



Jahangirnagar University Journal of Management Research

Journal Homepage: <https://journals.juniv.edu/index.php/jujmr>

Role of Mobile Financial Service on Embracing Cashless Economy: A Study on Nagad Limited, Bangladesh

Sumaia Haque Nira¹

Md. Rubel²

Article Info

Received: October 10, 2023

Revised: November 26, 2023

Accepted: December 10, 2023

Published: December 20, 2023

Keywords:

Cashless Economy, Digital Payments, Mobile Financial Services, (MFS), Financial Technology, Financial Inclusion, Digital Transformation

JEL Codes: K31, M54

DOI:

<http://doi.org/10.59185/ujmr.v6i1.470>

Abstract:

The methods of making and receiving payments have seen a dramatic shift in the modern era. A greater variety of payment methods are available now because of regulatory changes and technological infrastructure. This study focuses on the contribution of the Mobile Financial Service (MFS) industry, with a specific emphasis on Nagad Ltd., towards promoting a cashless economy in Bangladesh. The study is descriptive in nature and the primary data is collected through a survey using a 5-point Likert scale structured questionnaire. To supplement the study's context and background information, the secondary data have been collected from internet repositories, scholarly research papers, and related publications. The study highlights Mobile Financial Services (MFS) as a key component in Bangladesh's shift to a cashless economy, with Nagad at the vanguard. Importantly, the findings emphasize Nagad's potential to lead Bangladesh into a cashless future, contributing significantly to economic development, fostering financial inclusion, and catalyzing digital transformation. Collaborative efforts among governments, financial institutions, and technology providers are crucial for successfully embracing a cashless society.

1.0 Introduction

A cashless economy refers to an economic framework wherein transactions are mostly conducted without the need for physical currency. It does not imply a complete absence of cash transactions in the economy, but rather that the volume of cash-based transactions is kept to a minimum. A cashless economy, also known as an e-payment system, refers to a scenario in which there is a minimal or negligible circulation of physical currency inside a particular community. As a result, people primarily use electronic methods like debit cards,

¹ MBA Student, Department of Management Studies, Jahangirnagar University,
E-mail: nirasumaia@gmail.com, Mobile: 01760773987

² Assistant Professor, Department of Management Studies, Jahangirnagar University,
E-mail: rubelmisdu@gmail.com, Mobile: 01760057684

electronic money transfers, mobile payments, multi-functional ATMs, and online banking for transactions.

The forward-thinking Digital Bangladesh initiative, which began in 2008, has been at the core of the country's recent achievements, reflecting the extraordinary history of continuous change in Bangladesh. This comprehensive strategy has guided the country through a decade of significant change, guiding it from the analogue past to the digital future. The next frontier for Digital Bangladesh is the creation of a cashless society, a concept where transactions are conducted electronically, digitally, and virtually, leaving behind the traditional use of physical currency. The benefits of a cashless economy are multifaceted, encompassing reduced crime rates, heightened safety, early detection of corruption, expedited transactions, impeccable record-keeping, automated audit trails, heightened tax compliance, and accelerated financial inclusion.

In pursuit of this vision, the Bangladesh Bank has taken a momentous step by granting licenses for mobile financial services (MFS). The objective is clear: to bring unbanked individuals into the formal financial system, stimulate financial intermediation, and catalyze economic growth. It is the accessibility and secure nature of MFS that have enabled it to make swift inroads, fundamentally altering the way money circulates within the nation. The transformation in Bangladesh's financial landscape over the past few years is nothing short of astounding. As a pivotal driving force, MFS has played an instrumental role in this journey. Notably, between 2013 and 2019, the rate of financial inclusion in the country skyrocketed from a modest 20% to an impressive 55%, according to reports by the Daily Star.

Among the MFS providers, Nagad Ltd. stands out as a remarkable success story, redefining digital transactions within the nation in a mere three years. Their pioneering adoption of electronic Know Your Customer (KYC) processes is a testament to their innovative approach. Nagad's services have become integral to the lives of Bangladeshi citizens, serving diverse purposes such as peer-to-peer money transfers, salary disbursements, allowance distribution, and grant allocations, all facilitated seamlessly through MFS. What makes Nagad's ascent even more noteworthy is its potential to catalyze economic growth on a national scale. As one of the youngest players in the MFS arena, Nagad has exhibited exponential growth, emerging as the second-largest MFS provider in Bangladesh. However, despite its palpable impact, there is a notable absence of scholarly literature that comprehensively quantifies Nagad's contributions to the MFS industry, national economic growth, and the imperative mission of financial inclusion. Through rigorous analysis and empirical evidence, this study aims to shed light on the profound impact of this dynamic MFS player on the nation's financial future and broader economic aspirations.

2.0 Problem Statement

This research focuses on investigating the impact of Nagad, a prominent Mobile Financial Services (MFS) provider in Bangladesh, on digital financial engagement and customer satisfaction in the context of the nation's transition towards a cashless economy. Despite Nagad's significant role, there is a notable absence of comprehensive empirical research analyzing the specific factors influencing this transformation. The study seeks to address

critical gaps in existing literature by understanding how Nagad's services, which emphasize convenience, adoption rate, security, awareness, and accessibility, contribute to broader goals such as economic development, financial inclusion, and digital transformation in Bangladesh. Additionally, it aims to assess Nagad's impact systematically on these variables.

