MOBILE FINANCIAL SERVICES AS RETAIL FINTECH INTERVENTION: WHAT DETERMINES THE GENDERED AND LOCATIONAL DIFFERENCES IN USER SATISFACTION?

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Abstract

Mobile financial services (MFS) platforms are considered the most retail, effective, and cost-efficient fintech intervention across the world. This paper explores the determinants of user satisfaction and whether the effects of the determinants are different across gender and location by using survey data on 1,040 personal mobile financial services (MFS) users in Bangladesh. A range of variables grouped in four dimensions– user demography, MFS type and characteristics, technology availability and friendliness, and location- are considered as potential factors. The overall findings suggest that users of older age, belonging from the male gender, and having tertiary level qualification were likely to be less satisfied, compared to others with the same MFS products and services offering, regardless of variations in occupation. The findings also confirm that there are gendered and locational differences in user satisfaction and that the level of satisfaction in using the same MFS product and service offerings is likely to be different due to the differentiated effects of different demographic, MFS-specific, technology, and locational factors. The insights from this paper offer several implications for MFS providers and policy-makers to foster financial inclusion and ensure access to financial services for all.

Keywords : *Financial Technology, Fintech, Mobile Financial Services, MFS, Access to Finance*

JEL Classification : *D14, O14, O16*

1. INTRODUCTION

Financial technology (fintech) is revolutionizing the traditional financial services models, as it allows financial services providers to reach out to the masses at a fingertip. Among all the innovations fintech brings about, mobile financial services (MFS) are perhaps the most retail-centric intervention that has already allowed millions to be financially included and access financial services at a minimal cost. MFS refers to any financial transactions or services that are carried out using a mobile device, such as a smartphone. The growth of MFS has been significant in recent years, especially in developing countries where traditional banking services may not be accessible or affordable for many people. Globally, the adoption of MFS has been steadily increasing,

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with more and more people using their mobile devices for financial transactions. According to the Global System for Mobile Communications Association (GSMA, 2022), there were over 1.2 billion registered mobile money accounts globally, as of December 2021. This represents a significant increase from the 1 billion registered accounts reported in 2020. The value of transactions conducted through mobile money also increased, reaching over $3.6 trillion in 2021 (GSMA, 2022).

In Bangladesh, the adoption of MFS has been particularly notable. The country has seen a significant increase in the use of mobile financial services over the past decade, with millions of people using their mobile phones to access financial services that were previously unavailable to them. According to a report by the Bangladesh Bank, the country's central bank, the number of registered mobile money accounts in Bangladesh reached 111.5 million in December 2021, up from 99.2 million in December 2020 (Rahman, 2023). The value of transactions conducted through mobile money also increased, reaching over $93 billion in 2021 (Rahman, 2023).

The growth of MFS in Bangladesh has been driven by many factors, including the high level of mobile phone penetration in the country, the widespread availability of 3G and 4G networks, and the efforts of the government and private sector to promote financial inclusion. Mobile financial services have also become an important tool for promoting financial literacy and empowering women, who have traditionally been excluded from the formal financial sector. Overall, the adoption of mobile financial services is expected to continue to grow in the coming years, both globally and in Bangladesh.

MFS platforms have become increasingly popular in Bangladesh over the past decade, with millions of people using their mobile phones to access financial services that were previously unavailable to them. One important measure of the success of these services is user satisfaction. Several companies offer MFS in Bangladesh, including bKash, Rocket, and Nagad. These companies provide a range of services, including money transfers, bill payments, and mobile top-ups. To gauge user satisfaction, these companies often conduct surveys and collect feedback from their customers. Overall, user satisfaction with mobile financial services in Bangladesh seems quite high because of the convenience they offer. Traditional banking services in Bangladesh can be time-consuming and difficult to access, especially for those living in rural areas. MFS, on the other hand, can be accessed from anywhere with a mobile phone signal, making it easier for people to manage their finances. Another factor contributing to user satisfaction is the level of security provided by mobile financial services. Many users reported feeling that their money was safer in their mobile accounts than it would be if they were carrying cash. Mobile financial services also offer features like PIN codes and biometric authentication to ensure that only authorized users can access the accounts. As mobile technology continues to improve, even more people in Bangladesh will likely turn to mobile financial services for their banking needs.

Several scholarly works have been done to identify the determinants of the level of MFS user satisfaction, as it is paramount that people across the board find them useful to promote financial inclusion. For example, Jahan and Shahria (2021) found

that convenience, reliability, security, ease of use, and positive attitude were the most important factors affecting user satisfaction. Islam, Hasan, and Tareque (2020) revealed that service quality and perceived value were positively associated with user satisfaction. Ahmed, Uddin, and Khanam (2020) found trust as another factor that positively affects user satisfaction. Ahmed, Uddin, and Hassan (2022) identified several demographic factors, such as age, gender, education level, and income, as having a significant influence on the level of MFS user satisfaction as age, education level, and income had a significant impact on user satisfaction. The study of user satisfaction and its determinants has gained significant attention across the world and is critical for Bangladesh. It is because the country's goal of financial inclusion through such retail fintech interventions and MFS providers' goal to tap new market opportunities cannot be achieved if people from all spheres of life do not adopt and find it useful, comfortable, effective, and efficient.

