Finance & Banking Studies

IJFBS VOL 13 NO 1 ISSN: 2147-4486

Available online at www.ssbfnet.com
Journal homepage: https://www.ssbfnet.com/ojs/index.php/ijfbs

Fintech-Based Financial Inclusion in Bangladesh: Overview, Challenges and Policy Directives

Rony Kumar Datta [(a,b)]

[(a)] *PhD Fellow, Institute of Bangladesh Studies, University of Rajshahi, Bangladesh.*
[(b)] *Department of Finance and Banking, Hajee Mohammad Danesh Science and Technology University, Bangladesh.*

ARTICLE INFO

Article history:

Received 21 Feb. 2024
Received in rev. form 15 March 2024
Accepted 16 March 2024

Keywords:

Fintech, Financial Inclusion, Digital Finance, Bangladesh

JEL Classification:
G18, G21, O33, Q01

ABSTRACT

Financial inclusion, especially the adoption of fintech, has emerged as a crucial avenue for removing the financial access divides in developing countries, including Bangladesh. Following the comprehensive analysis, this article intends to outline Bangladesh's recent experiences with fintech-based financial inclusion, identify the short-comings and hence make policy suggestions. Being a descriptive research, cross-sectional and observational research approaches are applied for the explanatory analysis of secondary data. Results suggest an urban-rural gap in the implementation of digital financial services, with urban areas consistently having higher rates of fully online branches and a greater number of financial machines. Despite this, the sharp rise in the issuance of active cards is a positive sign suggesting an expansion of consumer base and an adoption of electronic modes of payment. Moreover, inter-bank electronic fund transfers and online banking have experienced increasing uptake, revealing a progressing trend towards digital transactions within the banking industry. Additionally, the study identifies a speedy growth in the number of mobile financial services accounts in both urban and rural areas. This study adds to the exchange of ideas regarding financial inclusion by carrying out a detailed study of Bangladesh's digital financial transformation, exemplifying the accomplishments, obstacles, and future research directions. It highlights the need for targeted policies and ongoing research efforts to build inclusive financial systems to serve the entire society's interest. Nevertheless, the observations will have both theoretical and practical significance, contributing towards building capability in harnessing technology for sustainability, community uplifting, and shaping a brighter future.

© 2024 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

Introduction

Financial inclusion (FI) as referred to universal access to a broad variety of inexpensive financial services, such as banking products, financial literacy, insurance, and other services at reasonable pricing (Rajan, 2015). It is the process of ensuring that major institutional players provide vulnerable segments in society, such as lower-income and weaker parts, with cheap, fair, and transparent access to the right financial goods and services (Chakrabarty, 2013). Understanding FI's importance, the UN made it an objective for the sustainable development goals (UN, 2015), viewing as a driver of innovation, economic growth, gender equality, and poverty reduction. On the other hand, application of technology to financial services is recognized as financial technology or fintech) (Thakor, 2020). Fintech has, in fact, steadily upended the conventional banking paradigm, offering consumers more alternatives for obtaining financial services at the most affordable price (Berger, 2003). Whereas, fintech-based financial inclusion refers to achieve financial inclusion through fintech innovation and application.

A growing number of stakeholders, including academia and policymakers, have become interested in the new digital financial services as a possible avenue for financial inclusion in recent years. Financial systems have become more accessible, namely through the use of mobile phone technology, Internet-enabled money transfer systems, and digital payment technologies via digital platforms. Implementing digital services may influence and mold traditional financial transactions, perhaps ensuring a society's economic

© 2024 by the authors. Hosting by SSBFNET. Peer review under responsibility of Center for Strategic Studies in Business and Finance.
https://doi.org/10.20525/ijfbs.v13i1.3227

growth. Financial inclusion has the potential to be a transformative factor in several developing countries, reducing poverty and fostering a more financially inclusive society (Sassi & Goaied, 2013).

Klynveld Peat Marwick Goerdeler (KPMG) reports that 962 deals totalling 37.9 billion dollars in Fintech investment were made globally in 2019. Still, with only 3.6 billion dollars spread across 102 acquisitions, the investment in Asia Pacific was much less than that in other continents ("The Pulse of Fintech H1 2019", 2020). On the other hand, Accenture claims that Fintech investment in Europe has increased significantly. Australia and Singapore, with respective investments of 453 and 401 million dollars, made up the majority of the investments in Asia Pacific. Additionally, the survey noted that while Fintech investment has grown exponentially, it has now stabilized, indicating that the majority of firms are now moving into the mature stage of their business models. In 2020, Accenture Analysis Finds that "Global fintech fundraising fell in first half of 2019, with decline in China offsetting gains in the US and Europe" (Rahman et al., 2021).

Bangladesh's financial sector has seen remarkable transformation in the last fifteen years. It has achieved a balance between risk management and innovative openness in its policy and regulatory framework. Bangladesh can serve as an example for other developing nations with sizable populations who lack access to banking services by successfully navigating the shift from local to global connections. The government of Bangladesh has been dedicated to utilizing technology to alleviate poverty since the year 2009 through its 'Digital Bangladesh Vision-2021' plan, which was initiated as part of the National ICT Policy and ICT Act of 2009. They helped establish two well-known mobile payment firms in Bangladesh, Nagad and bKash, which provided support to the country throughout the epidemic (Noor, 2021). In its seventh and eighth-year plans, the government of Bangladesh also keeps emphasizing the creative application of technology to deepen the financial markets through the introduction of pertinent products and provide financial services to the underprivileged (Alliance for Financial Inclusion, 2018).

Bangladesh's government has introduced digital projects such human resource development, citizen connectivity, and digitalization of government services as part of the "digital Bangladesh" agenda. Under the public-private partnership (PPP) framework, several digital firms have emerged in partnership with international aid agencies (such as USAID and UNDP) to accelerate the development of digital infrastructure for the promotion of financial as well as public services. Again, 'digital financial service (DFS) lab' which is one of the prominent initiatives of the government of Bangladesh is aimed at ensuring access to financial services. It is a collaborative effort launched by the Bangladesh's central bank wished for advancing and broadening digital financial inclusion. DFS Lab makes several recommendations for digital financial inclusion, including starting 'rural e-commerce' activities, implementing interventions intended for financial literacy and communication of behavior change, and changing the legal and policy framework (Aziz & Naima, 2021).

Bangladesh as a country has recently been an attractive investment destination because of its rapidly expanding GDP and promising economic prospects. With around 58 million people in the 15–35 age range, Bangladesh offers a plethora of opportunities for firms focused on technology. Bangladesh barely ranks 86th in terms of affordability and 77th in terms of availability of financial services, despite being hosting to about 2.2% of the world's population. Consequently, there is a relatively low banking penetration rate relative to the population, with over 70% of people lacking a bank account. Despite the limited penetration of banks, the use of smartphones has exploded, with more than 117 million individuals having mobile connections. Consequently, the government created regulations for mobile financial services or MFS in the year 2011 (Pathak et al., 2018).

Bangladesh has experienced an unprecedented financial revolution owing to MFS since its inception. Globally, among all registered mobile money accounts, more than 8% are in the MFS sector, which experienced significant growth in the country. Bangladesh is the eighth-largest recipient of remittances worldwide, and MFS has demonstrated and transformed digital finance in Bangladesh (Khan et al., 2019). Nonetheless, the majority of transactions continue to be focused on fundamental transactions. As a result, MFS activities continue to make up the majority of Bangladesh's Fintech ecosystem. Instead of leveraging fintech technology to its fullest extent, other businesses within the ecosystem, like financial service providers, solution providers, and IT platforms continue to use MFS in partnership with other organizations (Pathak et al., 2018).

In Bangladesh, fintech-based financial inclusion gained traction driven by advancements in technology and an increased focus on reaching the unbanked population in recent years. Despite these advancements, there are numerous avenues to explore the full potentialities of financial inclusion and fintech in Bangladesh. Likewise, many challenges hindering the widespread adoption of fintech-based financial inclusion in Bangladesh. In this regard, one question can be raised; what are the current scenarios and challenges facing Bangladesh in practicing fintech-based financial inclusion? Therefore, this article aims to outline Bangladesh's recent experiences with fintech-based financial inclusion and to draw attention to challenges that must be overcome to achieve digital financial inclusion. This research also provided insight into developing policy guidelines for Bangladesh.

Literature Review

Financial inclusion is the concept of providing advantageous and cheap financial products and services to individuals and enterprises in a responsible and sustainable manner (Datta, 2021). Alternatively, when most of the disadvantaged people of the society experiences the nonappearance of access to a broad variety of financial services is referred to as financial exclusion. If anyone does not have partial or entire access to services supplied by major financial institutions is considered to be financially excluded (Sapovadia 2018). Transaction banking, savings, credit, and insurance are vital services that all citizens in any society should have access to. Financial inclusion implies particularly for underbanked and unbanked individuals and companies having universal services given by sustainable institutions at a fair cost (Patwardhan, 2018).