3.0 Scope of the Study

This research exclusively examines the impact of Nagad as a Mobile Financial Services (MFS) provider in Bangladesh, with its geographic scope limited to the nation itself. It specifically targets individuals who are familiar with and have utilized Nagad's e-wallet services, collecting data through surveys and questionnaires with a 5-point Likert scale to gauge user perceptions. The study assesses key variables including convenience, adoption rate, security, awareness, and accessibility, investigating their influence on digital financial engagement and customer satisfaction among Nagad users. With a sample size of 96 willing participants, the research aims to provide empirical evidence for policymakers, businesses, and stakeholders interested in the role of Nagad and MFS in shaping Bangladesh's financial landscape. The study operates within a specified timeframe and acknowledges potential limitations, such as the sample size's impact on generalizability and reliance on self-reported data. In summary, this research is sharply focused on understanding Nagad's role in driving digital financial engagement and customer satisfaction within Bangladesh's cashless economy transition, offering valuable insights for informed decision-making.

4.0 Objectives of the Study

The main objective of this study is to examine the impact of Nagad Ltd., a prominent mobile financial services (MFS) provider in Bangladesh, on ensuring a cashless economy. The study also aims to fulfil the following specific objectives:

- To show the current status of mobile financial services in Bangladesh.
- To identify the different factors considered by the users of mobile financial services.
- To understand Nagad's role in digital financial engagement among users.

5.0 Literature Review

5.1 Inception of Mobile Financial Services (MFS) in Bangladesh

It's critical to recognize the value of each customer's investment in a mobile phone. It would be impossible to accomplish any significant objectives in this market without a customer purchasing a mobile phone. When mobile payments became widely used, having a smartphone was essential. The next step toward a cashless society will also require that each person own a smartphone. At this time, Bangladesh's central bank created the legal structure that made it possible to keep millions of consumer wallets affordable. The modus operandi allows a low-cost, highly-incentivized agent network to function while keeping these wallets under the control of the central bank. The agents were eager to offer cash-in

and cash-out services. To realize this ambition, Bangladesh later saw the birth of the mobile financial services (MFS) industry. Mazumdar and Alharahsheh (2020) found that the "Charter for Change" set a goal of attaining "Digital Bangladesh" by 2021.

Kumar (2021) studied that in 2011, Bangladesh Bank approved licenses for mobile financial services (MFS), among many other initiatives made by the government to bring the ideal of "Digital Bangladesh" to life. Akhter and Khalily (2017) explored Dutch Bangla Bank Limited was the first to offer mobile financial services in Bangladesh, launching on March 31, 2011, with the help of two telecom carriers, Banglalink and Citycell, and software from Sybase 365. Kibria (2019) mentioned readiness indicators of user groups in Bangladesh, which show that 92% of users have a National Identification Number (NID) and other material to open an MFS account. In September 2011, the Bangladesh Bank, the country's central bank, released guidelines on "Mobile Financial Services for Banks," which initially encouraged banks to implement MFS. Later, the central bank urged microfinance institutions and mobile network carriers to actively participate in supporting MFS across the nation. Ten banks initially received authorization to use MFS. The two institutions that spearheaded the introduction of MFS in Bangladesh were BRAC Bank's bKash and Dutch Bangla Bank Limited's (DBBL) Dutch Bangla Bank Mobile Banking (Chen, 2012).

Bangladesh's Post Office launched Nagad, a digital financial service with 8,500 e-post centers. Due to its compliance with postal standards rather than Bangladesh Bank requirements, Nagad benefits from flexible regulation. It permits more than five transactions each day. Since its inauguration by Prime Minister Sheikh Hasina on March 26, 2019, Nagad has been providing its customers with seamless services in line with their changing needs. The state-owned MFS operator's registered customers now stand at around 7.43 crore, contributing to the people's adoption of digital financial transactions (The Business Post, 2023).

5.2 Mobile Financial Services Overview

The central bank of Bangladesh, known as Bangladesh Bank, implemented the utilization of off-branch mobile financial services (MFS) in 2011. Following the establishment of a comprehensive mobile network, the growth of a significant number of mobile users, and the development of advanced IT infrastructures in the country, Bangladesh Bank undertook this initiative. The licensing provided by Bangladesh Bank enables the provision of various payment services, including business-to-person (B2P), person-to-business (P2B), person-to-person (P2P), government-to-person (G2P), and person-to-government (P2G) transactions, through mobile financial services (MFS) across the country. The service does not permit the delivery of foreign currency, but it does allow for domestic payment of international remittances through banking channels. Any individual of legal age has the ability to initiate the process of opening a Mobile Financial Services (MFS) account with any authorized operator at a designated bank branch or agent location. To accomplish this, individuals must provide a photograph and the necessary legal papers as required by the respective financial institution.

Table 1. Mobile Finance Service Providers in Bangladesh

Serial No.	Name of the Mobile Financial Service (MFS)	Name of Bank Providing MFS
1	bKash	Brac Bank Limited
2	Rocket	Dutch Bangla Bank Limited
3	mCash	Islami Bank Bangladesh Limited
4	MY Cash	Merchantile Bank Limited
5	T cash	Trust Bank Limited
6	U Cash	United Commercial bank Limited
7	Sure cash	Rupali bank limited
8	TeleCash	Southeast Bank Limited
9	BCB Sure Cash	Bangladesh Commerce Bank Limited
10	Jamuna Bank Sure Cash	Jamuna Bank Limited
11	Spot Cash	Standard Bank Limited
12	FirstPay Sure Cash	First Security Islami Bank Limited
13	OK wallet	One bank Limited
14	Islamic Wallet	Al-Arafah Islami Bank Limited
15	Sonali e wallet	Sonali Bank Limited
16	Tap' n Pay	Meghna Bank Limited
17	Hello	Bank Asia Limited
18	Nagad	Bangladesh Post Office

Source: Bangladesh Bank

5.3 Top Five Mobile Financial Service Providers in Bangladesh

Mobile financial service providers offer their own mobile apps with a variety of features that their customers can access using USSD codes. bKash and Rocket are the market leaders in the MFS industry in Bangladesh, with a large proportion of the market, and Nagad is showing positive growth.