However, none of the existing studies have explored whether or how satisfaction with MFS varies across gender and location in the context of Bangladesh. Evaluating from the gender lens is critical since Bangladesh Bank data shows that the majority of MFS users have consistently appeared to be women in Bangladesh over the last decade. As such, several studies suggest that the emergence of MFS has widened the access to and availability of finance for women and thus, significantly enhanced women empowerment in Bangladesh (Ghosh & Bhattacharya, 2019). Furthermore, digital financial inclusion through MFS significantly expands and enhances gender equality, i.e., the role and participation of women in social, economic, and cultural aspects of society (Hossain & Samad, 2021; Tiwari, Schaub, & Sultana, 2019). Improved digital financial inclusion of women is a significant driver of overall socio-economic welfare and development of Bangladesh (Siddik, 2017; Aziz, Sheikh, & Shah, 2022). Thus, it is critical that MFS platforms or providers remain pertinent to women's needs and preferences; otherwise, the platforms could lose their ability to significantly contribute to the country's development and at the same time, the progress and development of gender equality and women empowerment could be undermined. That considered, it is important to examine the determinants of MFS user satisfaction across genders, to particularly understand what influences female users' satisfaction level. Another important dimension of such satisfaction differences is location since MFS users of one location are likely to not be satisfied to the same level or degree as in another location. It is due to the differences in socio-economic demographics (e.g., education) of users across different locations (e.g., more or less developed regions) in the country. Particularly, users from more developed regions within Bangladesh (e.g., the capital city Dhaka) may have needs, preferences, and demographic characteristics that define their satisfaction level differently for the same features presented by an MFS platform compared to those located in a relatively lesser developed region (e.g., a regional city Barisal). Such differences could be useful in offering location-specific digital financial products and services by MFS providers and meet the needs and preferences of MFS users more effectively across the country.

Considering the research gap in the existing literature, this paper aims to explore the determinants of user satisfaction and whether the effects of the determinants are different across gender and location. The paper offers significant differentiation and several unique contributions to the literature in at least two ways. First, the existing literature lacks comprehensiveness in terms of considering the potential factors from all possible dimensions, as they focused on either perceived or demographic factors separately. This paper considers potential determinants from four broad dimensions– (i) user demography, (ii) MFS characteristics and user perception about them, (iii) technology availability and friendliness to users, and (iv) usual location of users. The expanded coverage of determinants not only allows us to explore the effects of a diverse range of factors including those that were not considered before (e.g., technology availability and friendliness) but also produces more robust evidence on the variables that were previously examined. Second, to the best of the author's knowledge, this paper is the first to explore separately the gendered and locational differences in the influence of the determinants. The paper's findings offer important implications for both MFS providers and policy-makers in accelerating the adoption of MFS across gender and location. Overall, the findings are expected to provide insights that could be useful in advancing gender equality, women empowerment, and locational equality of access to financial services through digital means.

2. LITERATURE REVIEW

As a convenient means for users to access financial services like payments, transfers, and savings via their mobile phones, MFS platforms have grown in popularity across the world. To determine the factors affecting customer satisfaction when using mobile financial services, numerous studies have been carried out. This review provides a comprehensive overview of the key factors that influence customer satisfaction in this domain.

The SERVQUAL model is a popular paradigm for evaluating service quality in several industries, including the market for mobile financial services. Reliability, responsiveness, assurance, empathy, and tangibles are its five dimensions. In various research about the mobile financial services business, these dimensions have been found to affect consumer satisfaction (Khan, Lima, & Mahmud, 2020). Another important feature that might influence customer satisfaction is the ease of use of a mobile banking service. Ease of use was found to be a strong indicator of customer satisfaction with bKash in a study by Huda, Islam, and Ali (2019). Perceived simplicity of use, perceived usefulness, and trust were also found to be significant determinants of consumer satisfaction with bKash services in a study by Akter and Sadiq (2018). A study by Ahmed et al. (2022) identified six factors that significantly increased customer satisfaction with bKash services: perceived usefulness, perceived ease of use, service quality, perceived security, trust, and customer support. Another crucial element that influences customer satisfaction with bKash services is service quality. According to a study by Hossain and Rahman (2019), customer satisfaction is significantly positively impacted by service quality factors like dependability,

responsiveness, assurance, and empathy. Some significant elements that affect customer satisfaction with bKash services include price and promotion. A study by Hasan and Islam (2017) found that price and promotion have a significant positive impact on customer satisfaction. According to a study by Mahmud and Islam (2019), transaction costs were found to be negatively related to the customer satisfaction with bKash. Users who perceived the transaction costs to be high reported lower satisfaction levels. This finding is supported by other studies (e.g., Huda et al., 2019), indicating that transaction costs can influence customer satisfaction with bKash.

