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Factors Affecting Transaction Value of Mobile Financial Services: Illustration from an Emerging Economy

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Abstract

The objective of this study is to identify the factors that affect the value of mobile financial services (MFS) transactions. To attain the aim, this research collects data from the Bangladesh Bank database that spans December 2018 and October 2021. The study employs an ordinary least squares (OLS) method to analyze the data. It finds that the value of MFS transactions is affected in a positive and significant way by the amount of remittances, e-commerce transactions, school banking, and the flow of private credit. Policymakers should come up with plans that make it easier for money to flow freely through the economy and help a developing country with similar institutional dynamics to grow.

Keywords: Mobile financial services, E-commerce, Remittance, Emerging economy

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1. Introduction

Mobile Financial Services has been one of the most common words associated with financial transactions in recent years (MFS). In the case of a financial transaction, the vast majority of companies nowadays have MFS as their primary mode of operation. They began to carve a niche for themselves outside of the conventional system of commerce, in which the buyer and the seller are required to engage in face-to-face interaction in order to complete the transaction. This perception was altered by MFS because to the comprehensive range of services they offer. Not only have MFS altered the perspective of conventional businesses, but they have also altered the outlook of the economy as a whole by contributing to profitable growth in a variety of industries. MFS has contributed to this lucrative expansion by developing novel approaches and products inside the financial industry (Horne,1985). The term "mobile financial services" (MFS) refers to the use of mobile or wireless devices to carry out financial transactions. However, there is an intriguing aspect regarding this matter: by utilizing MFS, one may not only enjoy the benefits of conducting financial transactions through a mobile phone, but also examine the financial details of a certain customer without having to leave the comfort of their own house. Mobile financial Services not only helps the section of unbanked people but also the wealthy or banked people by providing comfortability.

The history of MFS is rather extensive. It originated in Kenya under the moniker M-Pesa. It was initially established in March 2007 through a group agreement between the mobile network Safaricom and the minority stakeholder Vodaphone (40 percent). With 17 million users by December 2011 in Kenya, M-Pesa was the leading market gainer in money transfers and became a successful enterprise in a short period of time. This MFS approach in Kenya enables unbanked rural Kenyans to conduct financial transactions with simplicity and convenience. After the success of M-Pesa, several nations followed this concept with minor tweaks and found success with it. Two to three percentage points are added to the global GDP in 2021 due to the contribution of mobile financial services (IMF, 2021). Rapidly creating jobs for the world's unemployed, MFS institutions are a force for good. Despite the severe impact of the pandemic on the global economy, MFS creates jobs for 20 million jobless people in 2020. (GSMA, 2020). The number of employment spaces created by MFS increases annually. Moreover, people across the world freely utilize the services of various institutions. MFS offers 365-day-a-year, 24-hour-a-day service. The use of mobile devices and utilization of broadband technologies is on the rise. Therefore, MFS is not only advantageous for the buyer and seller, but also for the supporting sector.

In this epidemic era, the use of MFS is on the rise, making the introduction of these services even more crucial. In the years of social distancing, individuals are preferring digital financial services to face-to-face transactions. During this challenging time of epidemic, the depletion of mobile financial services has dramatically increased in many low- and middle-income nations, exceeding traditional financial services and inspiring more institutions to enter the domain of MFS (IMF, 2020). Some nations are exerting extraordinary effort to embrace MFS as their primary financial system. In this pandemic time, Kenya leads the league in terms of MFS transactions, followed by India, while Bangladesh positions eighth (IMF, 2021).

Numerous researchers have examined mobile financial services in previous research. This research attempts to describe their notable works. Singh and Srivastava (2014) investigated the causes behind customers' inclination to abandon mobile banking. They have identified five predecessors, including perceived ease of use, compatibility, social influence, security, and perceived cost, which have a significant impact on consumer judgement and will diminish the usage of mobile banking. Their investigation reveals that compatibility, social influence, and security are the most influential factors on customers' decisions to abandon mobile banking. To enable the expansion of MFS providers, Owusu et al. (2017) stated that feature phones with USSD and STK interfaces must be supported. If companies can secure the usability and accessibility of this mix of technology, their services will generate more revenue. Accessibility and user interface are entirely unstructured. The motivations for the growth of financial services, as noted by Akhter and Khalily (2017), include a) intense competition in financial markets and b) a desire for more market share, etc. They have also suggested that innovation in finance, in the form of likely process and product, has had a significant role in the enormous competition and expansion of financial services. According to Chironga et al. (2017), MFS comprises several financial services, including payments, savings, loans, investments, and insurance. Mobile money is a subset of mobile financial services that enables customers to deliver, collect, and save funds utilizing cellular devices. Lema (2017) examines some of the reasons why unbanked individuals have lately begun to embrace MFS. Utilizing the Technology Acceptance Model (TAM), they analyzed six variables, including a) Perceived usefulness, b) Perceived ease of use, c) Perceived trust, d) Perceived cost, e) Perceived risk, and f) Social influence, revealing that perceived usefulness, perceived cost, and social influence have a significant impact on the adoption of mobile financial services. It is discovered that perceived ease of use, perceived danger, and perceived trust have no impact on the acceptance of mobile financial services.

