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The Impact of Mobile Financial Services (MFS) to the Economic Development of Emerging Economy

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Abstract

The study aims to explore the research questions and tries to find out how many Mobile financial services have contributed to our rural economic development in Bangladesh. The research type is exploratory and followed by a conclusive method. A total of 100 MFS users were taken for the study. The study's findings revealed that MFSs contribute to individual households, small and medium businesses, and farmers but that is not at a very significant level. Rural people are using MFSs only for money transfer services and remittance purposes. Other services like savings, insurance, access to loans, and mobile banking have not been used that much, and many rural people don't even know about these services due to a lack of knowledge and education. The study also showed that MFSs have increased income, improved living standards, Job creation, poverty alleviation, women empowerment, breakdown of the power of middlemen, and so on. However rural populations have faced some problems and challenges with MFSs. Based on these findings, the study suggested that MFS operators should build a strong security system to moderate the transaction cost and arrange more campaigns regarding Digital and Financial literacy programs in rural areas. So, the risk associated with MFSs should be reduced and then MFS may prove as one of the finest innovations in our developing country.

Keywords: MFSs, Rural People, Economic Development, Rural Business, OLS

1. Introduction

Bangladesh is the most densely populated country in the world. Despite facing all obstacles, the country is making significant progress in its economy. But still, the country faces challenges that may hinder economic growth, especially in rural areas. According to the World Bank report, almost 61% of people live in rural areas and most of them do not have any bank account. Access to financial services has become one of the major roadblocks to our economic development. To bring the huge population under the banking system is quite impossible. Establishing branches and serving the marginalized and rural people in remote areas is not cost-effective for the banks. Mobile financial services are one of the finest innovations of the modern financial system that has been applied to connect unbanked and underprivileged people into formal financial channels. Now the impact of mobile financial services on our economy is enormous. However, the emergence of mobile financial services (MFS) has brought a major revolution in the financial landscape in Bangladesh and has created new opportunities for the people, particularly for the unbanked and unserved people in rural areas. Now it has evolved into the lifeline for rural people who have

limited access to the formal banking channel. MFS is the mobile technology that provides electronic monetary services by allowing users to access financial services through their mobile phones. Users can easily access banking services as well as other financial-based transactions by using their phones.

Mainly, mobile financial service is divided into mobile payment and mobile banking. The rapid growth of MFS is only possible due to the Digitalization of payment systems, the rapid growth of mobile phone users, strong IT infrastructure, country-wide network coverage, and availability of the internet all over the country have enhanced the likelihood of financial inclusion through MFSs. Bangladesh is moving to a digital economy with the help of MFS. Since its inception in 2011, Bangladesh has gained robust growth in the number of account holders and number of transactions in MFS due to the rapid increase in mobile phone users. MFS has made itself indispensable which is blissful for the underprivileged people. By increasing popularity and accessibility, rural people have used the MFS as the primary mode of financial transaction which is recognized as the potential catalyst for rural economic development. To fulfill the goal of financial inclusion, MFS has played a remarkable role in flourishing rural economic development by providing access to savings, credit, insurance, and other financial services for the unbanked and underprivileged people of our country. This success has led to an increase in job creation, women empowerment, and financial literacy which has boosted the living standard of the rural people. However, many rural people are still confined to only money transfer services, and a very significant percentage of people, particularly women open MFS only for inward remittance. Moreover, Access to other services by rural people is still quite harder for them. Still, other services like savings, access to loans, and insurance are little meaningful for them. Suppose if farmers and small and medium businesses can access loans at their peak times through MFS they can contribute more to our economy. Because it's hard for them to get loans from banks due to strict terms and conditions and even some of them don't have any bank accounts. There are some problems and challenges that rural people face in dealing with MFSs.

2. Literature Review

Hossain and Russel (2017) showed that Mobile financial services have played a tremendous role in socio-economic development by serving unbanked and underprivileged people in rural areas in which bKash has held the lead position of the market. The study revealed that bKash has created a positive impact on socio-economic development by creating women empowerment, reducing poverty, encouraging saving, an easy way to receive foreign remittances, helping to develop the SMEs and agricultural sector, and breaking down the exploitation of middlemen and flourishing business transactions. Ultimately this positive impact has uplifted the living standard of the rural people.

Akhter and Khalily (2017) investigated the impact of mobile financial services on financial inclusion in Bangladesh. Mobile financial services have come up with a major 'change in the institutional structure and financial products. The outcome of the paper stated that the need for mobile financial services is indispensable. It can stretch out the excluded low-income, small, and medium enterprises which will have a wider impact on poverty alleviation and growth.

Islam, Basher, and Haque (2022) asked in the study whether mobile financial services can help elevate people out of poverty. The study examined the impact of mobile financial services on poverty reduction at the district level throughout 2010-2016 in Bangladesh and found out that 0.71%-point poverty is reduced due to every one billion takas increased through bKash. The study suggested that mobile money has become the lifeline for poor people who have limited access to the formal banking sector and has been successful in accomplishing various policies regarding poverty reduction initiatives

Kumar (2021) presented an overview of the prospects and challenges of MFS that may focus on some development strategies for policyholders in Bangladesh and described how MFS operators overcome MFS-related problems and challenges and satisfy their customers. The result of the study suggested that maintaining proper quality services, financial and technological risk, and the ability to provide appropriate services are the crucial challenges for Mobile financial services and recommended the MFS authorities open up a new path for the researcher to investigate in long-term nature