Rahman, Islam, and Kabir (2020) investigated the factors influencing customer satisfaction with Nagad. The study discovered that customer satisfaction is significantly impacted by service quality, security, and convenience. Another study by Hassan, Hoque, and Haque (2020) identified convenience, security, trust, perceived value, and perceived risk as the most important factors influencing customer satisfaction with Nagad. Furthermore, a study by Hossain et al. (2021) discovered that perceived utility, perceived simplicity of use, and service quality greatly influence customer satisfaction with Nagad. Moreover, the study by Islam et al. (2020) found that perceived usefulness, ease of use, and trust are the most important factors affecting customer satisfaction with Nagad. It also discovered that service quality and perceived value have a significant indirect effect on customer satisfaction through perceived usefulness, ease of use, and trust. According to Parasuraman, Zeithaml, and Berry (1988), service quality is the gap between customer expectations and perceptions of the service provided. A study by Fakir, Islam, and Yeasmin (2019) identified that service quality has a significant impact on customer satisfaction with Rocket. Customers need to trust the MFS provider to safeguard their money and personal information. A research work done by Al Mamun, Alam, and Islam (2020) found that trust has a significant positive effect on customer satisfaction with Rocket. A positive brand image can enhance customer satisfaction and loyalty, as per the study of Alam, Rahman, and Rahman (2019) on Rocket.

Hossain and Rahman (2019) explored the factors that influence user satisfaction with mobile financial services in Bangladesh. The study found that convenience, reliability, security, and ease of use are the most important factors affecting user satisfaction. In addition, the study found that users who have more positive attitudes toward mobile financial services are more likely to be satisfied with their experience. Islam et al. (2020) investigated the relationship between service quality, perceived value, and user satisfaction with mobile financial services in Bangladesh. The study found that service quality and perceived value are positively associated with user satisfaction. Specifically, users who perceive the services to be of high quality and good value for money are more likely to be satisfied with their experience. Ahmed et al. (2020) examined the impact of trust on user satisfaction with mobile financial services in Bangladesh and identified that trust has a significant positive effect on user satisfaction. Users who trust the mobile financial service provider are more likely to be satisfied with the services they received. Ahmed et al. (2022) investigated the impact of demographic factors on user satisfaction with mobile financial services in Bangladesh. The study found that

factors such as age, education level, and income have a significant impact on user satisfaction. For example, younger users and those with higher levels of education are more likely to be satisfied with mobile financial services.

Many studies have found that customers are more likely to use and remain loyal to MFS platforms that are easy to use, have user-friendly interfaces, and require minimal steps to complete transactions. The study by Hasan and Islam (2019) found that ease of use has a significant impact on customer satisfaction with MFS in Bangladesh. Another critical factor that influences customer satisfaction with MFS is the security and reliability of the service. Customers expect their transactions to be secure and protected from unauthorized access, fraud, and other security threats. A study by Woldu, Tadesse, and Fanta (2017) revealed that the security of MFS platforms is the most critical determinant of customer satisfaction in Ethiopia.

Several other factors have been evaluated by studies on some other countries similar to Bangladesh. For example, Nguyen and Nguyen (2019) found that transaction fees and charges significantly influence customer satisfaction with MFS in Vietnam. Speed and efficiency of transactions are also critical factors that affect the customer satisfaction. Customers expect transactions to be completed quickly and efficiently, without delays or interruptions. The study by Deng et al. (2019) found that transaction speed and efficiency were essential determinants of customer satisfaction with MFS in China. Customers expect high-quality customer service and support that is responsive, helpful, and able to resolve their issues promptly. The study by Sabir et al. (2020) found that customer service quality significantly influences customer satisfaction with MFS in Pakistan. Service quality is another factor that affects customer satisfaction with MFS. Customers are more likely to be satisfied with MFS when they perceive the service quality to be high (Alalwan et al., 2018; Roy, Saha, & Kar, 2020). Roy et al. (2020) identified that service quality has a significant positive impact on customer satisfaction with mobile money services in Bangladesh. Alalwan et al. (2018) found that service quality has a significant impact on customer satisfaction with mobile banking services in Jordan.

Given the existing literature and research gap, the paper considers a broad set of factors across four key dimensions and evaluates their effects on MFS user satisfaction in Bangladesh. Furthermore, the paper explores the effects of the factors across genders and locations of users.

3. METHODOLOGY

3.1 Variables

Based on the literature, the paper considers a range of variables to evaluate their effects on MFS user satisfaction. Table 1 reports the list of variables. An in-person semi-structured questionnaire survey has been administered from July to October 2022. The overall satisfaction level of using an MFS is measured by a score from 1 to 10; self-reported by the survey respondents. Based on the literature and conceptual relevance, a range of independent variables have been considered that capture four

broad factors about MFS users– demography, location, characteristics of the MFS used, and availability and friendliness of technology.

Table 1 : Variables, Data Type, and Measures

Variable	Type	Measures
Dependent variable		
Perceived overall satisfaction level (POS)	Continuous	An assigned score between 1 and 10 to reflect the level of satisfaction, where 1 for least satisfied and 10 for most satisfied
Demography		
Age (AGE)	Ordered categorical	<15=0; 15-19=1; 20-24=2; 25-29=4; 30-34=5; >35=5
Gender (GEN)	Categorical	1=Female, 2=Male
Education level (EDU) [level of educational qualification]	Categorical	No education=1; below SSC=2; SSC = 3; HSC = 4; Bachelor = 5, Postgraduate = 6
Occupation (OCU) (main occupation)	Categorical	Business=1; Housewife=2; Service=3; Student=4, Unemployed=5
MFS type and characteristics		
MFS type (MFS) (MFS platform used mostly and mainly)	Categorical	1=Nagad, 2=bKash, 3=Upay, 4=Rocket
User experience [measured in five dimensions – ease of use (EOU), degree of customer control (CON), security (SEC), efficiency (EFF), and customer service quality (SEQ)]	Ordered categorical for each dimension	Each dimension is measured by a 5-point Likert scale: Very good=5, Good=4, Moderate=3, Poor=2, Very poor=1
Technology availability and friendliness		
Mobile phone type (MPT) [type of mobile phone ownership]	Categorical	Featurephone=1, Smartphone= 2
Uninterrupted internet connectivity (UIC) [round the day internet connectivity in mobile phone]	Categorical	No = 1, Yes =2

