

Security Policy of Mobile Money Transfer in Bangladesh

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Abstract— the advancement of ICT in a variety of sectors helped in improving the time consuming and rigid service into fast and flexible service that is closer to the reach of individuals. For instance, mobile applications have evolved in different sectors such as healthcare patient support, geographic mapping and positioning, banking, e-commerce payment services and others. This study focuses on one of the most sensitive applications, which is mobile payment.

Mobile payment system being one of the widely expanding mobile services, it has security concerns that prevented its wide acceptance. Some of the main security services given prior attention in mobile payment are issues of privacy, authentication and confidentiality. The research concentrates on the strong authentication of a mobile client to its server, securing the credit card information and use of mobile card reader while making payments that enable customers to protect privacy of financial credentials.

Table of contents

Contents

Abstract	4
Introduction	5
Review of mobile money transfer technique	5
Common security issues for Bangladesh operators	8
Challenges of mobile banking in Bangladesh	11
Interoperability:	11
Security:	12
Scalability & Reliability:	12
Application distribution:	12
Proposed solution and security measures	12
Proposed security policy	13
What the government can do to spur growth?	15
Into the Next Level	16
Conclusion	16
Reference-	17

1 INTRODUCTION

The convergence of mobile telephony, banking services, and information systems creates significant economic opportunities on a global scale. While the adoption of mobile banking and mobile money emerged on the global scene as a tool to promote financial inclusion, new developments in the industry have created additional possibilities for this type of technology to revolutionize the practices and experiences of business owners in the Third World. This paper calls attention to the different ways in which mobile banking services and mobile payment systems are able to create value for their consumers.

The perception of security when it comes to dealing with money is of paramount importance. People keep or invest their money in banks because they believe it is more secure than keeping the money at their houses or investing in the money on their own. Most of the time during the history of banking people had almost unconditional faith on banks to be secure. However, those days have passed. With the recent worldwide financial crisis when the biggest defaulters were banks, people now have become very reluctant to have unconditional faith on banks and do not believe that everything their banks introduce is safe and secure.

Therefore, the users of mobile banking must perceive it as a secure system for it to capture the larger audience. To assess the current status the researchers were looking to see if at least 70% respondents would agree that mobile banking is fairly secured or highly secured. The high percentage (70%) for this hypothesis was selected due to the very high importance of security usually required by bank clients in recent days. To gauge the perception, the participants were given five choices ranging from highly secured to highly unsecured. Among the forty-seven respondents who answered the specific question forty-three respondents indicated that they thought mobile banking in Bangladesh was either highly secured or fairly secured.

2 REVIEW OF MOBILE MONEY TRANSFER TECHNIQUE

Online peer-to-peer money transfers allow consumers to quickly and easily send money to each other, without having to deal with the cumbersome process of writing and mailing a check or transferring physical cash. Online money transfers are not characterized by the location where the consumer authorizes the transfer; paying rent to a US-based roommate on an app works exactly the same way whether one is in the next room or thousands of miles away – as long as there is an internet connection and perhaps international mobile roaming for authorization purposes.

The launch of bKash in July 2011 came on the heels of Bangladesh's central bank (Bangladesh Bank) issuing guidelines (<http://www.bangladesh-bank.org/>) on mobile financial services that provided the certainty and clarity needed for bKash and others to invest and build a business. Bangladesh

Bank was comfortable issuing a license to BRAC Bank to launch bKash, since the bank was a well-managed commercial bank the regulator knew well. The idea of regulation that would allow nonbanks and particularly MNOs to launch their own services had first been debated in 2008, but Bangladesh Bank did not feel comfortable at that time to allow MNOs to lead. However, in addition to allowing banks to offer mobile financial services, the 2011 regulations included a clause that allowed banks to set up subsidiaries specifically for this purpose. This allowed conventional banks to establish separate companies in partnership with funders with relevant experience and, importantly, the risk appetite and entrepreneurial bent needed to make the business succeed. This nuanced light-touch regulation provided the environment that allowed bKash to be an operationally new and different kind of business while still being regulated under the umbrella of banking norms. As of yet, no other bank subsidiaries have been established for mobile financial services in Bangladesh, but the possibility remains. The regulators made another important decision early on. When bKash launched it had an agreement Box 1. Inspired by design details On the CEO's bookshelf is an illustrated volume on Satyajit Ray, one of the world's great filmmakers.