5.3.1 bKash: BRAC Bank Limited manages bKash, which represents a collaborative effort between BRAC Bank Limited in Bangladesh and Money in Motion LLC in the United States. The International Finance Corporation (IFC) became an equity partner in 2013, while the Bill & Melinda Gates Foundation initiated investments in the same year. In the year 2018, AliPay, a subsidiary of the Alibaba Group, joined the ranks of international investors in the aforementioned company. The participation of these international organizations has significantly contributed to their notable accomplishments and impacts. bKash has established partnerships with established mobile network operators (MNOs) and effectively operates mobile financial services (MFS) throughout the nation.

5.3.2 Rocket: Dutch Bangla Bank Limited (DBBL) oversees the operation of the Rocket mobile banking service. This entity is recognized as one of the most prominent providers of mutual funds in the country. The company offers additional benefits to its consumers, such as the opportunity to participate in cash drawings conducted at bank ATMs and branches. Additionally, it provided various services such as salary disbursement, corporate fund collection, scholarship distribution, and allowance allocation, among others.

5.3.3 Nagad: The sister company of the Bangladesh Post Office is Nagad Digital Financial Service. In 2018, the Bangladesh Post Office brought back its old money transfer methods (EMTs) and postal cash cards as Nagad. It was the first MFS service in the country to offer digital KYC (DKYC). The customer onboarding tool includes automated identity verification, OCR in Bangla, and data that is specific to the customer.

5.3.4 Sure Cash: Progoti Systems Limited introduced Sure Cash as a dynamic mobile financial services (MFS) platform in 2014. The organization offers accessible network infrastructure and establishes collaborative relationships with 1,500 payment partners and four domestic financial institutions within the nation. This network includes Rupali Bank Limited, a state-owned commercial bank. SureCash, a mobile financial service provider, has built its technology with a specific focus on utilities, government-run educational programs, and educational institutions.

5.3.5 mCash: Mobile financial services are offered by Islami Bank Bangladesh Limited through their platform, known as mCash. Users have the opportunity to access financial services that are based on Islamic Shari'ah principles through this platform. This feature enables operators to do cash withdrawals from automated teller machines (ATMs) as well as bank locations.

5.4 State of the Cashless Economy in Bangladesh

An interoperable QR-based payment method is Bangla QR. It represents progress in Bangladesh's cashless and contactless payment system. The payment system is built on the mVisa platform, which offers all of Visa's features and services without requiring a POS device. Bangladesh Bank (2021) introduced debit, credit, and prepaid card transaction volumes at Point of Sales (POS) machines through November, which as of so far have climbed 23% compared to the same period last year.

The rise in use of digital payments and networks, as well as banks' exclusive offers on debit, credit, and prepaid cards to consumers from all income categories, particularly millennials, are currently driving up card transactions. MFS is yet another well-liked payment method in the nation that is speeding up digital payments. 29 banks have obtained MFS licenses since the program's launch in 2011. Mohammad (2022) studied that Bangladesh has more than 170 million cellphone subscribers and more than 112 million internet users, and MFS has long been the preferred option for online bill payment, online tax returns, academic institution registration, digital health services, and banking systems.

Analysts claim that after a large shift to online payments and commerce as a result of the epidemic, Bangladesh's transition to a cashless economy is gaining momentum. They do contend that despite its modernity, cards are still often used in this manner of payment. They note that although there was progress toward more dependable digital payment systems before the pandemic, the viral invasion hastened development at a time when travel restrictions were in place to prevent the spread of diseases. In March 2022, the number of users of Internet banking increased by almost 400,000.

J.U.H. (2022) demonstrated that according to the electronic settlement system, cash is transferred from one bank account to another in real-time and on a gross basis. Akara and

Asekome (2018) examined the benefits of cashless payments that may reduce financial risks such as default risk, liquidity risk, and systemic risk by improving the efficiency of the payment system.

5.5 Prevalence of a Cashless Society and Nagad's Role

The MFS sector has been operating in the nation for 12 years. But this industry has undergone a significant upheaval since Nagad entered the picture in 2019. Nagad has evolved from the idea of cash in and cash out to accommodate all kinds of financial transactions. The year after the organization's journey, the COVID epidemic began. The prevalence of cashless transactions has grown as a result of this pandemic. It continues to gain popularity among individuals because they are becoming aware that carrying cash is no longer necessary. Nagad has been pursuing this objective for the past four years. But before that, there wasn't a definite figure or amount. This time, they are working toward a very definite objective, making it much simpler for them to continue along that road. Nagad has already begun to make efforts to reach the goal.

Many individuals have noted that in exchange for making a Nagad payment, they offer customers the chance to win hundreds of motorcycles, refrigerators, smart televisions, tablets, smartphones, smartwatches, and BMW sedans valued at crores of rupees. In total, they are awarding thousands of rewards. Approximately 2,500 awards have already been given out, and the major reason for doing all of this is to promote digital payments (The Daily Star, 2023).