Confidence in technology use (CIT) [self-confidence about the ability to use technology appropriately]	Categorical	Not confident=1, Somewhat confident=2, Highly confident=3
Location		
The main location of the user (LOC) [Division where a user usually lives]	Categorical	Barisal=1, Chittagong=2, Dhaka=3, Khulna=4, Rajshahi=5, Sylhet=6

Source: Author developed based on survey data

3.2 Sampling and Data

Following Cochran's (1977) and Yamane's (1967, p. 886) formulas applicable to large populations, the optimal sample size is determined using the following equations. The number of samples is determined based on the reference table for optimal sample size (Israel, 2003); developed using the two formulas reported in Table 2.

Table 2 : Sample Size Determination

Formula	Equation No. and Source	Minimum Number of Samples
$n_0 = \frac{Z^2pq}{e^2}$	---------- (1) Cohcran (1977)	400
$n = \frac{N}{1 + N(e)^2}$	---------- (2) Yamane (1967, p. 886)	400

Note: Assuming a 95% significance level; considering a population of over 180 million users according to Bangladesh Bank data on total MFS users in the country

Given the time and budget considerations, a total of 1,400 MFS users were reached across six divisions of the country– Dhaka, Chittagong, Rajshahi, Khulna, Barisal, and Sylhet- with over three times larger than the acceptable sample size specified in Table 2. The sampling frame is set limited to the users who are relatively younger or close to middle age since these groups of people are likely to be more accustomed to, motivated, and familiar with using and leveraging any new technological innovations. Convenience sampling is followed to reach the target group of respondents both online and in-person. The survey was administered with the highest efforts to ensure diversity among the respondents, such as, by age, location, gender, and occupation, to capture the true influence of respondents' characteristics on their satisfaction. Out of the 1,400 responses received, a total of 1,040 responses are considered as final to carry out this research, which is well above the minimum required sample size mentioned before. A total of 360 responses were discarded considering several criteria: relative completeness of all and necessary fields of the questionnaire,

consistency of the responses throughout all the questions asked, and any biases or errors (e.g., outliers, moral hazard) identified in the responses. Table 1 reports the key variables for which survey data were collected for analysis, which include numerical, categorical, and ordered categorical data.

3.3 Model and Method Specification

Using the cross-section data collected from the questionnaire survey, the following generic econometric model can be specified for estimation:

$$y_i = \boldsymbol{\alpha_i} + \boldsymbol{X_i\beta} + \varepsilon_i,$$
$$for\ i = 1, 2, \ldots\ldots, N \qquad (3)$$

Where, i (i = 1, 2,……, N) indicates individual respondent;

$\boldsymbol{y_i}$ is the vector of the dependent variable (perceived overall satisfaction level)

$\boldsymbol{X_i}$ is a vector of the independent variables (as specified in Table 1)

$\boldsymbol{\beta}$ is a vector of the unknown parameters to be estimated

ε is the random disturbance term

Since the dependent variable, Perceived Overall Satisfaction is continuous in nature, linear cross-sectional regression is estimated to produce the effects of the independent variables in consideration. In line with the objectives of the paper, estimations of the model are carried out in three stages: (i) Overall by pooling all data available, (ii) by gender- male and female, and (iii) by location- Dhaka and Other than Dhaka (OTD). While all variables are included in the model for estimation (i), for (ii) and (iii), the models exclude gender and location variables, respectively.

3.4 Diagnostic Checks and Data Summary

Cross-section models are typically prone to three major econometric biases– heteroskedasticity, multicollinearity, and endogeneity. Table 2 reports the diagnostic tests conducted to confirm the existence of the biases. Test results suggest no evidence of significant multicollinearity and endogeneity across all models. As additional evidence of no multicollinearity concern, Table 3 reports the pairwise correlation matrix which shows none of the correlation coefficients is statistically significant. However, all models except the 'Other than Dhaka' evidence a significant level of heteroskedasticity. To deal with the possible misspecifications arising from heteroskedasticity, repressions for all models are estimated with robust standard errors. Table 4 reports the summary statistics of the data, which shows most of the data are categorical with the dependent variable ranging from 0 to 10. On average, respondents express a relatively higher level of satisfaction about the use of MFS platforms as reflected by the mean POS score of 8.28.