Yesmin et al. (2018) shown that mobile financial services are comparable to "lite" banking services. This study identifies key elements that assist MFS providers connect with greater traffic in emerging nations, such as: a) the pervasiveness of mobile phone services b) Although branch banking may not be available in many regions, cellphone coverage is robust. Adjei and Appiah (2018) cite the World Bank study and argue that a large proportion of families in developing countries lack access to formal banking, forcing them to use informal banking channels associated with significant risk. Mobile banking services aid in eradicating this issue at its core. According to Gupta (2019), MFS, m-banking, and m-payments bridge the gap between the financial industry and prospective customers. This study indicates that functional and economic advantages will play a significant role in convincing customers to use MFS. West et al. (2019) studied several causes and solutions for not adopting MFS in developing nations such as Nigeria, including a) a lack of sustainable business models and b) a lack of viable business models. This paper's analysis demonstrates that mobile money service providers must restructure their present business models in order to attract additional customers. Recent research by Tun (2020) shown that beliefs, socialism, quality, and trust had a beneficial effect on MFS acceptance. This research demonstrates how to position mobile wallets in order to have a favorable effect on client retention among a certain customer base. Since Bazarbashet et al. (2020) noted, social distance is not an impediment to financial transactions, as individuals and businesses have begun to adopt digital financial services, including mobile money. Recent IMF Financial Access Survey (FAS) findings indicate that social distancing concerns have caused a dramatic increase in MFS depletion. Hung and Linh (2020) examined, within the context of Asian economies, the link between financial inclusion and financial stability. They have demonstrated that free access to the financial system and quick utilization of financial services are indicators of a complete financial system. Pursuant to this, Khera et al. (2021) explored that Digital Financial Inclusion (DFI) has a positive effect in accelerating economic growth. This study has identified access to infrastructure, fintech literacy, and institutional quality as quintessential chauffeurs of DFI.

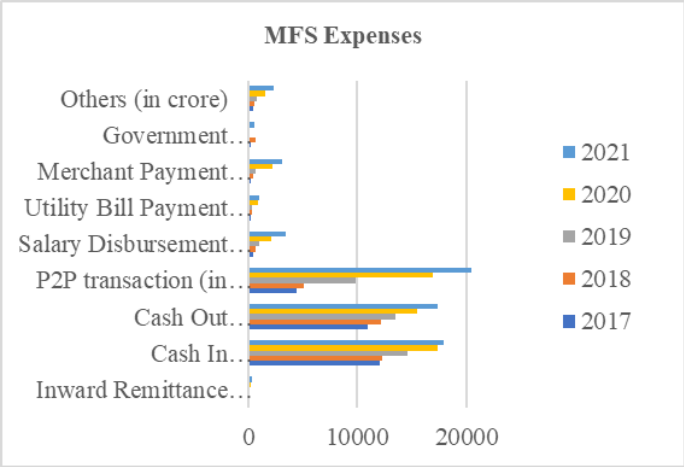
Numerous studies on mobile financial services have been conducted over the course of several years. However, the majority of them discussed about either financial inclusion or consumer desire about specific mobile financial services. Moreover, these studies mainly focused the digitally developed nations like Singapore, the USA, the UK, China, and other comparable economies. However, none of prior research analyze the economic determinants that influence the MFS on the nations who are developing in nature. To fill this void, the purpose of this research is to explore the influence that macroeconomic factors have on MFS transaction value in the context of an emerging economy, Bangladesh. Bangladesh is chosen as the case because it has been one of the economies with the quickest growth over the course of the last decade and has swiftly implemented MFS over the course of the last several years.

2. Overview of Mobile Financial Services: Global and Bangladesh Perspective

Mobile Financial Services (MFS) has been grasping the world financial market rapidly in recent years. These services are more useful for rural, unbanked people. It is a powerful tool for bringing 1.7 billion unbanked and underbanked people throughout the world under the services of the financial sector (World Bank, 2021). Because of the effectiveness of MFS, many unbanked and banked people have begun to embrace it, and few people use MFS in place of banks and non-bank financial services. increasing their territory more than ever before. This study explores the real picture of increasing usage of MFS year by year with a simple graph.