Rahman (2021) investigated the challenges that rural people may face difficulties during the use of mobile financial services in Bangladesh. The findings of the study suggested that a lack of proper knowledge and awareness, high transaction costs, and technological error are the challenges for rural users. Ultimately these challenges may extremely affect the actual users of the MFS. The government and the MFS authorities should take the appropriate steps and policies to reduce the risk associated with the MFS and ensure better quality services

Parlasca, Johnen, and Quaim (2022) described in the study that Interest in mobile financial services has increased due to the rapid increase in mobile phones in rural areas and collected data to analyze the mobile payment, savings, and access to credit among farmers in Kenya. The study showed that more than 80% of the farmers use mobile phones whereas only 15% of farmers use innovation for agricultural-related payments. Less than 1% of the farmers use the mobile loan facility for their agricultural investments. Overall, the usage of the MFS in agriculture among farmers is assumed to be lower indicating that MFS may not have a transformative impact on farming in Kenya.

Kikulwe, Fischer, and Quaim (2014) did a study on farmers, and householders in Kenya and found out that the use of mobile money has a great impact on household income. Remittance received from friends, and family is one of the important pathways for reducing the risk and liquidity constraints, promoting the commercialization of agriculture. The result suggested that mobile money has helped to alleviate poverty reduction and overcome the people from obstacles that hindered them from accessing the market

Ouma, Odongo, and Were (2017) showed in the study that the adoption of the mobile phone has become instrumental for the unbanked segment populations to the mainstream financial systems in Africa and led to an increase in the usage of mobile financial services. The study revealed that mobile financial services have boosted the likelihood of savings at the household level. It has helped to promote saving mobilization among the poor and low-income level people who are excluded from formal banking activities.

Sarpong and Agbeko (2020) stated in their study that mobile financial services are one of the greatest innovations for the people of Ghana. It has extended its services all over. The study revealed that the people of Ghana have a lot of expectations and have some future desires like foreign exchange services, ATM transactions, online shopping, and online payment that must be furnished by the MFS

Alampay, Moshi, Ghosh, Peralta, and Harshanti (2017) did a systematic review to determine the impact of mobile financial services in low and lower-middle-income countries. The study showed that mobile financial service in developing countries is the medium for reaching unbanked people and giving them access to financial services. The findings of the study demonstrated that significantly mobile financial service users received higher volumes of remittances than nonusers. Even 54% in farm-inputs consumption was increased due to the use of MFS compared to non-users. The study also revealed that the contribution of MFS to household income and farm yield sold is significantly increased.

Vong, Fang, and Isu (2012) did a pilot study to assess the impact of mobile money services on micro-entrepreneurs in rural Cambodia. The pilot study suggested that mobile financial service has the potential ability to flourish the micro or small business trade in terms of minimizing the operational, higher profit margin, and access to the market and that helps to improve their living standards.

Morawczynski and Pickens (2009) presented an insightful understanding of how the use of M-PESA has impacted poor people and their lives and that was conducted in two communities: Kibera and Bukura in Kenya. The study demonstrated that M-PESA has reduced the barriers to money transfer helped to release money flow and allowed that flow to enter rural areas. Users transferred small amounts of money with greater frequency. Even remittance and saving patterns have changed significantly.

kirui, Okello, Nyikal, and Njiraini (2013) stated in their study that the impact of mobile phone-based money transfer services in the agriculture sector has significantly increased. The study demonstrated that by using mobile-

based money transfer services, farmers can resolve market failures that they faced earlier and now they can access financial services in the market.

Abdinoor and Mbamba (2017) presented an assessment of consumers' adoption of mobile financial services in Tanzania by using the technology acceptance model. The findings of the study revealed that the adoption of mobile financial services is positively related to individual awareness, perceived usefulness, and benefit. The study recommended that mobile service providers should play a leading role in influencing individual awareness and perception of mobile banking and consider the affordability and availability of financial services for low-income people in Tanzania.

Literature Gap: Following literature gap has been identified to construct the research questions and develop the relevant hypothesis considering the review of literature mentioned above.

This investigation will enable us to know whether MFSs have significant contribution to the rural business stakeholders including small and medium business owners and farmers accelerating the economic development of this country.

2.1 Research Question and Development of Hypothesis

Considering the literature gaps discussed earlier in literature review, following research questions have been developed:

- (i) For what type of service, do individual households, small and medium business owners, and farmers use MFSs?
 - (ii) What are the usage patterns of MFSs on households, small and medium business owners, and farmers in Bangladesh?
 - (iii) What is the contribution of MFS to individual households, rural businesses, and farmers in Bangladesh?
 - (iv) What are the problems and challenges households, rural business owners and farmers are facing with MFSs?
- Considering these research questions, following hypothesis has been constructed:

Hypothesis development:

H_0 (Null Hypothesis): MFSs don't have significant contribution to the rural business accelerating the economic development of a country.

H_1 (Alternative Hypothesis): MFSs have significant contribution to the rural business accelerating the economic development of a country.