Financial inclusion is recognized as a lubricant of broader economic system as recommended by Vo et al. (2020) after assessing its impact on the sustainable fiscal health via increased investments in funds and financial savings incorporating bank-level information compiled from 3071 Asian institutions within the year 2008 to 2017. Their analysis also shows that financial inclusion promotes financial sector stability by delivering timely and adequate solutions and products to families and small and medium-sized companies (SMEs). When a country take initiative for the unbanked to get entry to financial services, the country may try to effort growth and alleviate poverty by improving healthcare, business, and education (Demirguc-Kunt et al., 2018). Furthermore, Ozili (2018) in his study stated that increasing financial inclusion assists impoverished households to cope with income shocks caused by unexpected misfortunes like as illness or unemployment. However, the three dimensions namely affordability, physical access and eligibility that gauge an economy's financial inclusion. The indicators of these dimensions include the proportion of adults who has at least one deposit or loan account, the number of automated teller machines or branches of financial institution by adult population or geography, and so forth (Mialou et al., 2017).

In academic literature, the digital inclusion concept first appeared around 2003 (Warschauer, 2004). In the United Kingdom, it first arose in reference to its relevance to social inclusion in terms of age, race, culture, location, gender, education, poverty, and disability (Helsper, 2008). Fintech is a financial issues and technology mashup by merging the internet of things, big data, social computing, and cloud computing that is redefining the role of information technology. This has allowed financial institutions to automate their processes. This has disrupted the established financial sectors' ecosystem by inventing new platforms, channels as well as innovative business models and influenced the buying patterns through the adoption of a self-service culture (Rahman et al., 2021). Digital finance is the supply of banking and financial services deploying digital innovations especially cellular phones or internet connection, which are increasingly frequently utilized for financial services. This has enhanced access, decreased prices, and makes transactions easier for the left behind sectors of society (Patwardhan, 2018). Alternatively, Salampasis & Mention (2018) in their study described the FinTech as the technology of innovation and application in delivering economic services to the end users with the intent to set up such a pecuniary system that protects the people, planet, and the economy as a whole.

In Nigeria, cross-sectional research on 230 persons of employed-age highlighted the financial inclusion and a cashless economy in a contemporary setting and found that customer value, awareness, and infrastructure impacted the financial inclusion which are hallmarks of a cash-free economy (Abdullahi, 2015). A study conducted by Datta (2021) showing an association between bank's profitability and cashless banking in Bangladesh. His findings show that there is a positive and significant influence of transactions volume of mobile financial services (MFS) on return on assets (ROA) of the banking industry of Bangladesh. Another research accompanied by Krivosheya (2020) found a considerable favorable influence of numerous financial innovations on the frequency of cardholder behavior and cashless payments.

Datta et al. (2022) conducted a survey of the factors that drive Bangladeshi public commercial bank customers to choose E-banking. They discovered that the most important variables were simplicity of use, security, convenience, ease of access to the internet, and resistance to change. Khan et al. (2017) discovered that mobile banking acceptability in Bangladesh is influenced by perceived security, price, and convenience, as well as the complexity of utilizing the service. Again, according to Islam et al. (2018), the system's simplicity of use and responsiveness, transaction security in ATM booths, and technical challenges all have an impact on Bangladeshi mobile banking users' experiences. Whereas Datta (2021) examined a study to show the influence of financial inclusion on the GDP of Bangladesh and found a positive significant relationship between active mobile money accounts and financial inclusion.

Fintech has demonstrated significant advantages to generate economic solutions for developing nations due to its capacity. It refers to a collection of techniques, products, equipment, and assistance employed to manage the movement of individuals with limited financial means, with the goal of attaining a desirable level of living within the limitations of existing resources. However, the challenge of managing money for individuals with lower incomes arises from the underlying problem of insufficient cash input. Fintech has the capacity to effectively handle the money administration practices of informal sector for lower income individuals, who constitute the mainstream population in many emerging countries. Additionally, it offers possibilities for change and enhancement (McCaffrey & Schiff, 2017).

Bangladesh, situated in Southeast Asia, has one of the most rapidly expanding economies in the area. In 2019, it had an impressive economic growth rate of 8.2 percent and is projected to become the 28th biggest economy globally by 2030 (Bhuiyan et al., 2020). Regrettably, the state of financial inclusion in Bangladesh has remained stagnant since the Maya Declaration in 2011. Based on the Global Financial Index 2017, approximately 59% of individuals aged 15 and above lack a bank account, in contrast to 71% in 2014 (Demirguc-Kunt et al., 2018). A significant portion of the adult population remains unable to benefit from official financial products and services due to factors such as inadequate income, a minimum account balance requirement, insufficient financial knowledge and understanding, and a lack of a technological facility, particularly in the countryside and suburban communities. Simultaneously, a shortage of resources in terms of material wealth, workforce capacity, and business skills among service providers is exacerbating the existing financial inclusion gap (Ahmed & Hasan, 2021).

In addition, acoording to the study of David-West et al. (2018) and Sapovadia (2018), when it comes to amenities and performance in operations, banks have a significant edge over non-bank firms. The central bank of Bangladesh, Bangladesh Bank (BB), has launched several programs in recent years with the goal of integrating underprivileged, marginalized, and impoverished populations into the formal financial system through digital financial services, agent and branch banking, and mobile financial services (MFS), among other major channels (Bangladesh Bank, 2020).

Throughout the entire country, there exists about 57 commercial banks and over 10,000 branches. However, individuals in cities value these services more than people in rural regions do, as most bank clients reside in metropolitan areas. Mobile financial services (MFS) were established in 2011 to ensure that underprivileged people in rural regions have access to financial services. The Dutch-Bangla Bank PLC was the first bank to offer mobile banking services (such as Rocket) through a variety of mobile phones. bKash

(BRAC Bank PLC), MCash (Islami Bank Bangladesh PLC), MYCash (Mercantile Bank PLC), UCash (United Commercial Bank PLC), Mobile Money (Trust Bank PLC), OK Banking (ONE Bank PLC), Hello (Bank Asia PLC.), and numerous other well-known commercial banks are providing MFS. According to Yesmin et al. (2019), the entire MFS market in Bangladesh is expected to be valued at 15 billion BDT, with bKash—a division of Brac Bank—holding a 75% market share and Rocket coming in at 18%.

In Bangladesh affected by the COVID-19 pandemic, MFS providers are essential in mitigating adverse economic outcomes. A shift toward a greater use of digital payment systems was mostly brought about by continuing social distancing measures and lockdowns after the first Corona infection was discovered in March 2020. But during COVID-19, when people began losing their employed positions and returning home from the city, MFS saw sharply declining trends starting in June 2020 (Aziz & Naima, 2021).

Fintech's major goal is to improve the quality of service through shorten transaction cycles and lower service costs. Fintech therefore has the ability to quicken the growth of the financial sector by boosting the financial inclusion in developing nations like Bangladesh. Payment systems with fintech capabilities have the power to completely change the system by bringing the informal and formal economies together and enhancing tax collection and transparency. Fintech can lower payment banks' operational costs while lowering the central bank's present fraud risk. Fintech can also automate the loan approval verification process, which is now sadly lacking in Bangladesh. By reducing the time it takes to approve or deny an advance or loan will increase customer satisfaction while reducing the possibility of bias. In delivering Robo Advisor services to all stakeholders at various levels, Fintech can also be leveraged perhaps improving service quality even more. Chatbots can now be used to replace customer service representatives, lowering operational costs and increasing service speed. However, implementation in all these domains, Bangladesh has still scope currently. Furthermore, the country benefits from a huge proportion of its population being youthful, as well as extremely high mobile subscription coverage. Combining the two drives, and with the active participation of regulatory bodies, Fintech has the potential to drive macroeconomic growth by acting as a catalyst (Chakraborti, 2020).

Fintech has the potential to revolutionize the financial industry, but sensible regulation and direction are desperately needed. Bangladesh is the ninth-largest recipient of remittances worldwide; however, despite remarkable success globally in streamlining this system through Fintech, cross-border money transfers continue to be a laborious and drawn-out process because of policies enforced by the government and central bank of Bangladesh. In order to improve the standard of living for people who operate in rural areas and are usually unable to secure fair pricing, it can also be used at the grassroots level to develop financial markets (Rahman et al., 2021). Ahammed et al., (2021) discovered that, despite having a high demand for loans, many farmers remain outside of the formal financial network for a variety of reasons, including fear of rejection, a complex loan approval process, a dislike of interest, and unfriendly banker behavior. Furthermore, fintech provides the chance to integrate green initiatives. With all of this in mind, the Bangladeshi government as a part of the implementation of the government's Vision 2021 has already set a timeframe of 2019-2024 for developing the first national financial inclusion strategy (NFIS) (Islam, 2019). Although the level of financial inclusion in Bangladesh has grown over the last two decades, there is still potential for growth in the country's financial inclusion status. Better policies and proper implementation of Bangladesh's National Financial Inclusion Strategy can improve the country's financial inclusion scenario (Ahammed et al., 2023).