Table 2 : Diagnostic Checks

Diagnostic Checks	Reported Statistic	All Data (Overall)	By Gender		By Location	
			Male	*Female*	*Dhaka*	*OTD Dhaka*
Heteroskedasticity [Breusch-Pagan / Cook-Weisberg test]	chi2	35.23***	7.33***	89.28***	14.37***	2.49
Multicollinearity [VIF test]	Mean VIF	2.76	3.44	3.93	1.78	3.65
Endogeneity [Durbin–Wu–Hausman test]	F	3.19	8.24	7.19	6.83	5.77

Source: Author's calculation

Note: Significance level: 1%=***, 5%=**, and 10%=*

Table 3 : Pairwise Correlation Matrix

	POS	AGE	GEN	OCU	EDU	EOU	CON	SEC	EFF	SEQ	MFS	MPT	UIC	CIT	LOC
POS	1.00														
AGE	0.24	1.00													
GEN	-0.13	0.08	1.00												
OCU	-0.16	-0.50	0.08	1.00											
EDU	0.09	0.09	-0.05	0.06	1.00										
EOU	-0.03	-0.14	-0.05	0.14	0.07	1.00									
CON	0.18	-0.01	0.01	0.00	0.04	0.17	1.00								
SEC	0.05	0.06	-0.03	0.18	0.06	0.23	0.14	1.00							
EFF	0.01	0.07	0.02	0.08	-0.04	0.23	0.18	0.56	1.00						
SEQ	0.06	0.05	0.03	0.00	0.05	0.04	0.01	0.08	0.20	1.00					
MFS	0.04	0.12	-0.05	-0.03	0.11	0.02	0.00	-0.06	0.00	0.04	1.00				
MPT	-0.14	0.00	0.03	-0.01	-0.15	0.10	0.01	0.00	0.01	0.06	-0.05	1.00			
UIC	0.10	0.04	0.00	0.00	-0.04	-0.13	0.07	0.00	-0.03	0.06	-0.02	-0.06	1.00		
CIT	0.00	-0.08	-0.07	0.07	0.05	-0.01	0.04	-0.09	-0.09	-0.06	-0.03	-0.06	-0.06	1.00	
LOC	-0.06	-0.09	-0.04	0.02	0.11	0.14	-0.11	0.06	0.03	0.04	-0.02	0.07	-0.04	-0.13	1.00

Note: Significance level: 1%=***, 5%=**, and 10%=*

Table 4 : Data Summary

Variable	Mean	Std. Dev.	Min	Max
Perceived overall satisfaction level (POS)	8.28	1.55	0	10
Age (AGE)				
<=14	0.00	0.07	0	1
15-19	0.07	0.26	0	1
20-24	0.17	0.37	0	1
25-29	0.43	0.50	0	1
30-34	0.28	0.45	0	1
>=35	0.05	0.21	0	1
Gender (GEN)				
Female	0.56	0.50	0	1
Male	0.44	0.50	0	1
Occupation (OCU)				
Business	0.06	0.24	0	1
Housewife	0.09	0.28	0	1
Unemployed	0.01	0.12	0	1
Service	0.60	0.49	0	1
Student	0.24	0.43	0	1
Education level (EDU)				
Postgraduate	0.22	0.42	0	1
Bachelor	0.63	0.48	0	1
HSC	0.09	0.28	0	1
SSC	0.01	0.12	0	1
Below SSC	0.04	0.20	0	1
Illiterate	0.00	0.07	0	1
User experience				
Ease of use (EOU)	1.91	1.29	1	4
Customer control (CON)	2.76	1.45	1	5
Security (SEC)	2.45	1.35	1	5
Efficiency (EFF)	2.32	1.21	1	5
Service quality (SEQ)	2.24	0.99	1	5
MFS type (MFS)				
Nagad	0.10	0.29	0	1
bKash	0.01	0.12	0	1

Variable	Mean	Std. Dev.	Min	Max
Rocket	0.00	0.07	0	1
Upay	0.89	0.32	0	1
Mobile phone type (MPT)				
Feature phone	0.09	0.28	0	1
Smartphone	0.91	0.28	0	1
Uninterrupted internet connectivity (UIC)				
No	0.01	0.12	0	1
Mostly yes	0.18	0.38	0	1
Yes	0.81	0.39	0	1
Confidence in technology use (CIT)				
Not confident	0.18	0.38	0	1
Somewhat confident	0.30	0.46	0	1
Highly confident	0.52	0.50	0	1
Usual location (LOC)				
Barisal	0.01	0.12	0	1
Chittagong	0.13	0.34	0	1
Dhaka	0.78	0.41	0	1
Khulna	0.03	0.18	0	1
Rajshahi	0.03	0.17	0	1
Sylhet	0.01	0.10	0	1

Source: Author's calculation

4. ANALYSIS AND DISCUSSION

4.1 Descriptive Analysis of Key Variables

Figure 1 shows the distribution of the sample respondents by gender and usual location of living. As can be seen, over 56% of the users are female while 44% are male in the sample, which closely represents the national distribution of MFS users by gender, as reported by Bangladesh Bank, as of January 2023. The survey covered about 78% of respondents based in Dhaka, followed by 13.3% from Chittagong, 3.3% from Khulna, and the rest from the other three regions. Figure 2 reports the mean score value of the perceived level of satisfaction of the users by gender and location. The figure suggests a higher level of satisfaction of female users compared to males, which conforms to the earlier studies (e.g., Ahmed et al., 2022). Users based in Dhaka report the lowest level of satisfaction compared to those based in other divisions, while users based in Chittagong report the highest level of satisfaction. The locational comparison highlights that users based in the capital city are relatively less satisfied with their MFS use compared to any other divisions in Bangladesh.