3. Data and Methods

The study is based on a mixed methods approach where both qualitative and quantitative approaches are being used and has been conducted based on an exploratory approach by using primary data followed by the conclusive approach. Primary data was collected through a survey where a 5-point Likert scale questionnaire (1 is for Strongly Disagree to 5 is for Strongly Agree) was applied to assess the response of the participants. Both closed-ended and open-ended questions were used in this study. For conducting the study, a convenient sampling method was used. The survey was done among 100 rural people who were users of the mobile financial service at Suhilpur Union, Brahmanabaria in Bangladesh. The questionnaire is designed for all MFS users. Among all individual households, who were small and medium business owners and farmers were further asked to give their opinion on the 5-point Likert scale questions which were specially designed for them. Close-ended data collected through the survey was analyzed by statistical tools like descriptive statistics, and regression analysis, Pearson Correlation. For the analysis of the four open-ended questions, thematic analysis was used to identify the meaning or themes of the answers of the participants, and graphs were used to illustrate the thematic analysis's results. However, here multiple regression analysis is used to measure the impact of individual variables on a dependent variable.

Following regression model has been constructed:

$$Y_i = \alpha_i + \sum_{k=1}^9 \beta_i X_{ik} + u_i \dots \dots \dots (1)$$

Where,

Y= MFSs can contribute to the rural business

X₁ = Merchant mobile account can help you to increase your sales

X₂ =Your business operation is managed smoothly by using the MFSs

X₃ =Mobile financial services have increased the business profit

X₄ =MFSs have reduced costs and made business transactions easy

X₅ =MFSs have encouraged you to save and investment

X₆ =MFSs have offered mobile banking services

X₇ =MFSs have increased the financial productivity in seasonal times

X₈ =MFSs have created employment opportunities through your business in your rural areas

X₉ =MFSs have played the role to develop the SMEs

u_i=Error term

We have adopted OLS method¹ to estimate the coefficients of this regression model depicting the relationship between MFS's contributions and rural developments.

4. Results and Discussion

4.1. Mobile Financial Services and Individual Households

Table 1: Descriptive Analysis of the Individual Household's Questions

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
It's easy to receive foreign remittances through MFSs	100	3.00	5.00	4.8400	.39492
MFSs have increased the income level in your family	100	3.00	5.00	4.4800	.59425
MFSs have improved the living standard by accessing better goods and services for the rural people	100	3.00	5.00	4.5300	.57656
Save cost and time through MFSs	100	4.00	5.00	4.6200	.48783
MFSs have encouraged you to save	100	2.00	5.00	3.4200	.92310
MFSs have helped to reduce poverty in your family	100	1.00	5.00	3.8400	.95049
Now women in your family have operated MFSs independently	100	2.00	5.00	4.7700	.50960
Rural women are empowered to be involved in small-scale business	100	3.00	5.00	4.8500	.43519

¹ Steps in Deriving OLS Estimators: Defining the model and error term using this equation no.01; then **Define the sum of squared errors (SSE) followed by Minimizing the SSE using calculus; after that solving the normal equations, OLS estimators (including intercept and slope) can be obtained.**

Rural women have contributed to the family by accessing financial services	100	3.00	5.00	4.9200	.30748
MFSs are reliable, convenient, and safe for the rural people	100	4.00	5.00	4.9700	.17145
Valid N (listwise)	100				

Source: Field Survey (Analysis by SPSS)

Table 01 shows the descriptive statistical analysis of the statements that have been given to the respondents. To assess the response of the respondents regarding the statements, a 5-point Likert scale is applied in the field survey. Based on the perception of the respondents regarding the mean value of the statements, the decision will be taken. In the Likert scale, 1= Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree, 5=Strongly Agree.

The first statement shows the mean value is 4.84 which is almost 5. Here 5 indicates strongly agree. It means that the majority of the participants strongly agree with the statement that 'It is easy to receive foreign remittance through MFSs'.

The mean value of the second statement is 4.48. This shows most of the respondents agree with the statement that 'MFSs have increased the income level in their family'.

The third statement's mean value is 4.53 which refers to the agreed option (point 4). Rural people agree with the statement that MFSs have improved living standards by accessing better goods and services.

The fourth statement states that MFS has saved costs and time. The mean value of the statement is 4.62. Most of the respondents agree with this statement.

The Fifth statement states that MFSs have encouraged them to save. So the mean value of the statement is 3.42. It means that most of the respondents are neutral about the statement. They don't even know that MFSs have encouraged them to save.

In the sixth statement, we can see that the majority of the respondents agree with the statement that MFSs have helped to reduce poverty in their families. Here the mean value is 3.84 which is near to point 4 or agrees.

In the seventh statement, the mean value is 4.77 which is near to point 5. So, we can say that All respondents strongly agree with the statement that 'women in their family have operated MFSs independently'.

The eighth statement's mean value is 4.85. So the majority of the respondents have chosen the strongly agree option. These rural people strongly agree that Rural women are empowered to be involved in small-scale business.

The ninth statement indicates that Rural women have contributed to their families by accessing financial services. By assessing the mean value of 4.92 of this statement, we can see that almost all the respondents strongly agree with the statement.

In the tenth statement, the mean value is 4.97. That is very close to point 5. There is no doubt that overall MFSs are reliable, convenient, and safer for rural people. The majority of the respondents strongly agree with this statement.

After assessing all the responses of the households, we can see that mobile financial service has a great impact on the rural economic development in Bangladesh.

Table 2: Correlation between increased income and poverty reduction in rural families through MFSs

		MFSs have increased the income level in your family	MFSs have helped to reduce poverty in your family
MFSs have increased the income level in your family	Pearson Correlation	1	.263**
	Sig. (2-tailed)		.008
	N	100	100
MFSs have helped to reduce poverty in your family	Pearson Correlation	.263**	1
	Sig. (2-tailed)	.008	
	N	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field Survey (Analysis by SPSS)

The correlation of the coefficient of the two variables is .262. That indicates that the association between the increased income of rural people and poverty reduction in rural families has a small positive relation but the correlation is statistically significant.