The CEO occasionally pulls the book down to show how the filmmaker painstakingly story boarded each movie scene down to minute details—such as the design and color of a character's blouse. This is used to emphasize to bKash staff how to plan a business operation. This attention to detail and design is noticeable across bKash. 9. Technical assistance was provided through ShoreBank International (now called Enclude). The large grant from Gates Foundation had followed a smaller grant through ShoreBank International to help BRAC Bank explore the mobile money concept in 2008–2009. To link only into the subscribers of one of the four large MNOs. bKash as well as other bank-based mobile financial service providers sought access to unstructured supplementary service data (USSD)10 channels of all the major MNOs, and Bangladesh Bank actively encouraged mobile operators to open up to mobile financial service providers. Eventually the telecommunications regulator also pressured mobile operators to provide access. With this obligation and with Bangladesh Bank's support, bKash was able to enter revenue-sharing agreements to access a USSD gateway with all four big MNOs, providing access to over 98 percent of Bangladesh's 100 million mobile phone subscriptions. BKash could reach the customers of nearly all MNOs within its first year of operations. While this has been unpopular with MNOs who wanted to offer mobile financial services themselves, it has been a crucial factor in bKash's fast start. BKash had the communications limitations on who it could reach with its service removed and established an industry norm for revenue sharing with MNOs. This stands in contrast to many early-stage MNO deployments that often reach only their own voice subscribers early on.

bKash's initial growth to large scale has been among the fastest globally. At the same time, it is still early. The bKash board and management are the first to say that there is a long way to go and much still to do to build the business. It needs to stabilize its technology platform to support a much higher volume of transactions. It needs to shift users from doing their transactions via agents to using their own accounts. It needs to move beyond payments to provide other financial services. And the market in Bangladesh could benefit from having more than just one dominant business. Early fast scale has provided a platform for bKash to take its next steps and has shown that it is possible to create a deeper and more competitive market in Bangladesh. At the same time, lessons from Bangladesh are being watched by regulators and businesses in other countries that are thinking about the benefits of allowing specialized companies to offer mobile financial services at scale.

Dutch-Bangla Mobile Banking, the second largest mobile banking service provider in the country, has rebranded to ROCKET. The case extensively looks into the underlying reasons for DBBL losing market share to its competitor bKash, despite being a pioneer in the mobile finance industry. This eventually led DBBL management to rebrand itself to Rocket. DBBL management dealt mobile banking like a wing of their current banking business to utilize their existing infrastructures and agent base, however, DBBL management failed to realize the growth potential of mobile banking in Bangladesh. DBBL mobile banking emphasized on promoting mobile banking as an industry, on the other hand, its competitors bKash emphasized on branding their service efficiency and continuously increasing country-wide agent to better serve the inexperienced market. Changes in mobile banking regulation by Bangladesh Bank, Fierce competition from bKash, forced DBBL management to revise their marketing strategies. The mobile banking industry has seen a decrease in active registered user despite an increase in transaction value by 35% in the year 2016. DBBL has invested a lot on sophisticated software and hardware to ensure secured transaction, however, the company failed to utilize its ATMs network because of consistent service failure. Educating an inexperienced customer base to technology as well as ensuring financial security, competitor gained the advantage with widespread agent network. Rocket should emphasize on increasing service agents this will ensure swift service. Rocket may add new services like mobile savings account with interest facilities to reposition in user mind as a different and innovative mobile banking brand.