As a lucrative source of passive income, an increasing number of businesses in Bangladesh are turning to e-commerce, and fintech can play an important role in its growth (Rahman et al., 2019). In order to guarantee that their staff members can adjust to the changes, banks have started using new technology. Many of them have even started recruiting younger, more tech-savvy employees or setting up training programs to address the Fintech advancements (Ahmed & Rahman, 2020). Furthermore, Fintech firms have a lot of opportunities considering the size of the population. Particularly in Bangladesh's rural areas, Fintech services are desperately needed because it has been found that either the people there lack the skills needed to open bank accounts or that there is a substantial income gap between the rural and urban populations. Due to the fact that it is not profitable for traditional brick and mortar banks to open branches there, there is also a deficiency in the banking infrastructure and services. Government regulations and Fintech knowledge can improve financial inclusion in rural areas in order to address all of these issues (Kuddus et al., 2020).

In the financial services industry specifically in developing countries, fintech is still in its infancy. Although investment is growing, it will require additional substantial outlays to compete with other established firms that have substantial financial resources and politically aware clout, (Vijai, 2019). Fintech research is still lacking in certain important areas; however, some sectors are getting more attention than others. Large-scale data handling and robotic intelligence applications in the banking industry, along with new financial laws controlling fintech identification, protection, and data confidentiality, are not as well-documented as Fintech's contribution to alternative finance and its potential to alter organizational structures. Furthermore, the majority of the studies has no overarching goal and is tangentially connected (Kavuri & Milne, 2018).

Therefore, it is evident from the previous literatures that Bangladesh’s journey towards financial inclusion and fintech is on the smooth pace but there are numerous avenues and scope yet now to implement. A plenty of research has been conducted on the factors and measurement of financial inclusion and digital financial inclusion. But very few are stressed on the exploration of challenges to implement and attainment. Study conducted by Ahmed and Hasan (2021), Rahman et al. (2021), and Aziz and Naima (2021) have tried to assess and overviewing the scenario and challenges of digital financial inclusion in Bangladesh. But they used primary data which were both qualitative and quantitative. Hence, this paper attempts to describe the Fintech-based financial inclusion experiences and challenges to achieve the digital financial inclusion in Bangladesh based on the most recent secondary data which are completely quantitative in nature.

Data and Methodology

This study is descriptive in nature and is primarily based on secondary data. The data regarding the digital financial inclusion of Bangladesh has been collected from Bangladesh Bank (the central bank of Bangladesh) and the studied period is from the year 2018 to October 2023. This study also includes a thorough literature review based on the objectives of the study.

The goal of descriptive research is to describe a phenomenon and its characteristics. This type of study is more concerned with what rather than how or why something has happened. It provides a snapshot or summary of a particular situation without influencing or manipulating it (Nassaji, 2015). Since the current study is descriptive research, this study has used cross-sectional and observational studies method in analyzing and explaining the secondary data. These are two common research designs in descriptive research used to gather information about a population or phenomenon without manipulating any variables. The aim of cross-sectional studies is to obtain reliable data that make possible to generate, robust conclusions, and create new hypotheses that can be investigated with new research (Zangirolami-Raimundo et al., 2018). However, these methods cannot establish causal relationships between variables and limited in capturing changes or trends over time. They are also susceptible to biases such as recall bias and selection bias (Siedlecki, 2020).

Current State of Fintech-based Financial Inclusion in Bangladesh

The current scenario of fintech-based financial inclusion in Bangladesh is highlighted in the following tables and figures.

Table 1: Statistics of Fully Online Urban and Rural Branches of Bangladesh as the Percentage of Their Total Branches

Fully Online Branch (Urban and Rural)						
Period	**Urban**	**Urban Total**	**Urban (% of total)**	**Rural**	**Rural Total**	**Rural (% of total)**
2018	4842	5372	90.13	3629	4909	73.93
2019	5353	5541	96.61	3984	5027	79.25
2020	5509	5522	99.76	4847	5149	94.13
2021	5699	5700	99.98	5239	5239	100.00
2022	5840	5841	99.98	5298	5298	100.00
Up to Oct' 2023	5952	5952	100.00	5287	5287	100.00

Source: Bangladesh Bank

Table 1 represents data of Bangladesh for the years 2018 to October 2023, showing the number of fully online branches in urban and rural areas of Bangladesh, along with the percentage of fully online branches relative to the total number of branches in each category.

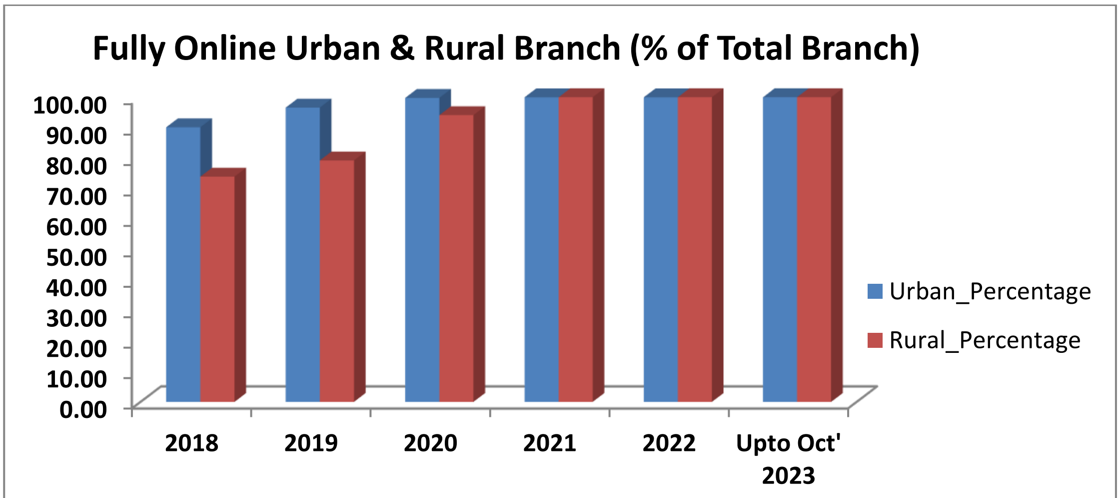

Figure 1: Fully Online Urban & Rural Branch of Bangladesh (% of Total Branch) from 2018 to October 2023

From figure 1, it is observed that in 2018, 90.13% of urban branches and 73.93% of rural branches were fully online. The percentage of urban branches increased significantly in 2019 (96.61%) and continued to rise, reaching 99.98% in 2021 and 2022. The rural branches also saw an increase in their percentage of the total, reaching 100% in 2021 and continuing at that level in 2022 and up to October 2023. As of October 2023, all urban and rural branches are categorized as fully online branches with 100% for both. The data suggests a trend towards a higher proportion of fully online branches in both urban and rural areas over time. Urban areas have consistently had a higher percentage of fully online branches compared to rural areas, although both have shown an increasing trend.

Table 2: ATM, POS, CDM and CRM Statistics of Bangladesh

Period	ATM		POS		CDM		CRM	
	Urban	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
2018	7361	2919	47027	1201	916	408	118	8
2019	7665	3259	56043	2484	992	415	224	30
2020	8407	3516	67045	6184	1069	458	698	82
2021	8928	3903	84414	7672	1193	505	979	221
2022	9201	4233	93971	9080	720	374	1959	530
Up to Oct' 2023	9611	4044	97096	9939	264	21	2766	1033

Source: Bangladesh Bank

Table 2 provides data on the number of Automated Teller Machines (ATMs), Point of Sale (POS) terminals, Cash Deposit Machine (CDM), and Cash Recycling Machine (CRM) installations in both urban and rural areas of Bangladesh for each year from 2018 to October 2023.

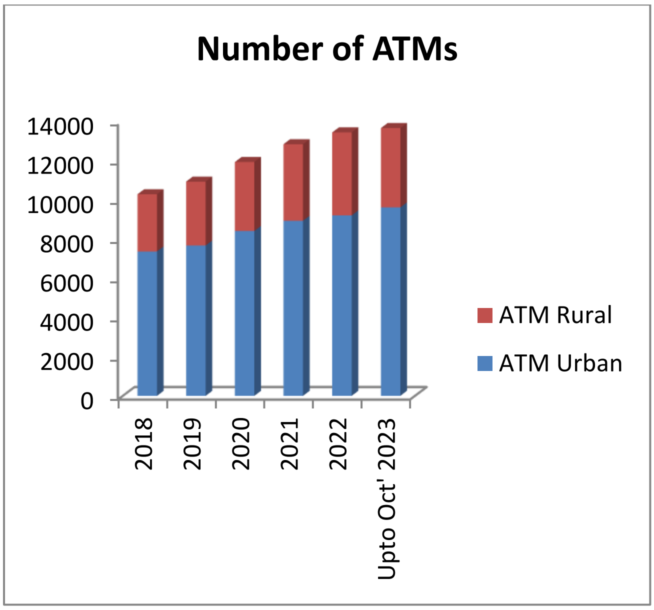

Figure 2: Number of ATMs in rural and urban areas of Bangladesh from 2018 to October 2023