Table 3: Correlation between increased income and improved living standards by accessing better goods and services in rural families through MFSs

		MFSs have increased the income level in your family	MFSs have improved the living standards by accessing better goods and services for rural people
MFSs have increased the income level in your family	Pearson Correlation	1	.282**
	Sig. (2-tailed)		.004
	N	100	100
MFSs have improved the living standard by accessing better goods and services for the rural people	Pearson Correlation	.282**	1
	Sig. (2-tailed)	.004	
	N	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field Survey (Analysis by SPSS)

From table 03, we can see that the correlation between the two variables is .282 on a sample of 100. The correlation of the coefficient describes that there is a small positive association between increased income and improved living standards by accessing better goods and services to the rural people through the help of MFSs but the association between the variables is significant.

Table 4: Correlation between increased income and encouraged savings in rural families through MFSs

		MFSs have increased the income level in your family	MFSs have encouraged you to save
MFSs have increased the income level in your family	Pearson Correlation	1	.200*
	Sig. (2-tailed)		.046
	N	100	100
MFSs have encouraged you to save	Pearson Correlation	.200*	1
	Sig. (2-tailed)	.046	
	N	100	100

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Field Survey (Analysis by SPSS)

The correlation of the coefficient between the two variables is .200. That describes a very weak relationship between the increased income and encouragement for saving in rural families through MFSs. However, the association between the two variables is statistically significant.

4.2. Contribution of MFSs to Rural Small and Medium Businesses

Table 5: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.843 ^a	.711	.593	.15686
a. Predictors: (Constant)				

Source: Field Survey (Analysis by SPSS)

From the model summary, we can see that the value of R is .843 or 84.3%. Here the value of R indicates that there is a high degree of strength among the independent and dependent variables.

Here R Square is .722. It means that 72.2% variation in the dependent variable is explained by the independent variables.

The value of the adjusted R² is .593 or 59.3%. The model indicates that 59.3% of predictor variables of MFSs are responsible for the contribution of the rural business.

Table 6: ANOVA

		ANOVA				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.334 ^b	9	.148	6.023	.000 ^b
	Residual	.541	22	.025		
	Total	1.875	31			

a. Dependent Variable: Y

b. Predictors (Constant): X₁, X₂, X₃, X₄, X₅, X₆, X₇, X₈, X₉

Source: Field Survey (Analysis by SPSS)

From the ANOVA test, it is seen that level of significant value is less than 0.05 or 5% which indicates the null hypothesis is rejected and the alternative hypothesis is accepted. As a result, we can say that there is a significant relationship between independent variables and dependent variables. According to the result, the conclusion is that MFSs can contribute to rural business.

Table 7: Coefficients table

Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.
		B	Beta		
1	(Constant)	2.487*** (.0560)		4.444	.000
	Merchant mobile account can help you increase your sales	-.066 (.051)	-.198	-1.285	.212
	Your business operation is managed smoothly by using the MFSs	-.007 (.058)	-.020	-.127	.900
	Mobile financial services have increased the business profit	.015 (.037)	.053	.404	.690

MFSs have reduced costs and made business transactions easy	-.003 (.059)	-.007	-.058	.954
MFSs have encouraged you to save and investment	-.011 (.033)	-.043	-.336	.740
MFSs have offered mobile banking services	.186*** (.061)	.429	3.060	.006
MFSs have increased financial productivity in seasonal time	-.339*** (.1140)	-.508	-2.982	.007
MFSs have created employment opportunities through your business in your rural areas	.621*** (.117)	.848	5.322	.000
MFSs have played the role of developing SMEs	.100* (.055)	.233	1.823	.082

a. Dependent Variable: MFSs have the potential ability to contribute to the rural business

Note: *, ** and *** indicate the level of significance of 10%, 5% and 1% respectively

Source: Field Survey (Analysis by SPSS)

According to the table-06, the estimated multiple regression model is $y(\text{hat}) = 2.487 + (-.066)X_1 + (-.007)X_2 + (0.15)X_3 + (-.003)X_4 + (-.011)X_5 + (.186)X_6 + (-.339)X_7 + (.621)X_8 + (.1)X_9$

4.3. Contribution of MFSs to Rural Farmers

Mobile financial services can contribute to the rural farmer by providing access to financial services. MFS has ensured financial inclusion in our country. No one is going to be left behind to include in the financial sector. That helps to fulfill the goal of SDGs.

1. Purchase agricultural stuff easily

The majority portion of farmers felt that MFSs have helped them to purchase agricultural stuff easily. They can easily send the money through their MFS account to the seller.

2. No need for middlemen to collect the payment

The majority of farmers strongly agree that there is no need for middlemen to collect the payment. There is no doubt that now farmer can receive their exact amount of money from selling products from their buyers in an MFS account. To get payment from the buyers, farmers need help from the middlemen to receive their money. A percentage of money has to be given to the middlemen to collect the money on behalf of farmers. Now the situation has changed and MFSs have come as the solution for the farmers. They do not need to bear additional costs to receive the money.

3. Reduced costs and saved time

MFS has broken down the power of middlemen in our society. There is no need for middlemen to settle the transactions between buyer and seller. This has reduced costs and saved time for the farmers. They are free from the exploitation of middlemen.