These studies collectively imply that MFS companies like Nagad have been significant in encouraging cashless transactions and financial inclusion in Bangladesh. Convenience, accessibility, security and trust are important factors that affect customer acceptance and use of MFS, particularly in rural areas and among underprivileged people. However, more investigation is required to determine how MFS affects Bangladesh's larger financial ecosystem and to develop plans for fostering equitable and sustainable growth in the industry.

5.6 Previous Empirical Studies

In order to understand the role of Mobile Financial Services (MFS) in Bangladesh's move toward a cashless economy, with a focus on Nagad Limited, it is important to look at previous empirical studies that have looked at the most important factors related to this trend. This section provides a comprehensive overview of relevant literature encompassing the independent variables, including convenience, adoption rate, security, awareness, and accessibility.

5.6.1 Convenience

Studies in the field of mobile payments and financial services have consistently highlighted the significance of convenience as a critical determinant of adoption. Kim, Mirusmonov, and Lee (2010) conducted an empirical examination of factors influencing the intention to use mobile payment systems, revealing the pivotal role of convenience in shaping user behavior. Additionally, Islam and Rahman (2017) investigated the relationship between

mobile financial services and financial inclusion, shedding light on how convenience factors impact the adoption of MFS in the context of Bangladesh.

5.6.2 Adoption Rate

The adoption rate of mobile financial services has been a subject of considerable interest among researchers. Abu-Shanab and Al-Jabri (2013) explored the determinants of mobile banking acceptance, offering insights into the factors that influence users' decisions to adopt such services. Moreover, Ahmed et al. (2019) conducted a study focusing on the adoption of mobile banking in Pakistan, emphasizing the significance of adoption rate as a variable that shapes the MFS landscape.

5.6.3 Security

Ensuring the security of financial transactions conducted through mobile platforms is paramount for user trust and adoption. Alalwan, Dwivedi, Rana, and Williams (2017) delved into the adoption of Internet of Things (IoT) services and their connection to user perceptions of security. Dissanayake and Ratnadiwakara (2020) examined trust and perceived risk as predictors of mobile banking adoption, highlighting the pivotal role of security-related factors.

5.6.4 Awareness

Awareness of mobile financial services and their benefits is a crucial precursor to adoption. Saeed and Abdul-Khaliq (2019) investigated the role of awareness and perceived ease of use in the intention to use mobile banking, shedding light on how awareness impacts user behavior. Rahman and Rahman (2020) explored factors affecting awareness and adoption of mobile financial services in Bangladesh, contributing valuable insights to the awareness dimension.

5.6.5 Accessibility

The accessibility of mobile financial services plays a pivotal role in their adoption, especially among diverse user groups. Kaur and Dhir (2016) examined factors affecting mobile banking adoption among Indian youth, highlighting the importance of accessibility considerations. Furthermore, Hoque and Sorwar (2017) extended the understanding of accessibility by investigating factors influencing the adoption of mHealth among the elderly, emphasizing the importance of ease of access.

In summary, the aforementioned empirical studies offer valuable insights into the variables of convenience, adoption rate, security, awareness, and accessibility within the context of mobile financial services adoption. These studies provide a foundational understanding of the factors that influence the embrace of cashless transactions in Bangladesh, paving the way for a deeper exploration of these variables in the specific context of Nagad Limited in the present research.

6.0 Methodology of the Study

For the purpose of the study, both primary and secondary data are collected. Primary data is gathered through surveys and questionnaires distributed to individuals who are familiar

with and have utilized Nagad's e-wallet services. The use of survey questionnaires allows the systematic collection of user perceptions and feedback regarding Nagad's services. We employ a purposive sampling technique to select participants who have actively used Nagad's services. The sample size comprises 96 willing participants among Nagad users. We developed a structured questionnaire that incorporates a 5-point Likert scale to assess user perceptions. The questionnaire includes questions related to convenience, adoption rate, security, awareness, and accessibility. We source secondary data from online repositories, scholarly research papers, and relevant publications to provide additional context and background information for the study. This secondary information contributes to a comprehensive understanding of the mobile financial services landscape in Bangladesh, with a specific focus on Nagad's role and impact. Quantitative data obtained from the survey questionnaires is analyzed using statistical software named IBM Statistical Package for Social Science (SPSS) Statistics 29.0. We compute descriptive statistics, including means, frequencies, and percentages, to assess user perceptions of Nagad's services in terms of convenience, adoption rate, security, awareness, and accessibility.

7.0 Analysis and Interpretations of the Result

7.1 Demographic Profile of Respondents

Table 2. Respondent's Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	39	40.6	40.6	40.6
	Male	57	59.4	59.4	100.0
	Total	96	100.0	100.0	

Among the 96 survey participants 39 were women, and 57 were men. Male respondents made up 59.4% of the total, while female respondents made up 40.6%. This indicates that both male and female use mobile financial services, despite the possibility of a little difference in their respective user counts.

Table 3. Respondent's Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25 years	65	67.7	67.7	67.7
	30-35 years	14	14.6	14.6	82.3
	Above 40 years	3	3.1	3.1	85.4
	Below 20 years	14	14.6	14.6	100.0
	Total	96	100.0	100.0	

According to the table, 67.7% of respondents' ages are in the range of 20–25, whereas only 3% are over 40 years. That indicates that the maximum number of younger people in Bangladesh use mobile financial services.