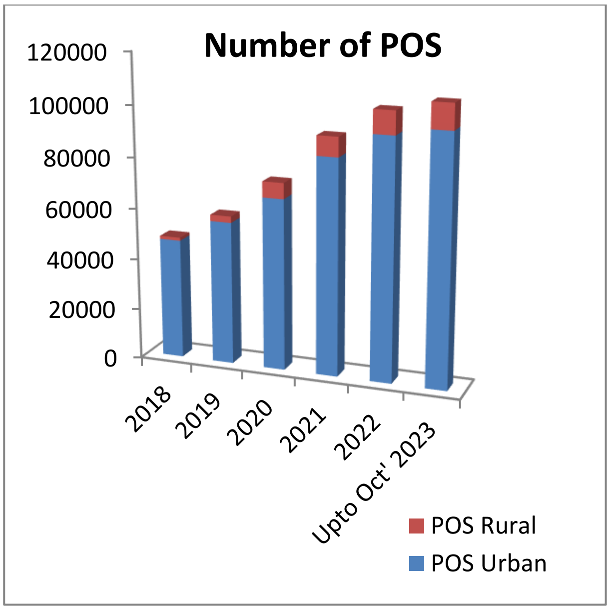

Figure 3: Number of POS in rural and urban areas of Bangladesh from 2018 to October 2023

In figure 2 and 3, both the number of ATMs and POS terminals shows an increasing trend over the years. In 2018, the number of ATMs in urban areas (7361) is significantly higher than in rural areas (2919). Similarly, for POS terminals, urban areas (47027) have a higher number compared to rural areas (1201). The numbers of both ATMs and POS terminals increase steadily over the years in both urban and rural areas. By October 2023, the number of ATMs in urban areas has reached 9611, while in rural areas, it stands at 4044. For POS terminals, urban areas have 97096 terminals, whereas rural areas have 9939 terminals.

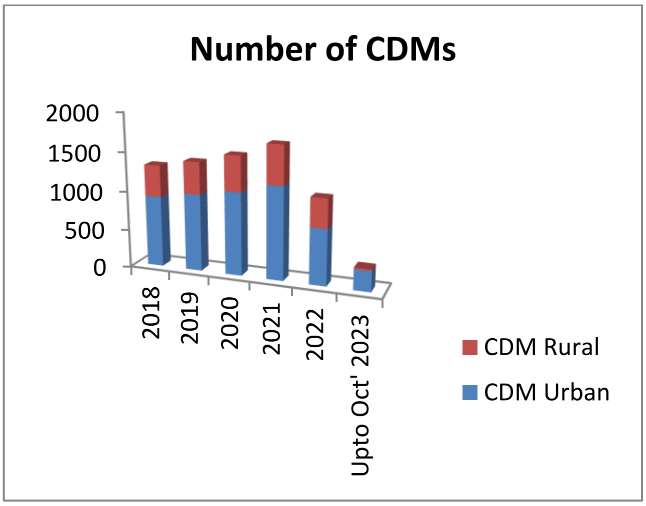

Figure 4: Number of CDMs in rural and urban areas of Bangladesh from 2018 to October 2023

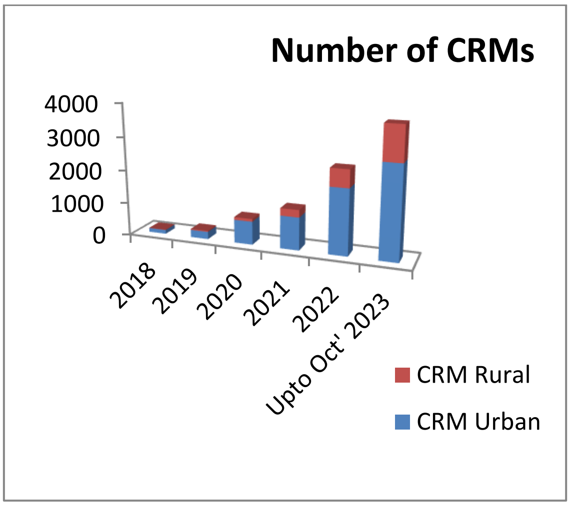

Figure 5: Number of CRMs in rural and urban areas of Bangladesh from 2018 to October 2023

In figure 4 and 5 depicts that the number of Cash Deposit Machines (CDM) increased overall during the period, with fluctuations in installation rates. Urban areas consistently had more CDM installations compared to rural areas. The highest number of CDM installations occurred in 2021, with 1193 units in urban areas and 505 units in rural areas. Notably, there was a significant decrease in CDM installations in 2022, particularly in urban areas where installations dropped to 720 units.

Similar to CDMs, the number of Cash Recycling Machines (CRM) installations varied over the years. Urban areas consistently had more CRM installations compared to rural areas. The highest number of CRM installations occurred in 2022, with 1959 units in urban areas and 530 units in rural areas. By October 2023, there was a substantial increase in CRM installations in both urban and rural areas, reaching 2766 units in urban areas and 1033 units in rural areas.

Table 3: Issued Cards and Transaction Statistics of Bangladesh

(Amount in Million Taka)						
	Number of Active Issued Cards			**Transaction Amount of Active Issued Cards**		
Period	**Debit**	**Credit**	**Prepaid**	**Debit**	**Credit**	**Prepaid**
2018	16692928	1922428	199951	124488.8	10432.8	984.9
2019	20144404	2542504	326147	151837.4	13396.7	1408.5
2020	23563580	2626449	354021	187956.5	15609.1	1678.3
2021	27117021	3471872	411136	243569.7	22289.8	2149.8
2022	37472910	3985465	502406	367106.5	24893.8	3122.6
Up to Oct' 2023	41810339	4783354	667711	395756.9	28656.6	3803.9

Source: Bangladesh Bank

Table 3 presents the information regarding the number and transaction amount of active issued cards of Bangladesh categorized into debit, credit, and prepaid cards, over a period spanning from 2018 to October 2023.

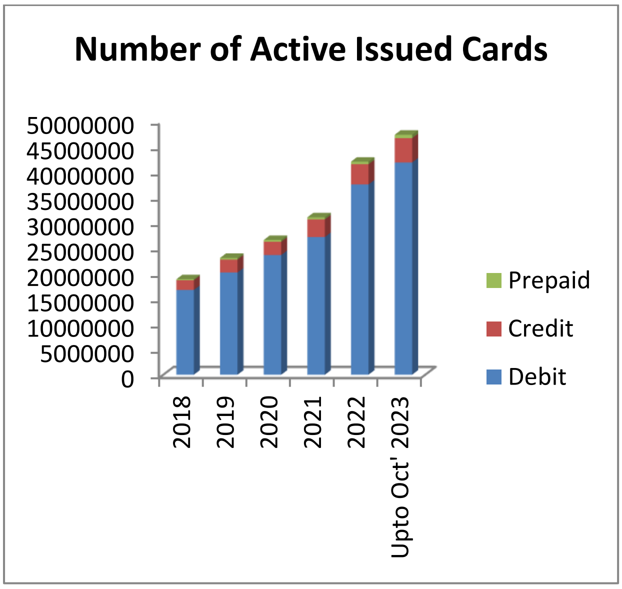

Figure 6: Number of active issued cards (debit, credit, and prepaid) of Bangladesh from 2018 to October 2023

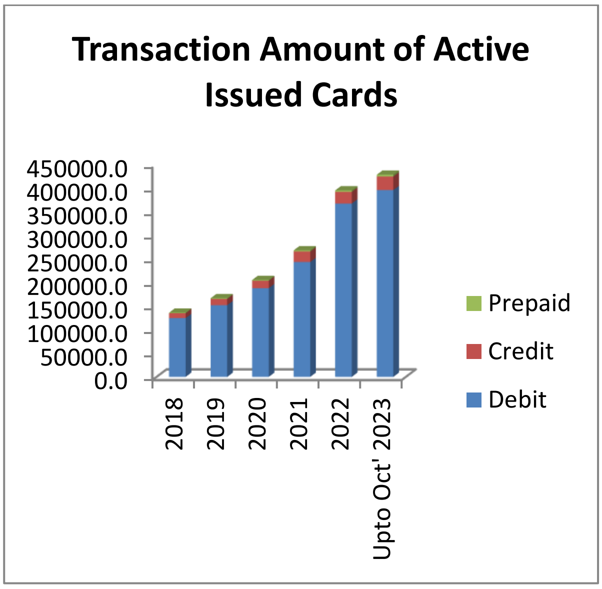

Figure 7: Transaction amount of active issued cards of Bangladesh from 2018 to October 2023

From figure 6 and 7 it is found that over the period from 2018 to October 2023, the total number and transactions amount across all types of active issued cards, including debit, credit, and prepaid has shown consistent growth throughout the period. The total number of active issued debit cards increased from 16,692,928 in 2018 to 41,810,339 and the transaction amount reached 395,756.9 million taka by October 2023. From 2018 to October 2023, the total number of active issued credit cards increased from 1,922,428 to 4,783,354 and the total transaction amount touched 28,656.6 million taka, indicating a substantial increase compared to earlier years. Prepaid cards increased in number from 199,951 in 2018 to 667,711 and reached 3,803.9 million taka in total transaction amount by October 2023, indicating a steady increase over the years**.**

Table 4: Interbank Transaction Statistics through EFT and RTGS

(Amount in Million Taka)					
	EFT		**RTGS**		
Period	**Scheduled Bank and BSBL**	**Bangladesh Bank**	**Scheduled Bank(Local Currency)**	**Scheduled Bank(Foreign Currency)**	**NBFI**
2018	129485.24	6127.73	966293.00		
2019	165029.37	17079.89	1134015.00		
2020	309151.91	42451.08	1562598.10		
2021	397692.49	74844.60	2726918.20		
2022	401328.04	93458.20	3730666.70	144093.50	210504.60
Up to Oct' 2023	574377.53	144917.34	4759965.50	225594.50	198636.10

Source: Bangladesh Bank

The provided data in table 4 presents information on inter-bank transactions of Bangladesh through Electronic Funds Transfer (EFT) involving scheduled Banks, Bangladesh Samabaya Bank Limited (BSBL) which operate their clearing through Scheduled Bank and Bangladesh Bank. Whereas, Real Time Gross Settlement (RTGS) containing scheduled banks and Non-Bank Financial Institutions (NBFI) segmented by local currency and foreign currency transactions, with amounts expressed in million taka. The table spans from 2018 to October 2023, detailing the amounts transferred between and these entities.