4. Access to financial services

Farmers are the most negligible person in our society. We can see in our study that all the farmers have up to primary level education. They do not have the proper education to accept the technology. Even it is quite hard for banks to connect all the people of the country. In the meantime, MFS has come up and resolved the problem. It

has tried that all the unbanked and unserved people of our society should connect to the financial system. Now financially excluded people can access financial services. The result of the study shows that the majority of the farmers can access financial services.

5. Access to loans

Access to loans is little meaningful for the farmer. Farmers are only introduced to the cash-in and Cash-out features of MFSs. They do not even know that other features like savings, access to loans, insurance, and donations are available. It would be a blessing for the farmers if they could access loans. Their contribution to our economy is unimaginable. Mobile operators should work more with farmers so that they can access all the services of MFSs at the lowest cost.

6. Improve the ability to save money

A very significant percentage of farmers are neutral and disagree with the statement that MFSs do not improve the ability to save money. They live from hand to mouth. It is hard for them to think about the savings.

7. Key barriers to adopting the MFS

Everyone agrees that lack of awareness, knowledge, and education are the key barriers to adopting the MFS. They don't have the financial literacy to operate the MFS. As a result, they get cheated by their relatives or agents. Many farmers said that MFS operators should arrange more campaigns to create awareness among people, build a strong security system, offer more incentives, and reduce transactional costs.

4.4. Response to Open-Ended Questions

Respondents have been asked to give their opinion on 'open-ended questions'. The answer to the questions is divided into a few categories after assessing a couple of responses.

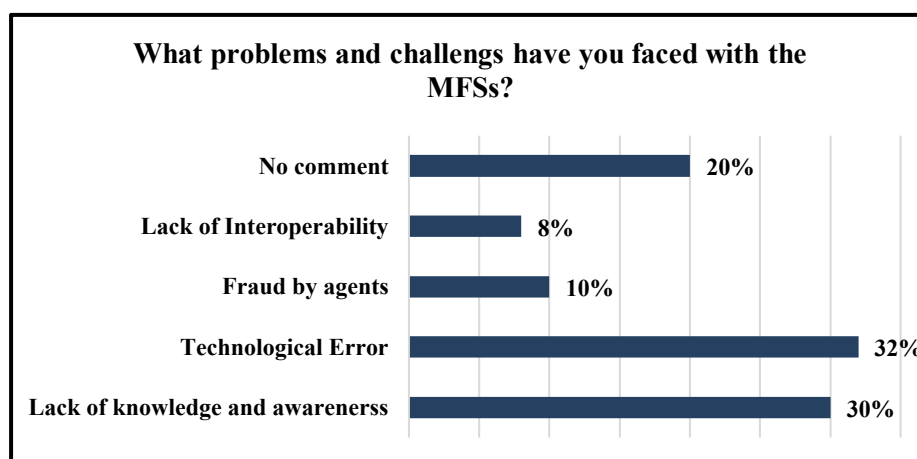


Figure 1: What problems and challenges have you faced with the MFSs?

Source: Field Survey (Analysis by SPSS)

The figure indicates that many of the respondents face technological errors while using the MFS. Rural people cannot make a transaction or sometimes it takes too much time to execute the transactions due to this error. Some of the respondents said that they cannot log in to the bKash app. One of the significant challenges faced by rural people is the lack of knowledge and awareness about MFS. 30% of the respondents said that they have insufficient knowledge to operate the MFS. Many rural people still think that MFS is only for Cash in and Cash out. 10% of the respondents got cheated by the agents. Even they got random calls and the fraudster told them to give the PIN. Another issue is that rural female users face harassment by male agents. Two respondents said that they got random

calls from unknown persons after the cashout. Another huge obstacle is the lack of interoperability among MFS providers. Users said that they could not send money among different MFS.

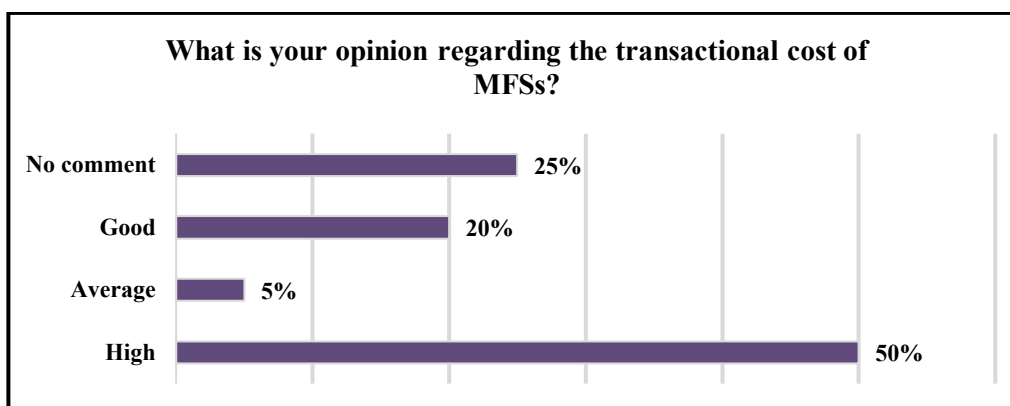


Figure 2: What is your opinion regarding the transactional cost of MFSs?

Source: Field Survey (Analysis by SPSS)

Figure 2 demonstrates the opinion of the respondents regarding the transactional cost of MFSs. The survey revealed that most of the respondents (50%) are unhappy with the higher transactional cost. Some of the respondents mentioned in the form that they are switching from bKash to Nagad due to high transactional costs. Even small and medium business owners said that high transactional cost is a huge burden for them. Sometimes they prefer not to use any MFS. 20% of them think that transactional cost is okay.