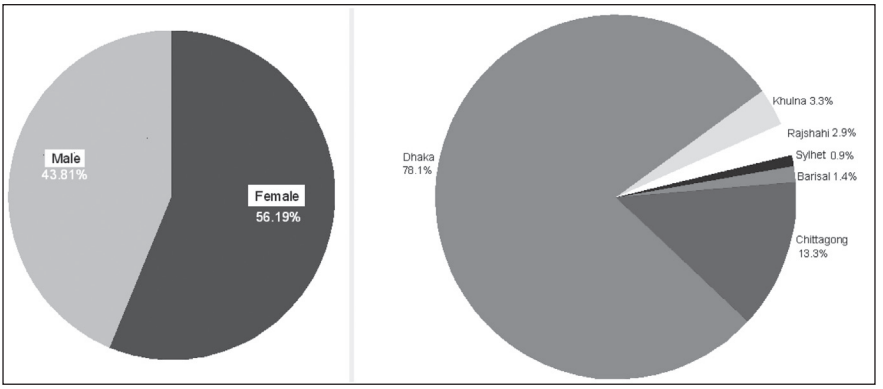

Figure 1 : Distribution of Users by Gender and Location

Source: Author's calculation based on survey data

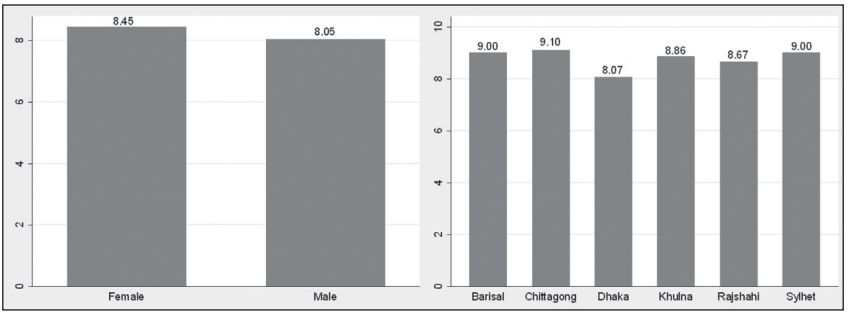

Figure 2 : Average Score of Perceived Satisfaction by Gender and Location (out of 10)

Source: Author's calculation based on survey data

4.2 Regression Results

Table 5 reports the results for overall (whole sample), gender-wise, and location-wise estimations. Results for overall regression are discussed first, followed by across genders and locations.

4.2.1 Discussion on Overall (whole sample) Regression Results

Considering the overall (whole sample) regression estimates for demographic factors, age shows a significant and negative effect on the perceived satisfaction of MFS users, which suggests that older people in general are likely to be less satisfied compared to younger ones. This could be due to the natural resistance and hesitance of the older population in adopting advanced technology tools and innovations (Anderson & Perrin, 2017; Mitzner et al., 2019). The significant and negative effect of the 'Gender' variable on perceived satisfaction suggests that male users are likely to be less satisfied compared to female users, which is consistent with the descriptive analysis reported before and the earlier studies (e.g., Ahmed et al., 2022). Considering the effect of education level, users with a relatively lower level of education (particularly, secondary or higher-secondary) are likely to be more

satisfied compared to those with a higher level of education. This could be because less-educated users in general are likely to find a minimal technology newness highly charming and interesting. As MFS increasingly offers innovative digital financial products and services, highly-educated users, such as those completing tertiary education, are more informed and are less likely to be equally satisfied with the same level of technology newness. However, people with no education at all are likely to be more dissatisfied with innovative digital financial products and services that they are exposed to (as the estimates for Illiterate in Table 5 suggest), simply because they do not understand the technology well or they fear losing their hard-earned money while using them (Riddell & Song, 2017). Estimates suggest no significant effect of any specific occupation on user satisfaction.

Table 5 : Regression Results

Variable	**Overall**	**Gender**		**Location**	
		Male	*Female*	*Dhaka*	*Other than Dhaka*
Age	-0.321*** (0.216)	-0.057*** (0.255)	0.135 (0.227)	0.106 (0.203)	-0.052** (0.111)
Gender – Male (base – female)	-0.107** (0.165)	-	-	-0.349** (0.264)	-0.166 (0.177)
Education level (base – Bachelor)					
Postgraduate (Master)	-0.093 (0.228)	-0.341 (0.416)	0.290 (0.245)	-0.032 (0.293)	-0.105 (0.133)
HSC	0.771** (0.345)	0.462 (0.407)	1.217** (0.614)	0.846** (0.425)	0.465 (0.307)
SSC	1.692*** (0.500)	-	1.742** (0.718)	1.517*** (0.529)	-0.224 (0.622)
Below SSC	0.164 (0.424)	0.789 (0.551)	-0.325 (0.632)	0.155 (0.439)	0.239 (0.336)
Illiterate	-7.122*** (0.478)	-7.364*** (0.631)	-	-6.966*** (0.606)	-
Occupation (base: Business)					
Housewife	-0.505 (0.481)	-	0.151 (0.388)	-0.660 (0.607)	-0.672* (0.368)
Service	-0.217 (0.410)	0.128 (0.704)	0.235 (0.195)	-0.268 (0.519)	-0.362 (0.273)
Student	-0.792 (0.571)	-0.649 (0.868)	-0.327 (0.805)	-0.989 (0.709)	0.248 (0.369)
Unemployed	0.279 (0.499)	0.0915 (0.697)	-0.654 (0.597)	0.567 (0.563)	-0.409 (0.431)