Table 4. Respondent's Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11,000-20,000	15	15.6	15.6	15.6
	21,000-30,000	10	10.4	10.4	26.0
	31,000-40,000	4	4.2	4.2	30.2
	41,000-50,000	3	3.1	3.1	33.3
	Above 50,000	5	5.2	5.2	38.5
	Below or equal to 10,000	59	61.5	61.5	100.0
	Total	96	100.0	100.0	

The data indicates that 61.5% of respondents have a monthly income that is below or equal to 10,000 BDT. In contrast, only 3.1% of respondents have incomes in the 41000–50000 range. This indicates that low-income people are using more mobile financial services in Bangladesh.

7.2 Reliability Analysis

Table 5. Reliability Test (Scale: All Variables)

Cronbach's Alpha	N of Items
.853	6

The Cronbach's Alpha coefficient of 0.853, within a range of 0 to 1, demonstrates strong internal consistency and reliability for the 6-item measurement scale, indicating that the scale consistently measures the intended construct. This reliability suggests that the scale is dependable and consistent in assessing the variable it was designed to measure.

7.3 Data Normality Evaluation Testing

	Demographics	Awareness	Adoption	Convenience	Accessibility	Security	Level of Cashless Transactions
N Valid	96	96	96	96	96	96	96
N Missing	0	0	0	0	0	0	0
Skewness	1.500	.366	.603	.760	.799	.491	.686
Std. Error of Skewness	.246	.246	.246	.246	.246	.246	.246
Kurtosis	2.200	-.631	-.063	-.162	-.161	.169	-.441
Std. Error of Kurtosis	.488	.488	.488	.488	.488	.488	.488

To evaluate the normality of each variable's distribution, the analysis relies on measures of skewness and kurtosis. By examining these statistical indicators for each variable, insights into the departure from a normal distribution can be gained. Based on the provided statistics:

Awareness: The skewness value is positive (1.500), suggesting a right-skewed distribution, and the kurtosis value is positive (2.200), indicating heavier tails. This may imply that the distribution of awareness is not perfectly normal.

Adoption: The skewness value is positive (0.366), indicating a right-skewed distribution, but the kurtosis value is negative (-0.631), suggesting lighter tails. This variable might have a somewhat skewed distribution but with lighter tails.

Convenience, Accessibility, Security: These variables all have positive skewness values, indicating right-skewed distributions. However, their kurtosis values are close to 0, suggesting that the tails are not substantially different from a normal distribution.

Level of Cashless Transactions: The skewness value is positive (0.686), indicating a right-skewed distribution, and the kurtosis value is negative (-0.441), suggesting lighter tails. This variable may have a somewhat skewed distribution with lighter tails.

Based on skewness and kurtosis alone, the data for each variable appears to deviate from a perfectly normal distribution to varying degrees. The skewness values suggest right-skewed distributions for most variables, while the kurtosis values indicate some departure from normal tails. The decision on normality may also depend on the specific requirements and assumptions of analysis.

7.4 Variable Analysis

Table 6. Descriptive Statistics

Variables	Mean	Std. Deviation	N
Level of cashless transactions	2.1979	1.13897	96
Awareness	2.4792	1.17857	96
User adoption rate	2.1458	1.30569	96
Accessibility	2.3750	1.16303	96
Convenience	2.1458	1.16961	96
Security	2.3854	1.13666	96

Based on the provided descriptive statistics, the following observations can be made:

The mean value for the level of cashless transactions in Bangladesh is 2.1979. The standard deviation of 1.13897 indicates a moderate amount of variation in the data. The mean awareness score for MFS (Mobile Financial Services) such as Nagad among the general population is 2.4792. The standard deviation of 1.17857 suggests a moderate level of variation in the responses. Besides, for the adoption rate of Nagad's mobile financial services, the mean value is 2.1458. The standard deviation of 1.30569 indicates a relatively higher level of variation in the responses. The accessibility value for Nagad in rural or urban areas is 2.3750. The standard deviation of 1.16303 suggests a moderate level of

variation in the data. The mean convenience of using Nagad compared to cash-based transactions is 2.1458. The standard deviation of 1.16961 indicates a moderate level of variation in the responses. For security and privacy concerns, the mean value is 2.3854. The standard deviation of 1.13666 suggests a moderate level of variation in the responses. All the values are here based on a sample size of 96.

7.5 Correlation and Regression Analysis

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square	F	df 1	df2	Sig. F Change
1	.760 ^a	.578	.554	.76032	.578	24.638	5	90	<.001
a. Predictors: (constant), security, user adoption rate, awareness, convenience and accessibility									

The coefficient of determination, R-Square, is 0.760, which indicates that the predictors in the model account for about 76% of the variance in the “level of cashless transactions”. This indicates a relatively strong relationship between the independent variables (security, user adoption rate, awareness, convenience and accessibility) and the dependent variable. The adjusted R-square is 0.578, which is slightly lower and represents the number of predictors in the model and gives a more realistic estimation of the model. The standard error of the estimate is 0.76032, which implies the average difference between the observed values and the expected values. The predictors are more accurate when the standard error is lower. The Change Statistics table shows the change in R-squared when predictors are added to the model. The F-statistic of 24.638 with 5 and 90 degrees of freedom and a significance level (Sig. F Change) less than 0.001 suggests that adding the predictors significantly improves the model’s ability to explain the differences in cashless transactions.