Dutch-Bangla Bank Mobile Banking is the pioneer in mobile banking service in Bangladesh. It was the first bank to offer banking facilities through a wide range of mobile phones with the name "DBBL Mobile Banking" since March 31, 2011, with the vision to promote Banking to the unbanked and to develop savings habit among the unbanked." DBBL Mobile Banking" is a wing of very renowned bank of Bangladesh "Dutch-Bangla Bank Ltd". On September 25, 2016 "DBBL Mobile Banking" has changed its name to Rocket to rebrand itself to the target market. Dutch-Bangla Bank Rocket is a Bank-led

model to fulfill the basic banking needs utilizing mobile phones in Bangladesh. Rocket is a Banking process without bank branch which provides financial services such as cash-in, cash out, merchant payment, utility payment, salary disbursement, foreign remittance, government allowance disbursement, ATM money withdrawal through mobile technology devices to unbanked communities efficiently and at an affordable cost. As this process involves a monetary transaction, from the very beginning Rocket has emphasized on registration with proper KYC (Know Your Customers) to ensure secured transactions. Rocket has involved four parties - Bank, Mobile Network Operators (MNO), Agents and Customers with a commission model to suit each of the parties. Highest priority is given to the benefits of customers and agents. The process has four tiers to complete the transaction cycle. First, Clients or users deals with Agents, The agents" deals with Super Agents mainly known as Dealer and the dealers deposit the money to bank branches. To monitor and supervise the activities of customers and agents Rocket follows four tier geographical controlling system- territory, upazila, district, and division.

3 COMMON SECURITY ISSUES FOR BANGLADESH OPERATORS

Several factors including technical and security standards, regulatory and supervisory issues and business and legal issues were found to be the main factors that might hinder mobile banking implementation in Bangladesh. Connectivity and secure communication platform and encrypted messaging system were found to be the factors that would enhance mobile banking implementation in Bangladesh.

Islam (2005) explained the present scenario of banking sectors in Bangladesh and at the same time he demonstrated the scope and benefits of E-banking compared with the existing system. Then a feasible proposal has been made by using partial utilization of the backbone network owned by Bangladesh Railway. He found out the efficiency, security of the proposed infrastructure under various situation. WAP is a non-proprietary (open), global standard that was introduced in its first version WAP 1.0 in 1998. It has been developed by the WAP Forum, a consortium of leading manufacturers of mobile phones including Ericsson, Motorola and Nokia (WAP-Forum, 2001). However, there are several issues including the lack of adequate legal framework and security of mobile transactions which tend to hamper the continued progress of developing this sophisticated mobile banking application. Due to the issues raised in this section and the importance of mobile banking, it is important that a study is carried out to identify the prospects and challenges of mobile banking in a developing country like Bangladesh.

Table below shows the results, when asked of the disadvantage of mobile banking. Most of the respondents representing 48% claim that the biggest disadvantage of mobile banking

is security concerns or risk. 32% of them think that the main disadvantage is complicated or uncomfortable usage of mobile service. 2% of them were of the opinion that expensive nature is disadvantage of mobile banking. 16% of the respondents say that mobile banking has no disadvantage whereas the rest (2%) stated other forms disadvantages of mobile banking.
Disadvantages of mobile banking

		Frequency	Percent
Valid	Security concern	24	48.0
	Complicated	16	32.0
	Too expensive	1	2.0
	Nothing	8	16.0
	Others	1	2.0
	Total	50	100.0

The result is consistent with previous studies by Bank Systems and Technology, (2008), on mobile banking in America. They identified that security of handheld device, security for the application running on the device, authentication of the device with the service provider before initiating a transaction, password authentication of the customer, encryption of data being transmitted over the air, encryption of data that will be stored in the device for later review by the customer is a complex process.

Factors that hinder of Mobile Banking

		Frequency	Percent
Valid	Technical and security standard	45	90.0
	Business and legal issues	4	8.0
	Regulatory and supervisory issues	1	2.0
	Total	50	100.0

When asked about their opinion on the factors that may hinder mobile banking implementation in Bangladesh, most respondents representing 90% were of the opinion that technical and security standards was the main factor affecting the implementation of mobile banking in Bangladesh. This is followed by those who think business and legal issues (8%) is the main hindrance to mobile banking implementation and the rest (2%) think that business and legal issues is the main obstacle to the implementation of mobile banking in Bangladesh.

This means that banks must deploy only secure channels that provide a non-repudiable platform to transact. It also means that the technology used must be secure, and at the same time convenient to deploy, and cost effective.