User experience					
Ease of use	-0.034 (0.066)	-0.015 (0.126)	-0.078 (0.095)	-0.077 (0.081)	0.071* (0.041)
Customer control	0.198*** (0.063)	0.325*** (0.098)	0.142 (0.093)	0.214*** (0.073)	-0.045 (0.048)
Security	0.053 (0.071)	0.040 (0.099)	0.115 (0.123)	0.093 (0.082)	0.001 (0.051)
Efficiency	-0.068 (0.073)	-0.111 (0.129)	-0.017 (0.123)	-0.070 (0.088)	-0.059 (0.088)
Service quality	0.152 (0.096)	-0.063 (0.138)	0.343** (0.172)	0.152 (0.135)	-0.007 (0.064)
MFS type (base: Nagad)					
Rocket	0.407 (0.757)	0.319 (0.602)	-	1.812*** (0.516)	0.335 (0.262)
Upay	1.084** (0.529)	0.752 (0.574)	-	1.272** (0.584)	-
bKash	-0.029 (0.417)	-0.415 (0.427)	0.326 (0.679)	-0.019 (0.482)	0.013 (0.523)
Uninterrupted Internet Connectivity (base: mostly yes)					
Yes	0.458 (0.286)	-1.572 (1.753)	0.188 (0.393)	0.608 (0.384)	0.075 (0.183)
No	-0.604 (1.548)	0.649 (0.506)	1.392** (0.605)	-1.295 (2.027)	-0.109 (0.378)
Phone type (Smartphone)	0.669*** (0.208)	0.669** (0.208)	0.522*** (0.337)	0.576** (0.238)	0.529 (0.312)
Confidence in Technology Use (base: Not confident)					
Somewhat confident	-0.413 (0.279)	0.824** (0.388)	0.198 (0.407)	-0.485 (0.327)	0.335 (0.262)
Highly confident	-0.252 (0.228)	0.764** (0.382)	0.479 (0.343)	-0.2823 (0.269)	0.178 (0.305)
Location (base: Barisal)					
Dhaka	0.019 (0.354)	-0.076 (0.794)	-0.651 (0.422)	-	-
Chittagong	0.935** (0.394)	1.297* (0.762)	0.072 (0.499)	-	-
Rajshahi	0.383 (0.480)	1.505 (1.357)	-0.627 (0.527)	-	-

Khulna	0.561 (0.486)	0.551 (0.824)	0.545 (0.559)	-	-
Sylhet	0.647 (0.575)	-	1.151 (0.698)	-	-
Constant	7.966*** (1.179)	8.484*** (2.138)	6.726*** (1.654)	7.844*** (1.215)	9.909*** (0.796)
Number of Observation	1040	460	580	810	230
R-Squared	0.358	0.565	0.258	0.345	0.674
Prob.>F	0.000	0.000	0.000	0.000	0.000
Regression type	Robust	Robust	Robust	Robust	Robust

Source: Author's estimates

Significance level: 1% = ***, 5% = **, and 10% = *

Considering the MFS type and characteristics, more control on the consumer end is likely to improve the level of user satisfaction. As fintech innovations take over the offering and delivery of more niche financial services, consumers value more control on their end as it allows them the freedom to choose and use different features offered by MFS right at the moment they need (Chen & Mort, 2007). Out of the three major MFS, users of Upay are likely to be more satisfied compared to Nagad– the second largest player in the Bangladesh MFS sector.

Considering the technology availability and friendliness variables, uninterrupted internet connectivity and confidence in the ability to use technology appropriately show no significant effect on user satisfaction. However, users with smartphones appear to be more satisfied than those with feature phones. It is expected since having a smartphone allows users to access higher number of features and services more smoothly than a feature phone. The effect of the 'Location' variable is consistent with the descriptive analysis reported before. Users based in Chittagong are likely to be more satisfied compared to those based in other divisions.

4.2.2 Discussion on Regression Results by Gender

Table 5 reports the regression results for male and female MFS users separately to explore how the effects of the factors considered differed across genders. In line with the overall results for demographic variables, results suggest that male users of older age are likely to be less satisfied, while age has no significant effect on female users. However, education level shows no significant effect on user satisfaction for males, while it has a significant effect on females. Consistent with the overall results, female users with relatively below-tertiary level education are likely to be more satisfied compared to those with a tertiary level qualification. In line with the overall results, occupation shows no significant effect on user satisfaction.

In terms of MFS type and characteristics, the overall results can be explained by the estimates for male users only. Results indicate that greater consumer control and service quality are likely to significantly improve satisfaction among male users. For

both male and female users, the type of MFS they use shows no significant effects on their satisfaction level.