Extracting the global data from World Bank, it is reported that the maximum MFS transaction is in Sub-Saharan Africa with 548.5 million and it is the minimum in Europe and Central Asia with 20.5 million in 2020. The number of registered accounts is on an increasing trend in 2021 with 1.2 billion across the world, a 12.7% increment from the previous year. There are some other statistical data which are also in an increasing trend in 2021, i.e., the number of agents is 9.1 million with a 14% increment from the previous year; the value transacted per day is $2.1 billion with a 21.9% increment from the previous year; the monthly circulating value is $23 billion with a 24% increment from the previous year; the number of active accounts is 436 million, which is also in an increasing trend; and MFS is mostly used in getting airtime services. Within the years 2016–20, MFS is used mostly in this sector. MFS are widely used as cash out/in services also. They have $1100 MFS are also frequently utilized for cash out and cash in services. It is anticipated that the total expenditures in this sector will be approximately $1100 million in the year 2020, and this figure is expected to continue rising (GSMA, 2020).

Mobile Financial Services (MFS) was introduced by Bangladesh Bank as an efficient off-branch banking activities in 2011. Since then, The Government of Bangladesh in co-operation with Bangladesh Bank are

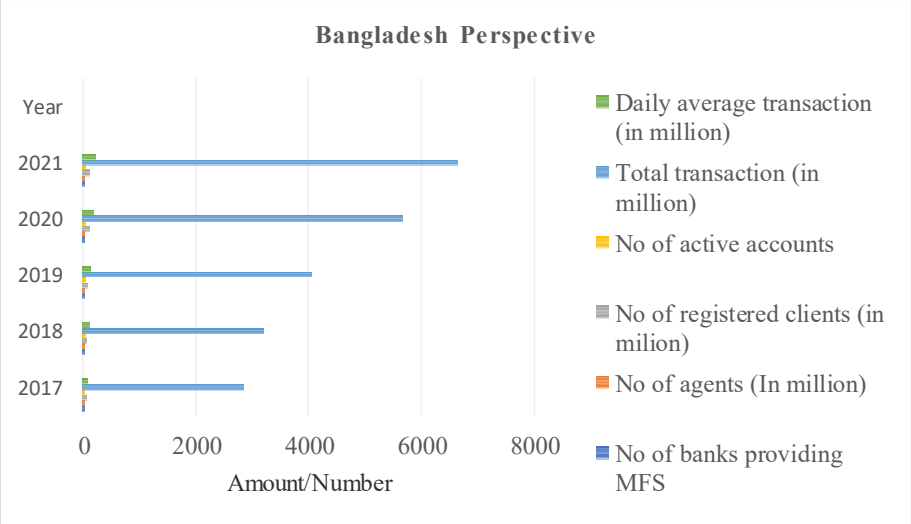


working together to make it a prime channel for small and medium financial transactions. To make it happen, Bangladesh Bank started this venture and within a few years it gains so much popularity that it became the world largest MFS market.

Bangladesh Bank permit the following services to the MFS providers:

- ✓ Cash in

- ✓ Cash out
- ✓ Person to Person (P2P)
- ✓ Person to Business (P2B)
- ✓ Business to Person (B2P)
- ✓ Person to Government (P2G) and
- ✓ Government to Person (G2P) payment services



All those services completed through MFS domestically. Cross-border money transfer is not allowed yet. But inward foreign remittance derives amid banking channel is sanctioned when it is completed through local disbursement. Nowadays, any adult can open an account with an android/IOS mobile devices by installing required apps and fulfilling required information such as legal identification. There are several MFS providers in Bangladesh which are listed below;

1) Rocket
2) Bkash
3) MYcash
4) Islami Bank mCash
5) Trust Axiata Pay (TAP)
6) FirstPay SureCash
7) UPAY
8) OK Banking
9) Rupali Bank SureCash
10) TeleCash
11) Islamic Wallet
12) Spot Cash

3. Hypothesis Development

In prior studies, some of the researchers had analyzed the economic implications of MFS with some other macroeconomic indicators like financial stability, unemployment, economic growth, and size of informal sector etc. Pham and Doan (2020) showed the relationship between financial inclusion and stability under the scope of Asian economies. In this study, they have shown that financial inclusion has positive impact on financial stability. Jacolin et al. (2021) showed that, the adoption of MFS significantly decreases the size of the informal

sector. Morawczynski and Pickens (2009**)** identified, M-Pesa, the pioneer in MFS, have negative impact on unemployment.