Table 8. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.311	.217		.155
	Awareness	-.080	.096	-.083	.408
	User adoption rate	.049	.065	.056	.454
	Accessibility	.098	.120	.100	.420
	Convenience	.468	.092	.481	<.001
	Security	.312	.098	.311	.002

The results of the regression analysis for predicting the "level of cashless transactions" reveal several important insights. Among the factors considered predictors, convenience and security emerge as significant drivers of cashless transactions. In particular, a one-unit increase in convenience is correlated with a significant 0.468-unit increase in the expected level of cashless transactions, and a corresponding increase in security is correlated with a 0.312-unit increase. Convenience and security are also statistically very significant (p 0.001 and p = 0.002, respectively), highlighting their major influence on cashless

transactions. Conversely, awareness, user adoption rate, and accessibility do not demonstrate statistically significant associations with cashless transactions, as their coefficients have p-values greater than 0.05. The intercept (constant) is also non-significant ($p = 0.155$). These findings suggest that when aiming to encourage cashless transactions, a focus on enhancing convenience and security measures may be particularly effective, while other factors may not have a meaningful influence in the context of this analysis.

Table 9. ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53.708	6	8.951	15.249	<.001b
	Residual	51.068	87	0.587		
	Total	104.777	93			
a Dependent Variable: level of cashless transactions						
b Predictors: (constant), security and privacy concerns, user adoption rate, awareness, accessibility, convenience, demographics of mobile financial services						

In this ANOVA analysis for the regression model predicting the "level of cashless transactions," the overall model is found to be highly statistically significant ($F = 15.249$, $p < 0.001$). This indicates that at least one of the predictors, including "security and privacy concerns," "user adoption rate," "awareness of mobile financial services," "accessibility of mobile financial services," "convenience of mobile financial services," and "demographics of mobile financial services," has a significant impact on the level of cashless transactions. The regression model successfully explains a substantial portion of the variance in the dependent variable, with a sum of squares for regression of 53.708 out of a total sum of squares of 104.777. The residuals, representing unexplained variance, have a sum of squares of 51.068. Overall, this ANOVA analysis underscores the significance of the predictors in understanding the variation in cashless transactions.

8.0 Discussion

Mobile financial services face several issues, including the need to address technological and financial risks, ensure service providers possess the necessary capabilities to deliver suitable services to their consumers, and effectively maintain service quality. Consumers can access digital financial services (DFS) remotely from any location, encompassing various forms of electronic banking, virtual banking, or cyber banking. In general, the process involves operating inside a given state, as initiated by the consumer, and demonstrating significant value to the consumer in terms of accessibility, cost, and utility (Hossain & Haque, 2014).

Mobile financial services are gaining popularity due to their ease of use, cost reductions, and cost effectiveness. A large portion of the population in this country does not have access to banking services. They have a lot of difficulties executing proper banking activities. Mobile financial services help to alleviate this issue by providing transaction services similar to those provided by banks or other vital bank services. Mobile financial services (MFS) providers such as Rocket, bKash, and Nagad have already substantially validated the promise of such banking facilities in Bangladesh. There are a number of typical obstacles associated with MFS in Bangladesh. Key challenges include cybercrime

probability, individual perception, concealment, initial high access costs, security and transaction confidence, lack of information regarding knowledge and skills, improper attitude toward a brand-new product, and the reduction of cash-based transactions, etc. (Mujeri, M. 2017). The innovation in the MFS business has significantly expedited the process of financial inclusion, offering a comprehensive solution for various transactions such as money transfers, utility bill payments, medical expenses, educational fees, transportation costs, and other bill-related activities. According to Rahman (2021), the service business can achieve significant advancements if it can effectively protect customer security, maintain service quality, reduce service costs, establish a fair competitive environment, enhance efficiency, accurately document user compliance, and provide valuable feedback.

In order to enhance the efficiency of this service, the MFS industry engages in partnerships with banks, non-governmental organizations (NGOs), microfinance institutions, and insurance companies. These collaborations facilitate loan disbursements, salary payments, utility bill payments, and other financial transactions. The integration of emerging technologies such as blockchain, artificial intelligence, virtual reality, and machine learning, along with the utilization of the internet, has facilitated the expansion of the Mobile Financial Services (MFS) business to unprecedented levels. MFS institutions prioritize the stringent protection of customers' personal information. They have implemented a secure IT infrastructure and robust cyber security measures to mitigate any potential risks to customers' funds. In order to maintain a constant line of communication with customers, these institutions regularly disseminate advertisements through social media platforms, addressing concerns related to privacy and security. Additionally, they consistently caution users against sharing their PIN and OTP (one-time password) with any third parties.

The banking industry has been in charge of the financial sector in this country for a long time and offers financial services to its customers. But banks did not help the poor people of Bangladesh get access to banking services. To do this, banks give customers their choices about mobile financial services and talk about technical and pricing problems that come up with them. When banks and other financial institutions need someone to do their work for them, they hire an agent. However, agents are not well-educated and trained like bank employees. They don't know much about the rules and laws, etc. Because of this, a lot of agents don't really care about fraud, theft, or other rules that protect information; they only care about theft and security problems. Often, one person can help with more than one mobile payment service, like bKash, Rocket, Nagad, Upay, Sure Cash, and so on. Service is slowed down and other issues arise. There isn't a safe place for agents to keep large amounts of cash in their shops so they are careful when customers cash out. A lot of MFS agents said they didn't get enough service commissions and other tools like marketing, technical, financial, and other help.

9.0 Findings of the Study

Based on the multiple regression analysis, several key findings emerged regarding the factors influencing cashless transactions in Bangladesh. The most significant factor was found to be the convenience of mobile financial services. This indicates that when financial

transactions using mobile devices are made easier, individuals are more likely to adopt cashless payment options. Additionally, the accessibility of mobile financial services was positively related to the level of cashless transactions, highlighting the importance of expanding coverage to reach individuals in remote areas or with limited access to traditional banking services.

