant difference of attitude towards the usage of mobile banking service.

5.5. Biplots to Identify User's Group having Long Term Usage Behavior

We constructed biplot between respondent's age on mobile banking with demographic factors gender, age group, socioeconomic class and education through correspondence analysis.
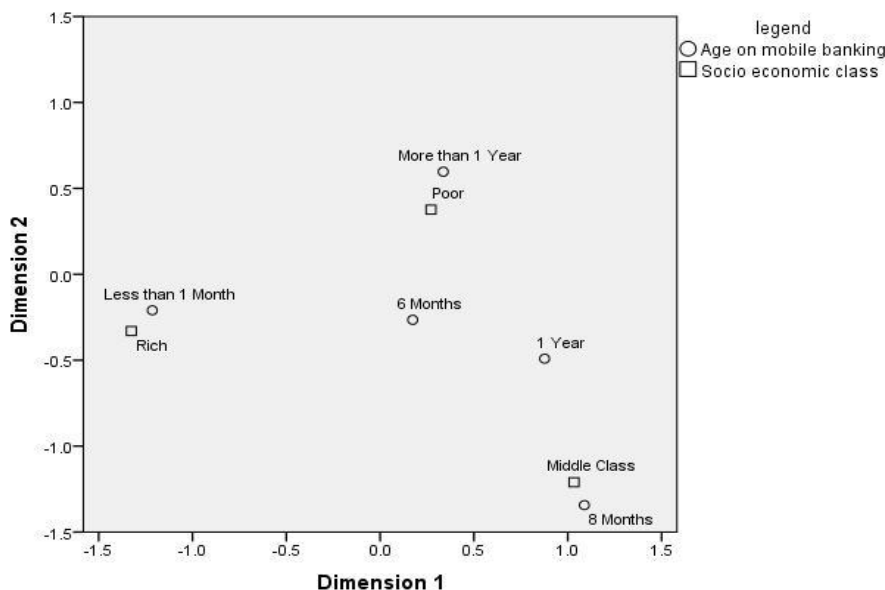

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Figure 1: Association between the categories of socioeconomic class and their age on mobile banking
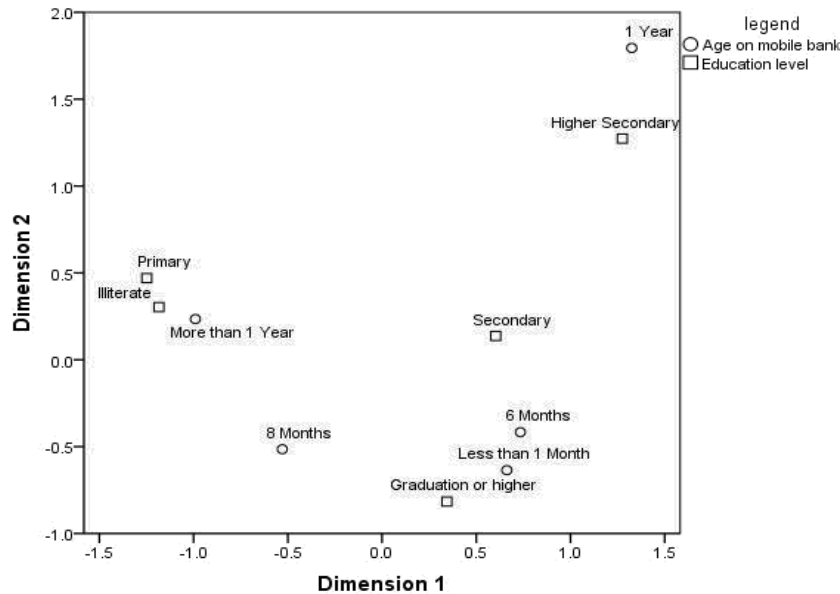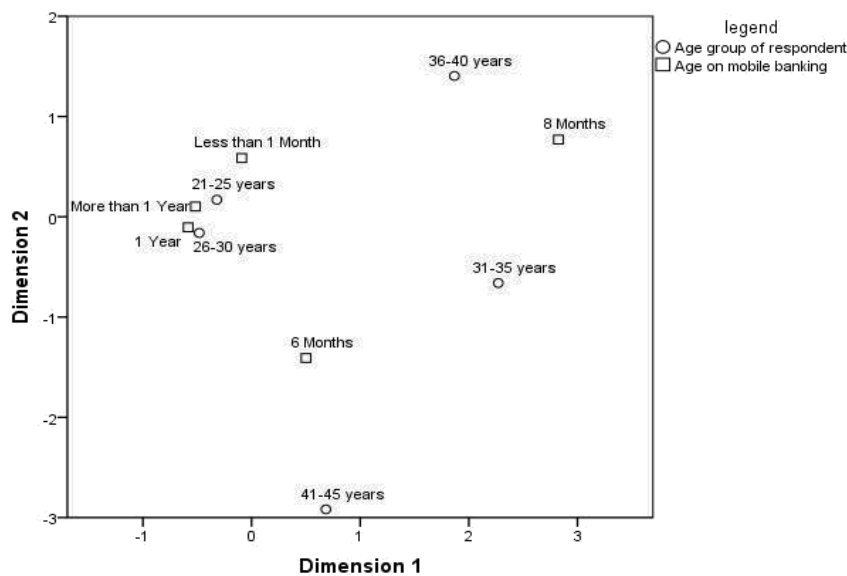

Figure 2: Association between the education level of respondents and their age on mobile banking

Figure 2 shows association between the categories of age of respondents and their age in mobile banking. The biplot represents association among illiterate respondents with usage of mobile banking more than 1 year. As literate people usually unable to take traditional banking service, taking mobile financial service for money transactions.

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Figure 3: Association between age group of respondents and their age on mobile banking

Figure 3 shows association between the categories of age group and age on mobile banking of respondents. Respondents between ages group (21 - 25) and (26 - 30) have association with age on mobile banking more than 1 year and 1 year respectively. That is, younger generation are taking mobile financial service for a longer period of time.

6. Discussion

The findings of our study identify factors having significant contribution on the attitude of user's toward usage of mobile banking. Availability of service points has the greatest influence on usage of mobile banking. Nowadays consumers often prefer next-door mobile banking service points as traditional banks remain far away from their location.

Security and cost of service have positive impact on the attitude. They are taking mobile banking service as they make secured financial transaction with low cost. Social influence also has influence on attitude towards usage. At often consumers get started to take mobile banking service because there family members or friends are using mobile banking service. Demographic factors age and socioeconomic class group of populations are found significantly different according to the attitude.

Though mobile banking has been introduced at the earlier of the decades in Bangladesh, but all socioeconomic class of people have not much association in mobile banking. Poor peoples have been tanking service longer period of time. Middle class and rich socioeconomic class groups are now getting enrolled in mobile banking. Illiterate peoples are most common consumers of mobile banking as they have been taking banking service higher period of time. Educated and somewhat educated peoples have been using mobile banking shorter period of time. Individuals of age group (21 – 25) are long term users of mobile banking, subsequently age group (26 - 30) also have great participation.

7. Conclusion

The study identified significant factors availability of service points, cost of service, social influence and security of service having positive influence on attitude toward the usage of mobile banking. Demographic factors age and socioeconomic class of user's are also found to impact significantly on attitude. Though poor, illiterate and age group (21-30) of people have been using mobile banking long period of time but middle, rich socioeconomic class and educated peoples are getting involved now a days. More studies in developing countries may provide us knowledge how different factors influencing user attitude towards the usage of mobile is banking service.

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