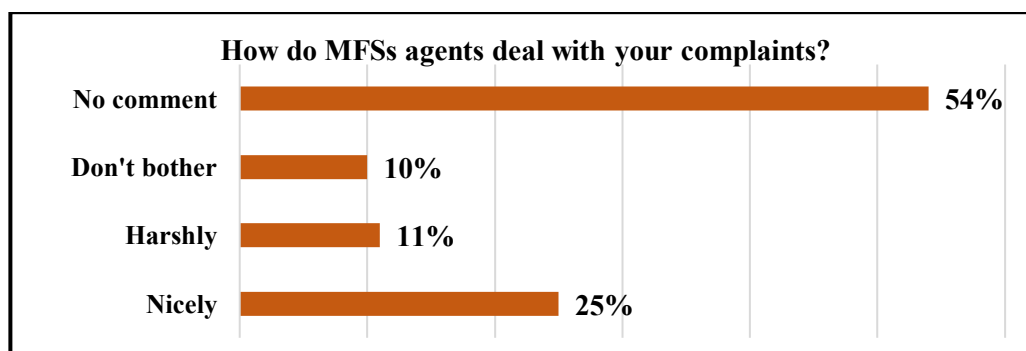
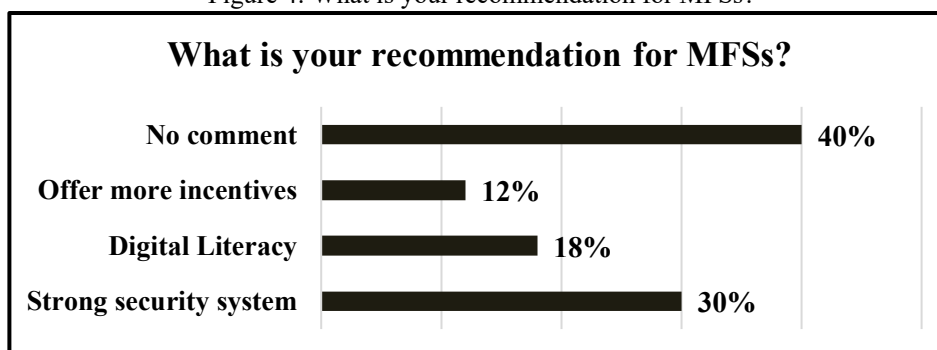


Figure 3: How do MFS agents deal with your complaints?

Source: Field Survey (Analysis by SPSS)

Figure 3 shows how MFS agents deal with respondents' complaints. 54% of them have no comment on this. Because they are okay with the services and don't find any issues. 25% of the respondents mention in the study that MFS agents deal with their complaints nicely and try to find any solutions immediately.

Figure 4: What is your recommendation for MFSs?



Source: Field Survey (Analysis by SPSS)

Figure 4 shows the recommendations for MFS. The survey states that a huge percentage of respondents have no comments. They don't even know what to suggest because of insufficient knowledge about the MFS. 30% of the respondents said that MFS should build a strong security system so that they may not get cheated by fraudsters. Due to numerous fraudulent activities, many people find it insecure to use the MFS. 18% of respondents said that MFS providers should create more campaigns regarding digital literacy so that rural people can gain sufficient knowledge to operate the MFS smoothly. People make more transactions when they get incentives from MFSs. Recently Nagad's BMW campaign has gained huge popularity. Many said they made more transactions in Nagad to win the BMW. The incentive is another motive to make people close to the MFS sector.

5. Conclusion with Policy Implications

Mobile financial services have played a remarkable role in flourishing the of rural economic development in Bangladesh. It is undoubtedly a fast-growing business. MFS is one of the finest innovations in mobile phone technology. It has ensured financial inclusion all over the country by including all the unbanked and unserved people in the financial service. The contribution of MFSs to our economy is enormous, especially in rural areas. It has reduced poverty and increased the income of rural families. It has improved the living standards of rural people by providing access to better goods and services and made daily life easier. It is quite unimaginable even a few years ago that rural women could receive money at home from their family members staying abroad. It has unleashed the door of opportunity for rural people. The study shows that MFS users are greater in rural areas than users in Urban areas. Now rural people are more willing to open MFS accounts to conduct their transactions smoothly. So mobile financial service operators should take effective measures to improve the quality of their services in rural areas and identify the difficulties that rural users face while using the MFS.

The study has explored the contribution of MFS to rural economic development in Bangladesh and tried to find out the problems and challenges that rural people face in operating the MFS. The study revealed that MFS has a contribution to individual households, small and medium businesses, and farmers. However, the contribution to the rural economy is not that significant. Rural people are still confined to mobile money transfers. Rural people are not introduced to other services of MFSs like savings, access to loans, insurance, and so on. However, the study also showed that MFSs have increased income, improved living standards, Job creation, poverty alleviation, women empowerment, breakdown of the power of middlemen, and so on in rural areas according to the responses of the participants. The study has demonstrated that rural people face difficulties while using the MFS. Due to technological errors, it takes a huge time to make transactions. Even they got cheated by agents and sometimes got random calls from fraudsters acting like MFS agents. The fraudster told them to give their PINs. Many users give their PINs. Because they do not have the proper knowledge of MFS. Even they are unhappy with the transaction cost and mention in the study that transactional cost is costly very for them.