Considering the technology availability and friendliness, female users with uninterrupted internet access are likely to be more satisfied, while it shows no sensitivity for male users. In contrast to the overall results, male users who are more confident in using technology are likely to be more satisfied, while for female users, confidence shows no sensitivity to their satisfaction level. The results for male users are intuitive since more confident users are likely to try, adopt, and benefit from MFS features and services more quickly than the less confident ones (Riddell & Song, 2017; Anderson & Perrin, 2017; Mitzner et al., 2019). For smartphone ownership, both male and female users with a smartphone are likely to be more satisfied than those owning a feature phone. Concerning the location variable, users based in Chittagong are likely to have a higher level of satisfaction than the other divisions.

4.2.3 Discussion on Regression Results by Location

The last two columns of Table 5 report the regression results by two main groups of usual location of users defined by administrative division– a) Dhaka– where the capital city is and b) districts other than Dhaka. In line with the overall results, older users outside Dhaka are likely to be significantly less satisfied compared to the younger ones, while age shows no significant effect in Dhaka. However, for gender, male users in Dhaka are likely to be less satisfied than females, while gender shows no significance for users outside Dhaka. Results for Dhaka further support the overall regression as users with below tertiary level education are likely to be more satisfied than those with a tertiary level qualification, while users with no education at all is likely to significantly less satisfied. Occupation-wise, housewives in Chittagong are likely to be less satisfied compared to users with business as a profession.

In terms of MFS type and characteristics, for users based in Dhaka, greater consumer control is likely to improve user satisfaction, however, for users based outside Dhaka it is the ease of use that makes users more satisfied. Out of the technology available and friendliness variables, smartphone ownership is likely to increase the satisfaction of users in Dhaka, which is consistent with earlier discussions.

5. CONCLUSION

This paper explores the determinants of user satisfaction and whether the effects of the determinants are different across gender and location by using survey data on personal MFS users in Bangladesh. A range of variables grouped in four dimensions- user demography, MFS type and characteristics, technology availability and friendliness, and location- are considered potential factors. Findings overall suggest that users of older age, male, and having tertiary level qualification are likely to be less satisfied compared to others with the same MFS products and services offering, regardless of variations in the users' occupation. Users are likely to be more satisfied when they are allowed more control over what they can do with the MFS platform. Ownership of smartphones over feature phones is likely to increase the satisfaction level of users. These findings remain broadly consistent across genders and locations, where age matters for male users and below-tertiary level qualification matters for

female users' satisfaction. Females with smartphones are likely to be more satisfied with better service quality and uninterrupted internet connectivity. Across regions, findings suggest gender and age as determining factors for users based in Dhaka and outside Dhaka. Below tertiary-level qualification and smartphone ownership matter for user satisfaction for users in Dhaka, with no sensitivity evidenced for users outside Dhaka. On the other hand, for users outside Dhaka, greater ease of MFS use is likely to improve user satisfaction.

All considered, the research confirms that there are gendered and locational differences in user satisfaction and that the level of satisfaction in using the same MFS product and services offerings are likely to be different due to the differentiated effects of different demographic, MFS-specific, technology availability and friendliness, and locational factors. Findings offer several managerial implications for MFS providers to further the adoption of financial products and services through their platforms across all levels of the population. First, shifting focus from the young-age population which is traditionally considered as the core target market, is needed. Service providers perhaps need to make MFS functionalities easier to use for the older age population alongside taking effective measures to educate them at the retail level. Second, providers risk losing business opportunities from innovative digital financial products and services offerings, if male users continue to remain less satisfied while male members in Bangladesh typically become entrepreneurs and act as decision-makers and earning members in a family. Combining both, older age and male users perhaps should receive more attention from the MFS providers. Third, MFS providers need to put more stress on allowing consumers, particularly male ones, more control over their choices while using an MFS. Fourth, MFS providers also need to examine why users above tertiary level education are not demonstrating greater satisfaction; this could be problematic since the highly-educated segment of the market could be a great potential for the MFS companies by providing high-end business opportunities. Furthermore, MFS providers need to ensure that users who never received education are not left behind if they truly want to promote financial inclusion and expand their business opportunities. Lastly, despite most MFS providers assigning greater importance to the capital city, it would be wise for them to further explore why users based in Dhaka are relatively less satisfied than other divisions, particularly Chittagong. Specifically in Dhaka, providers need to evaluate why highly educated users are less satisfied to avoid significant business opportunities. For users outside Dhaka, providers need to sensitize using means other than ease of use– such as focused customer service or greater consumer control. While MFS providers have several insights to draw, this paper also offers implications for policy-makers. The Government of Bangladesh is prioritizing financial inclusion for all through financial technology and innovation as outlined in the National Financial Inclusion Strategy (NFIS) document. For furthering financial inclusion and ensuring no one is left behind across demography and location, the findings of this paper could offer valuable inputs for leveraging the most retail fintech intervention while putting the NFIS into action through policies and regulations. In particular, they could offer insights to the policy-makers about fostering equality and empowerment of people across genders and locations within the country, in line with the spirit of leaving no one behind in the achievement of sustainable development goals.

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