Surprisingly, the awareness of mobile financial services showed a negative but insignificant relationship with cashless transactions. This suggests that despite increased awareness, barriers such as lack of trust, knowledge, and perceived risks still exist. Efforts to address these barriers and enhance confidence and trust in mobile financial services are crucial. The user adoption rate, demographics of mobile financial services, and security and privacy concerns did not demonstrate a significant impact on cashless transactions. While these factors may influence attitudes and perceptions, they are not the primary drivers of cashless transactions in Bangladesh. These findings provide insights for policymakers, mobile financial service providers, and other stakeholders to develop strategies and initiatives that promote cashless transactions in Bangladesh. Emphasizing convenience, expanding accessibility, and addressing barriers to adoption will be key in driving the growth of the cashless economy in the country.

10.0 Conclusion

Customers of digital financial systems are increasing in number. People are becoming accustomed to a digital lifestyle; however, most Bangladeshi clients do not have access to MFS. They are not fully aware of current technology's capabilities and do not seek better control over their actions or the benefits of adopting MFS. This study has shed light on the role of Mobile Financial Services (MFS), specifically focusing on Nagad Limited, in embracing a cashless economy in Bangladesh. The findings highlight several important factors that contribute to the adoption of cashless transactions and provide valuable insights for policymakers, businesses, and stakeholders. Firstly, the convenience of MFS emerges as a critical driver in promoting cashless transactions. Nagad Limited has successfully introduced user-friendly interfaces, simplified transaction processes, and innovative features that have made cashless payments more convenient for users. Secondly, Nagad's widespread presence and efforts to extend services to remote areas have contributed to financial inclusion and empowered individuals to participate in the cashless economy. Moreover, while awareness of MFS is a crucial factor, this study reveals that it does not significantly influence the level of cashless transactions. This finding suggests that despite increasing awareness campaigns, there are still barriers and challenges that need to be addressed. These may include building trust, addressing knowledge gaps, and dispelling misconceptions about MFS. Additionally, the study highlights that factors such as user adoption rate, demographics of MFS users, and security and privacy concerns do not have a significant impact on the level of cashless transactions. Nagad Limited may continue to set the example in adopting a cashless Bangladesh by considering these issues and building on the strengths revealed in this study, helping to promote the economic development, financial inclusion, and digital transformation of the nation.

References

- Abu-Shanab, E., & Al-Jabri, I. M. (2013). Determinants of mobile banking acceptance: The case of Jordan. *Journal of Enterprise Information Management*, 26(4), 360-384.
- Ahmed, I., Nawaz, A., Ali, G., Ali, I., & Usman, A. (2019). Factors affecting the adoption of mobile banking: A case of Pakistan. *Management Science Letters*, 9(7), 1083-1090.
- Akhter, N., & Khalily, M. A. B. (2020, August). An Analysis of Mobile Financial Services and Financial Inclusion in Bangladesh. *Indian Journal of Human Development*, 14(2), 213–233. <https://doi.org/10.1177/0973703020946706>
- Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Williams, M. D. (2017). Consumer Adoption of Internet of Things (IoT) Services: An exploratory study. *Journal of Enterprise Information Management*, 30(2), 272-299.
- Al-Dalaïen, Borhan Omar Ahmad. “Cashless Economy in India: Challenges Ahead”, *Asian Journal of Applied Science and Technology*, 1, no. 7 (2017).
- Alam, S. B., Sarker, R. H., Hossain, M. S., & Khan, M. M. (2010). A secured electronic transaction scheme for mobile banking in Bangladesh incorporating digital watermarking. *IEEE International Conference on Information Theory and Information Security*, 1-5. IEEE.
- Banerji, R., & Singh, A. (2022). An empirical study on consumer attitude and behavioral intention to adopt mobile wallet in India. *International Journal of Electronic Banking*, 3(2), 83. <https://doi.org/10.1504/ijebank.2022.122219>
- Bangladesh Bank. (2021). *Mobile finance service provider’s comparative statement between month of March and April 2021*.
- Bangladesh ‘Going Cashless.’ (2021, December 17). *WhiteBoard Is a Quarterly Policy Magazine*. <https://whiteboardmagazine.com/2694/bangladesh-going-cashless/>
- Bangladesh Bank, Mobile Financial Services (MFS) comparative summary statement of June, 2022 and July, 2022. Retrieved November 4, 2022, from <https://www.bb.org.bd/en/index.php/financialactivity/mfsdata>.
- Bangladesh-population-don't-use-mfs-survey. (n.d.). *The Daily Star*. Retrieved May 17, 2023, from <https://www.thedailystar.net/business/economy/news/>
- Bayero, M. A. (2015, January). Effects of Cashless Economy Policy on Financial Inclusion in Nigeria: An Exploratory Study. *Procedia - Social and Behavioral Sciences*, 172, 49–56. <https://doi.org/10.1016/j.sbspro.2015.01.334>
- Bella, F. I., & Efendi, N. F. (2021, October 29). Strengthening The Islamic Digital Payment System Through Sharia Electronic Wallet (E-Wallet). *El Dinar*, 9(2), 94–107. <https://doi.org/10.18860/Ed.V9i2.11451>
- Chawla, D., & Joshi, H. (2019, October 7). Consumer attitude and intention to adopt mobile wallet in India – An empirical study. *International Journal of Bank Marketing*, 37(7), 1590–1618. <https://doi.org/10.1108/ijbm-09-2018-0256>
- China Campus Network Bangladesh. (2019). Booming Digital Economy of Bangladesh. Retrieved August 9, 2020.
- Chong, A. Y. L. (2013, February). Predicting m-commerce adoption determinants: A neural network approach. *Expert Systems With Applications*, 40(2), 523–530. <https://doi.org/10.1016/j.eswa.2012.07.068>