Given these consequences, MFS operators should consider these issues build a strong security system moderate the transaction cost, and arrange more campaigns regarding digital and financial literacy programs in rural areas so that rural people can access more mobile transactions and prevent themselves from fraudulent activities. Clear rules of conduct should be ensured by the MFS operators to ensure that MFS agents serve the customers with professionalism and frequent monitoring with stringent policies must be introduced to prevent any misconduct from the agents towards customers. More collaboration with Banks and Microfinance Institutions to accelerate the microloans and credit to help the farmers and small businesses and should introduce specialized financial products like microloans, insurance, and savings for them. By implementing all these, MFSs can contribute more to rural economic development and ensure financial inclusion all over the country. In this way, MFS may prove as one of the finest innovations in our developing country.

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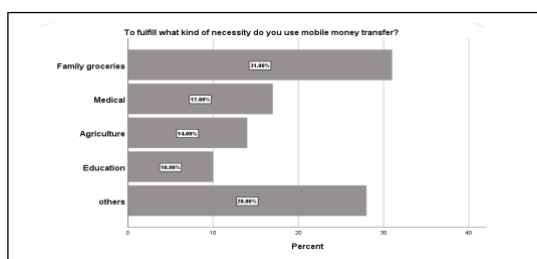
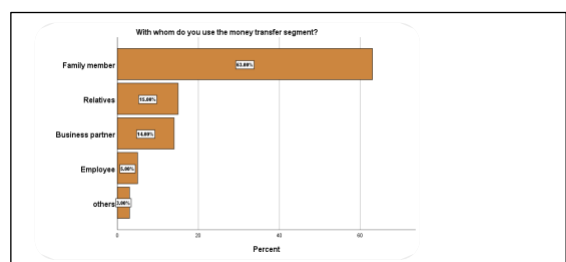
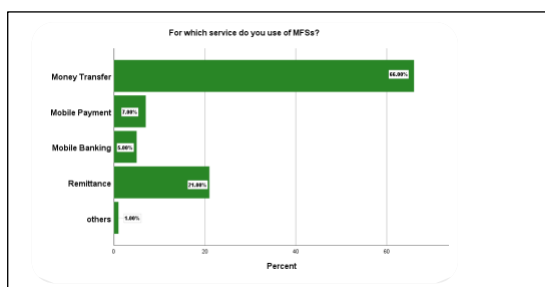
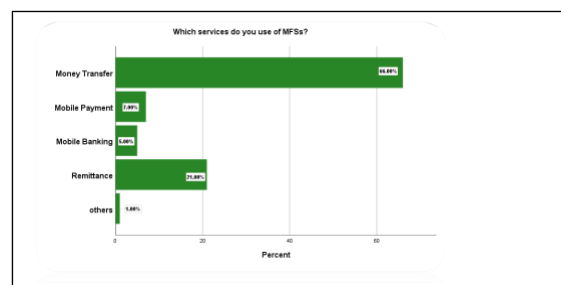
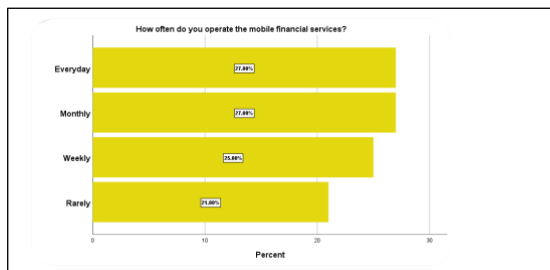
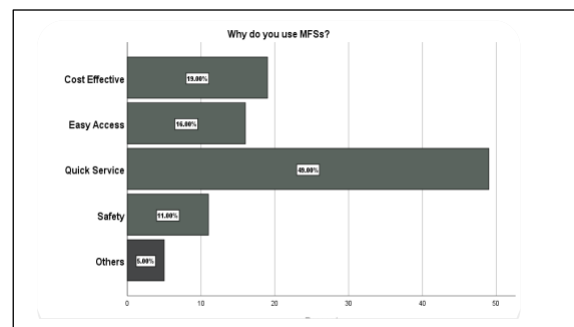
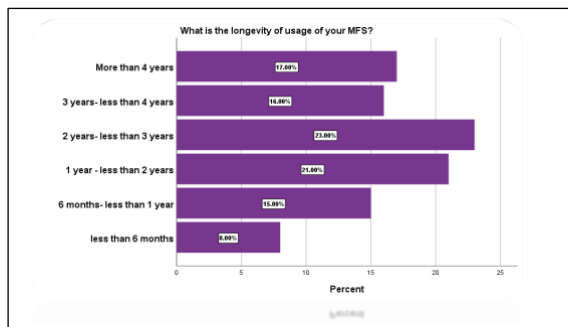
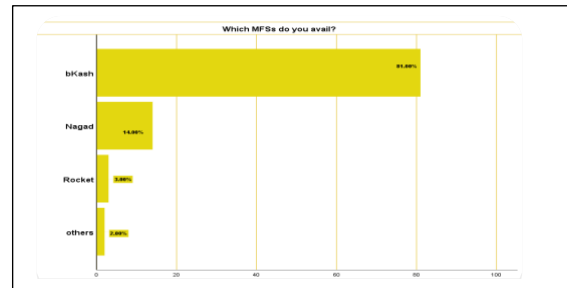
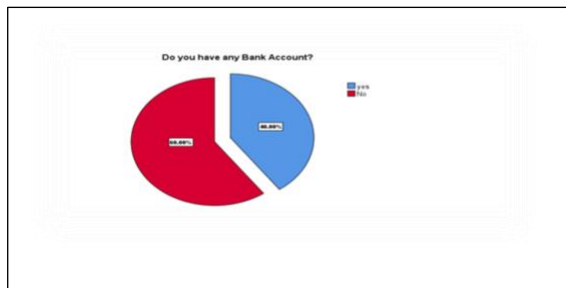
Conflicts of Interest: The authors declare no conflict of interest.