All of those above-mentioned studies discussed the impact of MFS on financial stability or unemployment. But none of them make an effort to discuss the overall macroeconomic implications of MFS. Thus, this study here aims to make this effort and analyze which macroeconomic factors have significant impact on MFS. To analyze the impact of macroeconomic factors on MFS, the study here run regression between MFS transaction value which will be stipulated as dependent variable and Balance of payment, Balance of trade, Remittance, E-commerce transaction, MFS total account, School banking deposit, T-Bill rate, Inflation and Private credit as independent variable.

3.1 Remittance and MFS Transaction Value

Remittance is the crucial ingredient of MFS nowadays. Now immigrants send their revenue to Bangladesh by using the MFS channel, which increases the value of MFS. These people do not want to bear the hassle of using the formal banking system to withdraw their money. They have used MFS extensively in recent years. Hence, considering the above-mentioned logic, the following hypothesis is developed:

H_1: Remittance is positively related to MFS transaction value.

3.2 E-commerce Transactions and MFS Transactions Value.

Because of the difficulty and scarcity of terminals, banks are no longer the most popular payment method for online shopping. People also don't want to use the banking channel in the case of online shopping because of its queuing system, documentary issues, etc. To understand the current craze for online shopping (TDS, 2021), and to make payment to this e-commerce site, MFS is required. Online purchasing is on the rise for a variety of reasons, including a) no physical contact due to the pandemic, b) bulk discounts from e-commerce sites, c) ease of use, d) time and money savings, e) a diverse range of products at competitive prices, and so on. Hence, considering the above-mentioned logic, we hypothesize:

H_2: E-commerce transactions are positively related to MFS transaction value.

3.3 School Banking Deposit (SBD) and MFS Transaction Value

The government of Bangladesh has started to take the initiative to send stipend to primary level students by using the MFS channel, which will be deposited into their school banking account. To withdraw money from this account, they need to use the MFS channel, which is associated with a certain charge. This will lead to an increase in MFS value. Hence, considering the above-mentioned logic, the following hypothesis is developed:

H_3: SBD is positively related to MFS transaction value.

3.4 Inflation and MFS Transaction Value

The MFS makes the economy stable by circulating money amongst each other, which will reduce the possibility of rising prices. If the price level of goods and services decreases, then the nation can reap the benefit of reduced inflation. Hence, considering the above-mentioned judgements, the study hypothesizes:

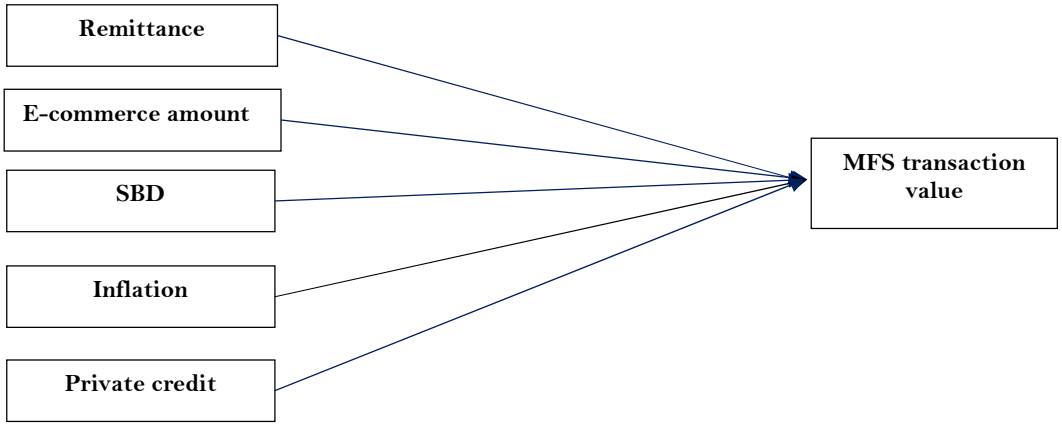
H_4: Inflation is negatively related to MFS transaction value.

3.5 Private credit and MFS Transaction Value

Private credit was hailed as one of the significant factors in the increment in MFS value. It happens because lenders and borrowers do not want to bear the hassle of the formal banking sector's documental process for lending and borrowing. They transfer money between themselves by using the MFS channel, which is very easy to use. Hence, considering the discussed points, we formulate the following hypothesis.

H_5: Private credit is positively related to MFS transaction value.

Based on the hypothesis drawn, the study proposes the following research model enumerated diagram.



4. Research Design

4.1 Data Collection

This study collected monthly data from the Bangladesh Bank Database to investigate the link between MFS value and macroeconomic variables. The data for this research ranges between December 20[1]8 and October 2021, a total of 35 months. All the required information is available in the website of Bangladesh Bank.