- Dissanayake, D. M. N., & Ratnadiwakara, D. M. (2020). Trust and perceived risk as predictors of mobile banking adoption in Sri Lanka. *International Journal of Bank Marketing*, 38(2), 370-388.
- Eid boosts MFS transactions to record Tk 93,033cr in Apr. (n.d.). *New Age | the Most Popular Outspoken English Daily in Bangladesh*.
- Hossain, A. M., & Haque, M. Z. (2014). Prospects and challenges of mobile banking in Bangladesh. *Journal of Business Studies*, 35(2), 165–186.
- Islam, S., & Rahman, M. T. (2017). Mobile financial services and financial inclusion: Is there any nexus? *MPRA Paper*, 80204.
- Kaur, P., & Dhir, A. (2016). Factors affecting mobile banking adoption among Indian youth. *Telematics and Informatics*, 33(4), 894-910.
- Khan, S. A., & Khan, M. H. R. (2020). Mobile financial services as a determinant of financial performances of commercial banks in Bangladesh. *International Journal of Electronic Banking*, 2(4), 283.
- Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, 26(3), 310-322.
- Kumar, D. (2022). Prospects and challenges of mobile financial services (MFS) in Bangladesh. *Handbook of Research on Social Impacts of E-Payment and Blockchain Technology*, 320-341.
- Rahman, M. F. (2021, January 17). The future of mobile financial services in Bangladesh. *The Daily Star*. <https://www.thedailystar.net/supplements/mobile-financial-services/news/the-future-mobile-financialservices-bangladesh-2028885>
- MFS-helping-bangladesh-become-digital-economy. (n.d.). *The Daily Star*. Retrieved May 17, 2023, from <https://www.thedailystar.net/business/economy/news/>
- MFS-providers-see-surge-utility-payments. (n.d.). *The Daily Star*. Retrieved May 17, 2023, from <https://www.thedailystar.net/business/economy/news/>
- Mujeri, M. K. (2017, November 3). Mobile finance - a new challenge for banks. *The Financial Express*. <https://thefinancialexpress.com.bd/views/mobile-finance-a-new-challenge-for-banks-1509720817>
- Mujeri, K., & Azam, S. (2018). Role of Digital Financial Services in Promoting Inclusive Growth in Bangladesh: Challenges and Opportunities. *Institute for Inclusive Finance and Development, Working Paper No. 55*.
- Nagad Contributes to Transforming Bangladesh Into a Cashless Country. <https://www.dhakatribune.com/business/2022/03/27/nagad-contributes-to-transforming-bangladesh-into-a-cashless-country>
- Nagad Finance gets final nod of Cen Bank. (2023, April 2). *The Business Standard*. <https://www.tbsnews.net/economy/nagad-finance-gets-final-nod-bb-609790>
- Nagad. (n.d.). *Nagad*. <https://nagad.com.bd/>
- Nagad-acquiring-over-50k-customers-per-day-2023-04-03. (n.d.). *The Business Post*. Retrieved May 17, 2023, from <https://businesspostbd.com/news/>
- Nagad-virtual-card-eliminates-harassment-women-over-phone. (n.d.). *The Business Standard*. Retrieved May 17, 2023.

- Oyewole, O. S., Gambo, J., Abba, M., & Onuh, M. E. (2013). Electronic payment system and economic growth: a review of transition to cashless economy in Nigeria. *International Journal of Scientific Engineering and Technology*, 2(9), 913-918.
- Rahman, B., Ahmed, O., & Shakil, S. (2021). Fintech in Bangladesh: ecosystem, opportunities and challenges. *International Journal of Business and Technopreneurship*, 11(1), 73-90.
- Rahman, M. S., & Rahman, M. M. (2020). Factors affecting awareness and adoption of mobile financial services in Bangladesh. *International Journal of Bank Marketing*, 38(3), 726-749.
- Rashid, M. H. (2020). Prospects of digital financial services in Bangladesh in the context of fourth industrial revolution. *Asian Journal of Social Science*, 2(5), 88-95.
- Revels, J., Tojib, D., & Tsarenko, Y. (2010, May). Understanding Consumer Intention to Use Mobile Services. *Australasian Marketing Journal*, 18(2), 74–80. <https://doi.org/10.1016/j.ausmj.2010.02.002>
- Saeed, M. N., & Abdul-Khaliq, S. M. (2019). The role of awareness and perceived ease of use in the intention to use mobile banking in Yemen. *Journal of Innovation & Knowledge*, 4(4), 218-224.
- The Daily Star. (2018, April 5). *The Daily Star*. Retrieved from Cashless shopping.
- Top Mobile Financial Services (MFS) Providers in Bangladesh | Mobile Banking Services | Business Haunt. (2022, February 5). *Business Haunt*.
- Vetrivel, M., & Razack, M. A. B. I. (2020). Whether E-Wallets Are Really A Catalyst towards Expedition of Cashless Economy?: An Empirical Investigation in the Aftermath of Demonetization. *Studies in Indian Place Names*, 40(34), 6-16.
- Wang, E. S. T., & Lin, R. L. (2016, February 15). Perceived quality factors of location-based apps on trust, perceived privacy risk, and continuous usage intention. *Behaviour & Information Technology*, 1–9.