Declaration of Generative AI and AI-assisted Technologies: This study has not used any generative AI tools or technologies in the preparation of this manuscript.

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Appendix A



Appendix B

The Impact of Mobile Financial Services (MFS) to the Economic Development of Emerging Economy

The questionnaire is designed to capture the information about how mobile financial services have played a tremendous role in rural economic development by serving unbanked and underprivileged people. The survey will be conducted at Suhilpur Union, Brahmanabaria. Your response to this question will help me to achieve the desired goals. The survey question will be used only for research purpose. Thank you for your participation.

Section 1: General Information

1. Name of the Respondent (optional): -----
2. Gender
 - a. Male b. Female c. other
3. Age (years)
 - a. Less than 20 b. 20-30 c. 31-40 d. 41-50 e. More than 50
4. Occupation
 - a. Small and medium business b. Farming c. Housewife d. rickshaw puller e. Employee f. others
5. Marital Status
 - a. Married b. Unmarried c. Others
6. Education Level
 - a. Up to primary b. Up to SSC c. Up to HSC d. Up to graduation e. Others (specify)
7. Monthly Income
 - a. less than 10000 b. 10000-19000 c. 20000-29000 d. 30000- 39000 e. 40000 and above

Section 2: Usages of Mobile Financial Services

8. Do you have a Bank Account?
 - a. Yes b. No
9. Which MFSs do you avail?
 - a. bKash b. Nagad c. Rocket d. others
10. What is the longevity of usage of your MFS?
 - a. less than 6 months
 - b. 6 months - less than 1 year
 - c. 1 year - less than 2 years
 - d. 2 years - less than 3 years
 - e. 3 years - less than 4 years
 - f. more than 4 years
11. How often do you operate the mobile financial services?
 - a. Everyday
 - b. weekly
 - c. monthly
 - d. Rarely
 - e. Never used

Section 3: Contribution of MFSs on Rural Economic Development

Question on Individual Household

(Type a)					
i) Why do you use MFSs?	☐ a) Easy Access	☐ b) Cost Effective	☐ c) Quick Service	☐ d) Safety	☐ e) others

ii) For service do you use of MFSs?	☐ a) Money Transfer	☐ b) Mobile Payment	☐ c) Mobile Banking	☐ d) Remittance	☐ e) others
iii) How do you operate MFSs?	☐ a) Self	☐ b) Family Members	☐ c) Friends	☐ d) Agent	☐ e) others
iv) To fulfill what kind of necessity do you use mobile money transfer?	☐ a) Family groceries	☐ b) Medical	☐ c) Agriculture	☐ d) Education	☐ e) others
v) With whom do you use the mobile transfer segment?	☐ a) Family Member	☐ b) Relatives	☐ c) Business Partner	☐ d) Employer	☐ e) others
(Type b)					
i) It's easy to receive foreign remittance through MFSs	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
ii) MFSs have increased the income level in your family	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
iii) MFSs have improved the living standard by accessing better goods and services for the rural people	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
iv) Save cost and time through MFSs	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
v) MFSs have encouraged you for savings	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
vi) MFSs have helped to reduce poverty in your family	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
vii) Now women in your family have operated MFSs independently	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
viii) Rural women are empowered to be involved in small-scale business	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
ix) Rural women have contributed to the family by accessing financial services	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree
x) MFSs are reliable, convenient, and safe for the rural people	☐ a) Strongly agree	☐ b) Agree	☐ c) Neutral	☐ d) Disagree	☐ e) Strongly disagree

14. Part A: Question on Small and medium business owners (Answer these questions if you are a businessman or if not then, skip)

i) Merchant mobile account can help you to increase your sales	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
ii) Your business operation is managed smoothly by using the MFSs	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
iii) Mobile financial services have increased the business profit	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
iv) MFSs have reduced costs and made business transactions easy	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
v) MFSs have encouraged you for savings and investment	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
vii) MFSs have offered mobile banking services	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
vi) MFSs have increased the financial productivity in seasonal time	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
vii) MFSs have created employment opportunities through your business in your rural areas	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
viii) MFSs have played the role of developing the SMEs	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
ix) MFSs can contribute to the rural business	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree

14. Part B: Question on Farmer (Answer these questions if you are a farmer or if not then, skip)

i) MFSs have helped you to purchase the agricultural stuff easily	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
ii) There is no need for middlemen to collect the agricultural related payment	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
iii) MFSs have reduced costs and saved time	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
iv) MFSs have helped you to access the financial services	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
v) MFSs have provided the access to loans	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
vi) MFSs have improved the ability of rural farmers to save money	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree
vii) Lack of awareness, knowledge, and education are	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree

the key barriers to adopting the MFS					
viii) MFSs may have the potential ability to contribute to the rural farmers	☐ a Strongly agree	☐ b Agree	☐ c Neutral	☐ d Disagree	☐ e Strongly disagree

15. What problems and challenges have you faced while using the MFSs?

16. What is your opinion regarding the transactional cost of MFSs?

17. How do MFS agents deal with your complaints?

18. What is your recommendation for MFSs