4.2 Methodology

This study employs an ordinary least squares (OLS) regression to investigate the impact of the macroeconomic impacts on the amount of mobile financial transactions in Bangladesh. To investigate the aforesaid association, the study includes MFS transaction value as the dependent variable, while the amount of remittance, e-commerce transactions, school banking deposits, private credit, and monthly inflation rate as the explanatory variables.

4.3 Model

Considering the variables to be analyzed in this study, the following model is employed.

$$MFS_{it} = \alpha + \beta_1 WREM + \beta_2 ECOM + \beta_3 SB + \beta_4 INF + \beta_5 PCR + \varepsilon_{it}$$

The details of the variables are given below.

Table 1: Variable Descriptions

Variable	Contraction	Scales of Measurement
Dependent Variable		
MFS transaction amount	MFS	Total monthly amount of MFS transaction
Independent Variables		
Amount of workers Remittance	WREM	Total amount of remittances sent by the workers living abroad
Ecommerce transaction amount	ECOM	Total amount of ecommerce transaction took place in a month
School banking amount	SB	Total monthly value of transactions made through the school banking deposits
Inflation rate	INF	Percentage rate of inflation
Private Credit amount	PC	Total amount of loans distributed in the private sector in a month

5. Results and Discussions

Pearson's correlation coefficients between the independent variables are represented in Table 2. From the table, it can be claimed that WREM and PCR are positively and significantly associated with all the other explanatory variables. ECOM found a positive significant correlation with only SB and PCR.

Table 2: Pearson's Coefficient of Correlation

Variables	WREM	ECOM	SB	INF	PCR
WREM	1.000				
ECOM	0.608*	1.000			
SB	0.599*	0.845*	1.000		
INF	0.550*	0.052	0.318	1.000	
PCR	0.435*	0.703*	0.852*	0.337*	1.000
VIF	3.26	6.40	7.37	2.64	4.19

** indicates 5% level of significance*

In addition to this correlation coefficient, a variance inflation factor (VIF) is also calculated for each of the independent variables. According to Gujarati (2003), variables could suffer from a serious collinearity issue if the value of VIF exceeds 10. From the results, it is evident that regression models have a negligible chance of suffering from multicollinearity problems since the maximum VIF value is 7.37 (less than 10).

Table 3 provides the results of the OLS estimates. Findings from the regression suggest that *WREM*, *ECOM*, and *SB* demonstrate a strong positive significance ($p<0.05$) with respect to *MFS*. Moreover, *PCR* shows a weak but positive significance in this respect. This implies that workers' remittance, e-commerce transactions, and school banking deposits have a substantial influence on the level of MFS transaction amount. *INF*, however, fails to establish an association with the amount of MFS. All the results are robust to autocorrelation and heteroskedasticity. Therefore, it can be claimed that the hypotheses H1, H2, H3 and H5 are significant and follow our prediction.

Table 3 Regression Results

Variables	t-value	*β (p-value)*
WREM	3.79	1.345 (0.001)***
ECOM	2.56	1.077 (0.016)**
SB	3.44	17.559 (0.002)***
INF	-0.95	-674671.80 (0.35)
PCR	1.89	0.021 (0.068)*
F Statistic (p-value)	58.31 (0.000)	
R^2	0.955	
Adjusted R^2	0.947	

*, **, *** denote 10%, 5%, and 1% level of significance respectively

Further to the above analysis, this study also assesses normality test of the model to validate the preconditions of the regressions. The test turns out to be non-significant in case of Jarque Bera test of normality, indicating that the sample data follows a normal distribution. We also rerun the model without the 'robust' option, and found that the results of the explanatory variables remain quantitatively and qualitatively identical to the original model.

6. Conclusion

The study investigates the level of impact that the macroeconomic indicators have on the amount of MFS transaction amount. The outcome of the research suggests that the flow of remittance, level of ecommerce transactions, deposits through school banking, and private credit amount positively and significantly affect the level of mobile financial services. However, inflation finds no significance in MFS transactions.

This research is a maiden attempt to underscore the factors that affect the amount of MFS transactions in a developing country like Bangladesh. No doubt, the increased level of money transfers through MFS channels fosters the flow of funds to the entire economy. It instantly serves the purpose of the beneficiaries at a low cost, which is less cumbersome compared to the formal banking channels. Therefore, policymakers should design necessary initiatives that enhance the level of fund mobilization through mobile financial services. In other words, the government should reform the policies regarding foreign remittance and electronic commerce transactions in a way that ultimately affects the level of quicker flow of funds in the economy through different media, and MFS could be one of them.

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