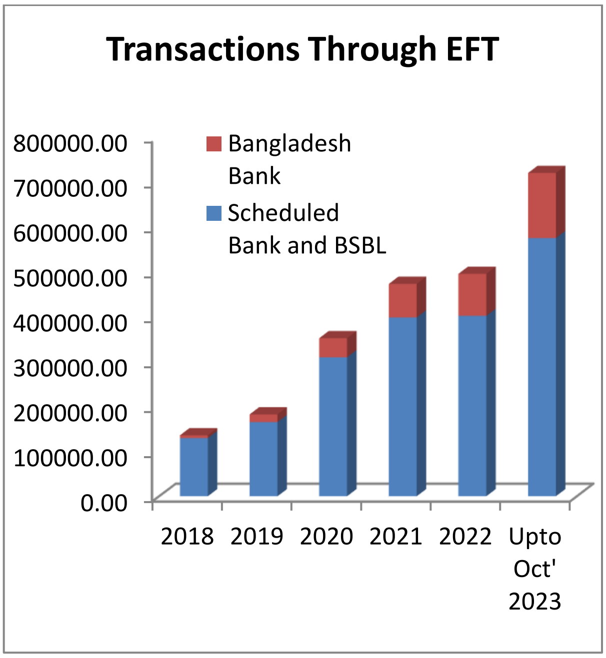

Figure 8: Inter-bank transactions of Bangladesh through EFT from 2018 to October 2023

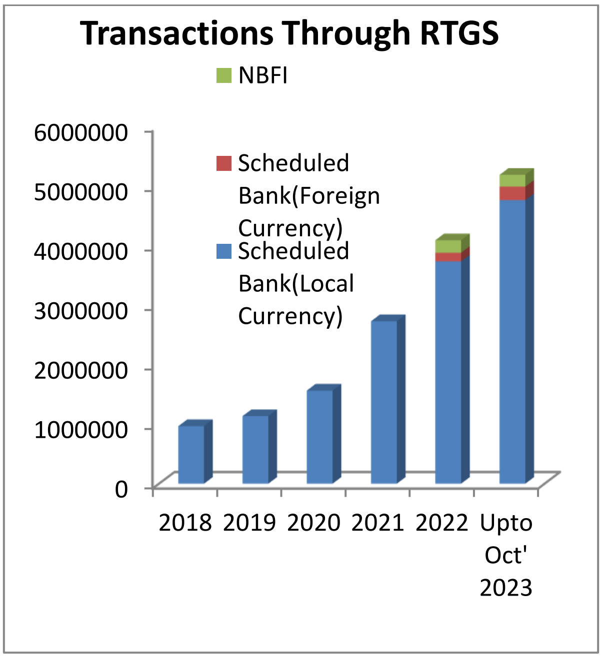

Figure 9: Inter-bank transactions of Bangladesh through RTGS from 2018 to October 2023

Figure 8 illustrates that in 2018, inter-bank EFT transactions involving scheduled banks and BSBL amounted to 129,485.24 million taka, with Bangladesh Bank contributing 6,127.73 million taka. In 2020, a substantial surge was observed, with inter-bank EFT transactions. The upward trend continued in 2021. In 2022, both categories experienced further growth. Up to October 2023, the data indicate a notable increase in inter-bank EFT transactions, totalling 574,377.53 million taka between scheduled banks and BSBL, and 144,917.34 million taka with Bangladesh Bank. Overall, the data show a consistent increase in inter-bank EFT transactions involving both BSBL and Bangladesh Bank over the years, indicating a growing volume of electronic fund transfers between these institutions.

From figure 9, it is noteworthy that the inter-bank transactions through RTGS of scheduled Bank in foreign currency and NBFI taking place from the year 2022. In 2018, the total amount transferred through RTGS transactions in local currency was 966,293 million taka. This amount continuously increased from the year 2019 to 2021. By 2022, there was a notable increase in RTGS transactions, with scheduled banks in local currency transferring 3,730,666.7 million Taka whereas scheduled banks in foreign currency transferring 144,093.5 million Taka, and NBFI transferring 210,504.6 million Taka. Up to October 2023, the data indicate a further increase in RTGS transactions, with scheduled banks in local and foreign currency transferring 4,759,965.5 and 225,594.5 million Taka respectively, and NBFI transferring 198,636.1 million taka.

Table 5: Internet Banking Statistics

(Amount in Million Taka)

Period	**Number of Internet Banking Customers**	**Internet Banking Transaction**
2018	1971984.00	37982.00
2019	2472151.00	60630.47
2020	3245333.00	80926.10
2021	4439938.00	205589.33
2022	6252634.00	275587.90
Up to Oct' 2023	7980859.00	788630.83

Source: Bangladesh Bank

The provided data in table 5 offers insights into the growth of Internet banking of Bangladesh detailing the number of internet Banking customers and the corresponding amount of internet Banking transactions measured in million Taka, over a period from 2018 to October 2023.

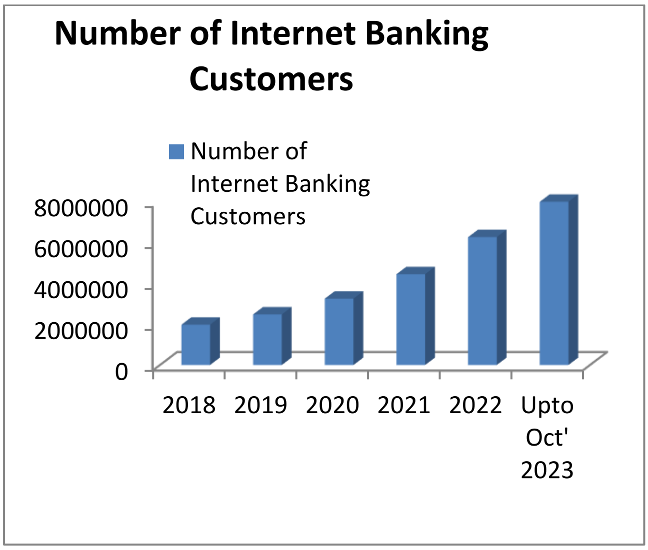

Figure 10: Number of internet banking customers of Bangladesh from 2018 to October 2023

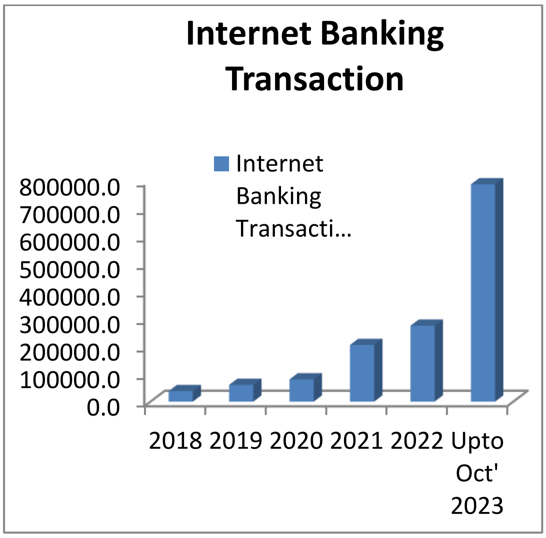

Figure 11: Internet banking transactions of Bangladesh from 2018 to October 2023

From figure 10 and 11, it is observed that in the year 2018, there were 1,971,984 internet Banking customers, and the total amount of Internet Banking transactions amounted to 37,982 million Taka. In 2019, both the number of Internet Banking customers and the amount of transactions increased and the trend continued to 2021. By 2022, there was a notable surge and up to October 2023, the data show a further increase in both the number of internet banking customers, which reached 7,980,859, and the total transaction amount, which reached 788,630.83 million Taka, indicating sustained growth in online banking activities.

Table 6: Mobile Financial Services (MFS) Statistics: Account and Transaction Information

(Amount in Million Taka)			
	Total Number of MFS Account		
Period	**Urban**	**Rural**	**Amount of MFS Transactions**
2018	23545294	44125174	321161.00
2019	33052111	54379336	427536.47
2020	46827989	76100288	617575.00
2021	72566422	97155609	810991.27
2022	85038273	106025300	961328.63
Up to Oct' 2023	96262332	121448498	1205964.66

Source: Bangladesh Bank

Table 6 provides data on the total number of Mobile Financial Services (MFS) accounts in both urban and rural areas of Bangladesh, as well as the corresponding amount of MFS transactions, measured in million taka, over a period from 2018 to October 2023. MFS account includes agent, male, female, and others. Whereas, transaction includes cash in, cash out, person to person (P2P), government to person (G2P), merchant payment, salary disbursement, talk time purchase, utility bill payment, inward remittance, and float payment.

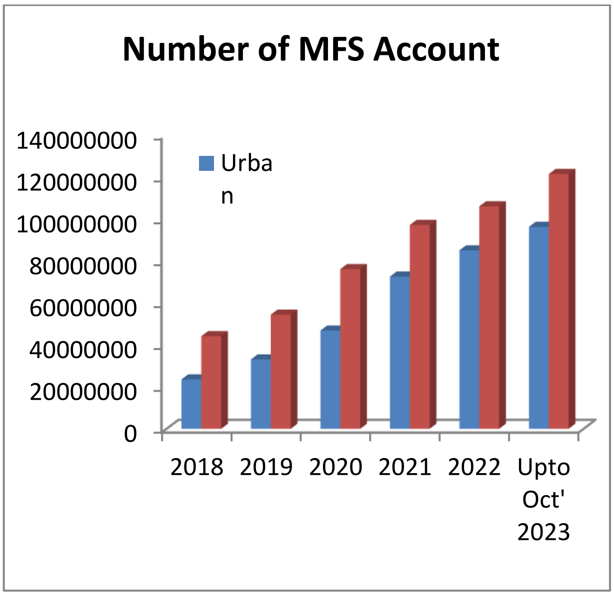

Figure 12: Number of MFS accounts in urban and rural areas of Bangladesh from 2018 to October 2023

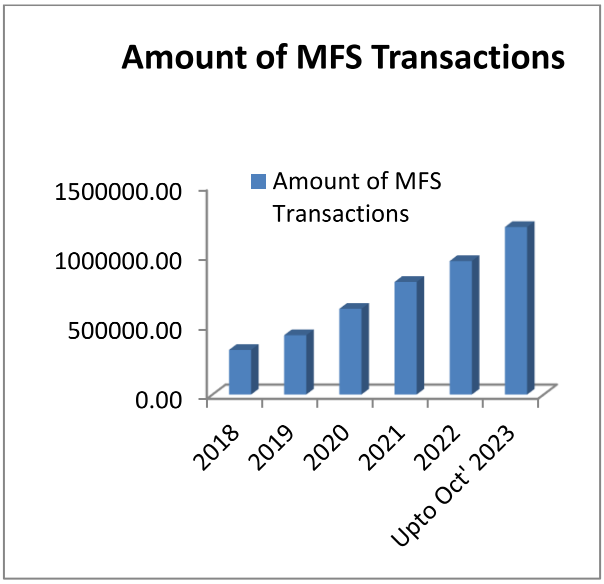

Figure 13: Transactions amount of MFS in Bangladesh from 2018 to October 2023

Figure 12 and 13 exhibits that in 2018, there were 23,545,294 MFS accounts in urban areas and 44,125,174 in rural areas. Up to October 2023, the total number of MFS accounts increased significantly to 96,262,332 in urban areas and 121,448,498 in rural areas. Whereas, the amount of MFS transactions experienced a substantial growth starting from 321,161 million taka in 2018 to increased significantly by 1,205,964.66 million taka up to October 2023.

Discussion on Key Observations

The trends regarding the adoption of fully online branches suggest a growth with a focus on urban areas initially, followed by an increase in rural areas as well. Urban areas generally having a higher percentage of fully online branches compared to rural areas. The data indicates a near-complete transition to fully online branches in both urban and rural settings by October 2023.

Again, the trends from the data suggests a consistent growth in the availability of both ATMs and POS terminals in urban and rural areas, indicating an increasing reliance on electronic banking services, both in terms of cash withdrawal and electronic payments in both urban and rural areas. While the number of ATMs and POS terminals is generally higher in urban areas, there is also noticeable growth in rural areas, though at a slower pace. Overall, the data reflects the expansion and adoption of electronic banking services across different geographic regions.

Similarly, there is a clear trend of higher installation rates of both CDMs and CRMs in urban areas compared to rural areas. While CDM installations showed fluctuations over the years, CRM installations displayed a general upward trend, particularly noticeable in urban areas. The significant increase in CRM installations indicates a growing emphasis on across both urban and rural areas, potentially driven by technological advancements and evolving customer needs.

Also, the reliance on card-based transactions suggests a growing trends, with debit cards leading the transaction volume followed by credit cards and prepaid cards. The key findings suggest a significant upward trend in the issuance and usage of debit, credit, and prepaid cards. This is indicating an ongoing transition towards a cashless economy and the increasing role of cards in facilitating financial transactions and serving as a preferred payment method in various sectors of the economy.

Inter-bank EFT transaction shows a consistent upward trend throughout the years from 2018 to October 2023. There is a notable increase in the amounts transferred between scheduled banks and BSBL, as well as between Bangladesh Bank and these entities, indicating growth in electronic fund transfers over time. BSBL is actively involved in inter-bank EFT transactions, with substantial amounts transferred between BSBL and scheduled banks. Bangladesh Bank plays a significant role in facilitating inter-bank EFT transactions, with increasing amounts transferred among Bangladesh Bank, scheduled banks and BSBL.

Likewise, inter-bank transactions facilitated by RTGS demonstrate a consistent upward trend with significant increases observed over the years, particularly from 2021 onwards. This suggests a growing reliance on RTGS for efficient and timely settlement of transactions among scheduled banks and Non-Bank Financial Institutions.

However, the number of internet banking customers and the amount of internet banking transactions show continuous steady growth indicating a growing reliance on online platforms and adoption of online financial services among the population over the years. This sustained growth has potential implications for banks and financial institutions, emphasizing the importance of investing in and enhancing online banking infrastructure and services to meet growing customer demands.

Furthermore, the substantial growth in both the number of MFS accounts and the volume of transactions highlights the growing importance of mobile financial services as a convenient and accessible means of financial inclusion, especially in underserved rural areas. While there are more MFS accounts in urban areas compared to rural areas, the data indicate a narrowing gap over time, suggesting an increasing adoption of mobile financial services in rural areas as well. This indicates potential implications for financial institutions, policymakers, and other stakeholders, emphasizing the need to further develop and promote mobile financial services to meet the evolving needs of customers and promote inclusive economic growth.

Challenges in Fin-tech Based Financial Inclusion in Bangladesh

In Bangladesh, the advent of financial technology (fintech) has offered promising solutions to enhance financial inclusion. However, despite the potential benefits, there are several challenges hindering the widespread adoption of fintech-based financial inclusion in the country.

Limited digital literacy
One of the significant challenges in Bangladesh is the limited digital literacy among the population. Many individuals, particularly in rural areas, lack the necessary skills to navigate digital platforms and understand fintech products. Without proper education and awareness, the adoption of fintech solutions becomes challenging. This digital divide poses a significant obstacle to the success of fintech-based financial inclusion initiatives.

Infrastructure challenges
The inadequate technological infrastructure in Bangladesh is another impediment to fintech-based financial inclusion. While major urban centres have relatively robust internet connectivity, rural areas often face infrastructural limitations, including poor network coverage and unreliable electricity supply. World Bank also highlighted that improving the technological infrastructure, especially in rural regions, is crucial for the successful implementation of fintech solutions for financial inclusion in Bangladesh.

Trust and Security Concerns
Building trust in digital financial services is a crucial factor in fostering financial inclusion. However, concerns related to the security of online transactions and data privacy issues remain significant barriers. A substantial percentage of the population in Bangladesh is hesitant to use digital financial services due to security concerns (BTRC, 2020). The fear of fraud and unauthorized access to personal information deters many individuals from embracing fintech solutions.

Regulatory challenges
The regulatory environment plays a pivotal role in shaping the success of fintech initiatives. In Bangladesh, navigating complex regulations and obtaining necessary approvals can be a time-consuming process for fintech startups. The regulatory landscape must evolve to accommodate the dynamic nature of fintech innovations while ensuring consumer protection and financial stability.

Inadequate financial infrastructure
While fintech solutions aim to provide financial services to the unbanked and under-banked, the lack of a comprehensive financial infrastructure poses a challenge. Limited access to traditional banking services, such as ATMs and bank branches, hinders the seamless integration of fintech into the existing financial ecosystem.

Fintech-based financial inclusion holds immense potential for transforming the financial landscape in Bangladesh. However, addressing the challenges outlined above is crucial for the successful implementation and adoption of fintech solutions across the country. Initiatives focused on improving digital literacy, upgrading infrastructure, building trust, adapting regulations, and enhancing financial infrastructure are imperative to overcome these obstacles and pave the way for a more inclusive financial system in Bangladesh.

Role Played by the Bangladesh Government in Digital Finance Innovations

The Bangladesh government has played a comprehensive role in fostering digital finance innovations, as evidenced by several initiatives outlined in the provided excerpts:

Smart Bangladesh (Vision 2041): The concept of "Smart Bangladesh" has built on the 4 pillars of smart citizens, smart government, smart economy and smart society and targeted to achieve by 2041. It is about bridging the digital divide by innovating and scaling sustainable digital solutions that all citizens, regardless of their socio-economic background, all businesses, regardless of their size, can benefit from. If implemented, 'Smart Bangladesh' will be a high-income, poverty-free, developed nation which will be grounded in innovation and powered by technology such as AI and IoT, that will have a per capita GDP of $12500.

Digital Bangladesh (Vision 2021): The government had declared and implemented the "Vision 2021" to establish a resourceful and modern country through effective use of information and communication technology. This initiative served as a foundational roadmap for digitization efforts, including digital finance as part of the broader focus on ICT growth.

National ICT policy and ICT Act of 2009: Through these legal frameworks, the government has laid down the regulations and facilitated the environment for the growth of ICT and digital finance services.

E-governance initiatives: The government has implemented various e-governance initiatives that not only improve government service delivery but lay the groundwork for a digital economy conducive to fintech innovations.

Electronic Know-Your-Customer (e-KYC) Guidelines: The government introduced guidelines that enabled the storage of biometric data against national identity cards, significantly streamlining the “Know Your Customer (KYC)” process and facilitating the opening of financial accounts. This helped to overcome the traditional barrier of physical identity verification in the financial sector.

Support for mobile financial services (MFS): Government policies have contributed to the expansion of MFS agents across rural and remote areas of the country, financially including populations that previously lacked access to financial services.

Digital Remittance Innovations: The government's initiative to offer incentives for digital remittances and partnerships with fintech services has made remittance processes more efficient and cost-effective, thus promoting digital finance.

StartUp Bangladesh: This ICT Ministry-run initiative provides seed funding, facilitated licensing, registration processes, and mentoring support to entrepreneurs in Bangladesh, including those in the fintech sector.

5G Network Commitment: The pledge to make a 5G mobile network widely available by 2023 demonstrates the government’s commitment to providing the infrastructure necessary for advanced digital financial services. The government's multifaceted approach to digital finance innovation has included infrastructural upgrades, policy initiatives, and support programs, which collectively bolster the growth and resilience of the fintech sector.

Strategic Policy Initiatives to Support the Local Digital Financial Services (DFS) Ecosystem

Supporting the local digital financial services (DFS) ecosystem requires a multi-faceted policy approach. By implementing the policies that address the following areas, governments can create a conducive environment for the growth and sustainability of the local DFS ecosystem. Some key policy initiatives that could be considered include:

Regulatory sandbox: Establishing regulatory sandbox environments where startups can test innovative financial products and services in a controlled regulatory setting with real consumers, without immediately incurring all the normal regulatory consequences.

Interoperability support: Creating regulations and incentives to promote the interoperability of digital financial services. This can allow seamless transactions across different platforms and banks for making the digital ecosystem more efficient and user-friendly.

Cyber security measures: Strengthening cyber security regulations and frameworks to protect consumers and financial institutions. This is necessary in building trust in the digital ecosystem, and encouraging widespread adoption of DFS.

Financial literacy and inclusion: Implementing nationwide programs aimed at increasing financial literacy, particularly around digital financial products, so that consumers can make informed decisions and leverage the full benefits of DFS.

Fintech innovation incentives: Providing tax benefits, grants, or other financial incentives for startups and existing businesses to develop innovative fintech solutions. Particularly, those targeting underserved segments of the population or small and medium-sized enterprises.

Data protection laws: Enacting robust data protection and privacy laws to safeguard consumer information, which is crucial in an increasingly digital financial environment.

Access to affordable internet: Expanding affordable internet access, which is the backbone of digital finance, especially for marginalized and rural populations.

Partnerships with global experts: Establishing advisory bodies comprising government officials, local industry leaders, and international fintech experts can facilitate knowledge sharing and the adoption of best practices.

Payment and settlement systems: Modernizing national payment and settlement systems to support real-time processing, reducing transaction costs and times.

Consumer protection: Enhancing consumer protection mechanisms to handle complaints, fraud, and errors in digital transactions to maintain the integrity of the financial system.

Investment in digital infrastructure: Continuously investing in digital infrastructure, particularly in rural and underserved areas, to ensure that the digital divide does not widen.

Specialized MDF programs: Establishing Market Development Funds (MDF) that contributes to projects that directly support payment acceptance and usage, particularly for MSMEs and female entrepreneurs.

By implementing policies that address these areas, governments can create an environment which is conducive for the growth and sustainability of the local DFS ecosystem.

Implications

Despite developments in fintech-based financial inclusion in Bangladesh, the government has emphasized its importance as a macroeconomic goal. Indeed, from a policy standpoint, it has the ability to reduce inequality while transforming sustained growth in the economy. This study adds to the increasing body of knowledge in the industry by looking at fintech's recent progress, problems, and future perspectives on boosting financial inclusion. It is designed to inform policymakers, financial institutions, technology providers, and researchers about the potentially transformative effects of fintech-based financial inclusion, as well as the importance of designing inclusive and sustainable financial ecosystems in the digital era. National policymakers can use the observations of this extensive study to better understand the current difficulties surrounding the financial services industry's quick transition to digitization and the hazards associated with digitized inclusion in finance. These are hints about the importance of financial inclusion, which is influenced by potential policy implications for promoting inclusive economic development. Finally, the observations of this study will give insight into how to harness fintech breakthroughs to assist the marginalized populations, thereby promoting economic growth and social development.

Conclusion and Further Research Directions

In Bangladesh, financial inclusion has been a decades-long quest to incorporate parts of the population that previously had little access to formal finance. This journey began with microcredit and has now evolved to cover all aspects of financial inclusion, from access to usage and quality. Mobile phones are being utilized for financial transactions in Bangladesh. People have become familiar with digital financial services such as agent banking, branchless banking, and smartphone payments. This study evaluated the current scenario of the country's digital financial transformation with an aimed to observe the progresses Bangladesh has attained in recent years and attempted to explore the challenges, role played by the Government and policy recommendations based on the observations.

It is stated from the key observations of this study that the percentage of fully online branches in urban areas has consistently been higher than in rural areas throughout the period from 2018 to October 2023. Again, the total number of machines (ATM, POS, CDM, and CRM) generally increased over the years. Urban areas consistently had a higher number compared to rural areas. Moreover, there is a general upward trend in the number and transaction amount of active issued cards (debit, credit, and prepaid) from 2018 to October 2023, indicating an overall increase in card-based transactions reflecting the expanding consumer base and adoption of electronic payment methods. Likewise, the inter-bank EFT and RTGS transactions indicate a potential acceleration in electronic fund transfers in the banking sector. Whereas, the consistent increase in both the customer base and transaction volume of Internet banking reflects the rising adoption and usage of online banking services. Lastly, a rapid expansion is observed in the total number and transaction volume of MFS accounts in both urban and rural areas over the years.

Even though, this study has shed light on the synopsis, challenges and policy directives of fintech-based financial inclusion in Bangladesh based on recent progress, there are a few notable confinements that provide the potential for more investigation. The main limitation of this study is to lack of employing inferential statistics and quantitative analysis. Therefore, it might not be feasible to extrapolate the actual situation from this study to other areas of the study region or beyond. Hence, further research can be carried out based on the causal relation between fintech and financial inclusion by applying the mixed methods. Furthermore, research can be done on the construction of the fintech-based financial inclusion index system for Bangladesh. Finally, the research can be extended to either the specific region and/or the entire globe rather specific single country to generalize the findings.

Acknowledgement

Author Contributions: Author has read and agreed to the published the final version of the manuscript.
Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.
Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.
Conflicts of Interest: The author declares no conflict of interest.

References

Abdullahi, M. (2015). 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

Ahammed, M. M. U., Haq, A. H., Mia, M. S., Datta, R. K., Siddikee, M. J. A., & Hossain, M. S. (2023). Assessing Financial Inclusion in Bangladesh: A Comprehensive and Inclusive Measurement. Scope, 13(4), 96-115. Retrieved from https://www.researchgate.net/publication/378041537_96_wwwscope-journal

Ahammed, M. M. U., Sarmin, I. J., Aktar, M., Ara, J., & Datta, R. K. (2021). Farmers'financial Inclusion in Bangladesh: A Survey on Dinajpur district. Journal of Science and Technology, 19, 92-99.

Ahmed, A., & Hasan, M. E. (2021). Bangladesh toward Digital Financial Inclusion: FinTech Experience. Journal of Entrepreneurship and Business Innovation,8(2), 33-49.

Alliance for Financial Inclusion (August 2018). Financial inclusion journey: Bangladesh: Bringing the light into the blind spot. Alliance for Financial Inclusion, Kuala Lumpur, Malaysia. Retrieved from https://www.afi-global.org/wp-content/uploads/publications/2018-08/AFI_MS_Bangladesh_AW_digital.pdf

Aziz, A., & Naima, U. (2021). Rethinking digital financial inclusion: Evidence from Bangladesh. Technology in Society, 64, 101509.

Bangladesh Bank. (2020). Annual Report 2019-2020.

Berger, A. N. (2003). The economic effects of technological progress: Evidence from the banking industry. Journal of Money, credit and Banking, 141-176.

Bhuiyan, A. B., Ali, M. J., Zulkifli, N., & Kumarasamy, M. M. (2020). Industry 4.0: Challenges, Opportunities, and Strategic Solutions for Bangladesh. International Journal of Business and Management Future, 4(2), 41-56. https://doi.org/10.46281/ijbmf.v4i2.832

BTRC (2020). Mobile Financial Services in Bangladesh: An Overview. Bangladesh Telecommunication Regulatory Commission. Retrieved from http://www.btrc.gov.bd/sites/default/files/files/btrc.portal.gov.bd/annual_reports/851d78f5_c1c2_411a_a30d_341cef7775d9/2022-02-09-05-29-11613ef8220844934a991009b770acea.pdf

Chakrabarty, K.C. (2013). Proceedings of the international banking summit. International Banking Summit for Reserve Bank of India, Mumbai.

Chuen & R. Deng (Eds.), Handbook of Blockchain, Digital Finance, and Inclusion, Volume 1

Datta, R. K. (2021). Relationship between Cashless Banking and Bank's Profitability of Bangladesh. International Journal of Science and Business, 5(7), 21-32. https://doi.org/10.5281/zenodo.4683181

Datta, R. K. (2021). Relationship between Financial Inclusion and GDP of Bangladesh. International Journal of Innovation and Applied Studies, 32(4), 485-493.

Datta, R. K., Sabuj, M. M. I., & Ahammed, M. M. U. (2022). Assessing the Factors for Choosing E-banking Services of Public Commercial Banks in Bangladesh. The International Journal of Business & Management, 10(5), 129-137. DOI No.: 10.24940/theijbm/2022/v10/i5/BM2205-028

David-West, O., Iheanachor, N., & Kelikume, I. (2018). A resource-based view of digital financial services (DFS): An exploratory study of Nigerian providers. Journal of Business Research, 88, 513-526. https://doi.org/10.1016/j.jbusres.2018.01.034

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution. The World Bank. https://doi.org/10.1596/978-1-4648-1259-0

Helsper, E. (2008). Digital inclusion: an analysis of social disadvantage and the information society. Department for Communities and Local Government, London. http://eprints.lse.ac.uk/id/eprint/26938

Islam, M. (2019). Seamless Finance and Opportunities Fintech in Bangladesh. Fintech, (30), 2. Retrieved from http://www.fintechbd.com/seamless-finance-and-opportunities-fintech-in-bangladesh/

Islam, N., Mustafi, M., Rahman, M. N., Nower, N., Rafi, M. M. A., Natasha, M. T., Hassan, R., & Afrin, S. (2018). Factors Affecting Customers' Experience in Mobile Banking of Bangladesh. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3305925

Kavuri, A., & Milne, A. (2018). Fintech and the Future of Financial Services: What are the Research Gaps?. SSRN Electronic Journal. doi: 10.2139/ssrn.3215849

Khan, S. N., Akter, M., & Akter, R. (2017). Factors influencing adoption and usage of mobile banking: Bangladesh experience. International Journal of Finance and Banking Research, 3(1), 1-12. https://doi.org/10.11648/j.ijfbr.20170301.11

Khan, S. N., Akter, M., & Zeya, F. (2019). Bangladeshi banking innovations: A case study on mobile banking. Business and Management Practices in South Asia: A Collection of Case Studies, Springer Nature, 101-124.

Krivosheya, E. (2020). The role of financial innovations in consumer behavior in the Russian retail payments market. Technological Forecasting and Social Change, 161, 120304. https://doi.org/10.1016/j.techfore.2020.120304

Kuddus, M., Saha, P., & Rahman, N. (2020). Rural Banking System in Bangladesh: An Exploratory Study. International Journal of Science and Research, 9(1). doi:10.21275/ART20203835

McCaffrey, M., & Schiff, A. (2017). Finclusion to Fintech: Fintech Product Development for Low-Income Markets. SSRN Electronic Journal. doi: 10.2139/ssrn.3034175

Mialou, A., Amidzic, G., & Massara, A. (2017). Assessing countries' financial inclusion standing—A new composite index. Journal of Banking and Financial Economics, 2(8). https://doi.org/10.7172/2353-6845.jbfe.2017.2.5

Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. Language teaching research, 19(2), 129-132. DOI: 10.1177/1362168815572747

Noor, W. (2021). What's next for Bangladesh's fintech innovation? Visa Economic Empowerment Institute. Retrieved from https://usa.visa.com/content/dam/VCOM/global/ms/documents/veei-whats-next-for-bangladesh.pdf

Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. Borsa Istanbul Review, 18(4), 329-340. https://doi.org/10.1016/j.bir.2017.12.003

Pathak, A., Saini, M., & Sahoo, S. (2018). Country Focus Note: Bangladesh. MicroSave Consulting, 6.

Patwardhan, A. (2018). Chapter 4—Financial Inclusion in the Digital Age. In D. Lee Kuo Chuen & R. Deng (Eds.), Handbook of Blockchain, Digital Finance, and Inclusion, Volume 1(pp. 57-89). Academic Press. https://doi.org/10.1016/B978-0-12-810441-5.00004-X

Rahman, B., Ahmed, O., & Nitu, A. (2019). Social Entrepreneurs' adoption of E-commerce in Bangladesh: Application of UTAUT model. Asa University Review, 13(1), 29-42.

Rahman, B., Ahmed, O., & Shakil, S. (2021). Fintech in Bangladesh: ecosystem, opportunities and challenges. International Journal of Business and Technopreneurship, 11(1), 73-90.

Rajan, R. G. (2015). A hundred small steps: Report of the committee on financial sector reforms. Planning Commission, Government of India, New Delhi.

Salampasis, D., & Mention, A.-L. (2018). Chapter 18 - FinTech: Harnessing Innovation for Financial Inclusion. In D. Lee Kuo Chuen & R. Deng (Eds.), Handbook of Blockchain, Digital Finance, and Inclusion, Volume 2 (pp. 451-461). Academic Press. https://doi.org/10.1016/B978-0-12-812282-2.00018-8

Sapovadia, V. (2018). Chapter 14—Financial Inclusion, Digital Currency, and Mobile Technology. In D. Lee Kuo Chuen & R. Deng (Eds.), Handbook of Blockchain, Digital Finance, and Inclusion, Volume 2 (pp. 361-385). Academic Press. https://doi.org/10.1016/B978-0-12-812282-2.00014-0

Sassi, S., & Goaied, M. (2013). Financial development, ICT diffusion and economic growth: Lessons from MENA region. Telecommunications Policy, 37(4-5), 252-261.

Siedlecki, S. L. (2020). Understanding descriptive research designs and methods. Clinical Nurse Specialist, 34(1), 8-12. https://doi.org/10.1097/nur.0000000000000493

Thakor, A. V. (2020). Fintech and Banking: What do we know?. Journal of Financial Intermediation, 41, 1-13. https://doi.rg/10.1016/j.jfi.2019.100833

Vijai, C. (2019). Fintech in India – Opportunities and Challenges. SSRN Electronic Journal. doi: 10.2139/ssrn.3354094.

Vo, D. H., Nguyen, N. T., & Thi-Hong Van, L. (2020). Financial inclusion and stability in the Asian region using bank-level data. Borsa Istanbul Review. https://doi.org/10.1016/j.bir.2020.06.003

Warschauer, M. (2004). Technology and social inclusion: Rethinking the digital divide. MIT press. Retrieved from https://clixplatform.tiss.edu/softwares/Reseach_data/Reseach_data_backup_HDD_20170601/Research%20data/miz_std_baseline/readings/%5BMark_Warschauer%5D_Technology_and_Social_Inclusion.pdf

Yesmin, S., Paul, T. A., & Mohshin Uddin, M. (2019). bKash: Revolutionizing mobile financial services in Bangladesh?. Business and management practices in South Asia: A collection of case studies, 125-148.

Zangirolami-Raimundo, J., de Oliveira Echeimberg, J., & Leone, C. (2018). Research methodology topics: Cross-sectional studies. Journal of Human Growth and Development, 28(3), 356-360. http://dx.doi.org/10.7322/jhgd.152198.

Publisher's Note: SSBFNET stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

© 2024 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

International Journal of Finance & Banking Studies (2147-4486) by SSBFNET is licensed under a Creative Commons Attribution 4.0 International License.