When asked about factors that enhance mobile banking implementation in Bangladesh, most respondents representing 54% expressed the opinion that secure communication platform is the main factor enhancing the implementation of mobile banking in Bangladesh. This is followed by those who think connectivity (24%) is the main factor enhancing the implementation of mobile banking and the rest (22%) are of the view that encrypted messaging system is the main factor enhancing the implementation of mobile banking in Bangladesh.

Factors that enhance Implementation of Mobile Banking

		Frequency	Percent
Valid	Connectivity	12	24.0
	Secure communication platform	27	54.0
	Encrypted messaging systems	11	22.0
	Total	50	100.0

This means that secure communication platform should be introduced for enhancing the m banking in Bangladesh. Given the mobile tele-density and the development of secure mobile technology solutions, banks are well - positioned to bridge the digital divide and introduce the unbanked sector to the financial mainstream.

As revealed by survey done across 2000+ consumers by LightCastle in 2015, security is a prime concern for the "digital middle class" of Bangladesh - with 70% of the respondents citing reasons like cyber security, smartphone hacking and trust in online transactions. Recent fiasco with the Central Bank fund heist didn't help the issue either. Banks here have to pick up while there will be growth in credit/debit card sells the main push in digital wallets will come via smartphone integration (Going Mobile! Mobile! Mobile! Is the mantra for Bangladesh). For that adequately addressing cyber security issues will be major challenge considering we are still struggling with ATM security.

The consumers are increasingly being exposed global quality applications where everything is linked to social media accounts and single sign-ins. Given the finance ecosystem of Bangladesh - where 60% of the adult population is unbanked the digital user experience (UX) is often difficult to free flow. However, even considering that even cursory talks with consumers reveal that the UX and systems indeed need to become more adaptive and friendly if the sector is to reach its growth potential. While FinTech companies like Paytm has made e-banking intuitive in India we are lagging behind.

The telecom sector boasts a 99% 2G penetration. 3G coverage is spreading rapidly and companies are investing heavily in infrastructure with population density (Bangladesh is the 5th most dense in terms of people/sq. ft. country in the whole world) especially in the cities making the capital flow possible. However, internet connectivity is by no means ideal. There are

blind spots, intermittent connections, low bandwidth and often not fully transparent billing. As e-banking progresses consistent telecom driven internet connectivity given that the growth will be extremely mobile heavy will become important. How can the financial institutions (FI) win?

Apart from working with stakeholders and being more nimble by partnering with FinTech companies, the FIs can start by taking up digital banking as core part of their growth strategy. While we definitely see the emergence with banks entering in multiple partnerships with telecoms – we are yet to see them come mainstream in digital marketing as opposed to traditional channels.

The next wave of digital consumers are in the social media and search engine space. They make their decisions here and spend most of their time in second screen (in their smart devices). Hence it's natural for banks to receive more marketing ROI by investing in digital communications. While FMCG (fast moving consumer goods) and telecoms has largely exploited digital marketing – its time the financial institutions start making digital a core part of their marketing mix strategy.

A stronger ICT integration focused towards consumer experience would add impetus to growth. This doesn't necessarily have to come from internal R&D but compared to countries like India where large banks like "Yes Bank" is investing in FinTech Startups to spur innovation – Bangladesh is still at its nascence. Accepting the case of GP, corporate based accelerator programs or investments are yet to pick up and banks at this stage can be pioneers and reap the benefits.

Lastly, for Bangladesh the game is not just online but that of hybrid mobile. This means a strong digital presence has to be backed by on the ground experience and brand building. Banks would need to focus on brand advocates, peer-to-peer recommendation building, PR events and strong set of partnerships (with consumer product and service companies) that is going to drive demand while ensuring that the technology product is seamless.

4 CHALLENGES OF MOBILE BANKING IN BANGLADESH

4.1 Interoperability

There is lack of common technology standards for mobile banking. Many protocols are being used for mobile banking – Hypertext Markup Language (HTML), Wireless Application Protocol (WAP), to name a few. There are a large number of mobile phone devices and it is a big challenge for banks to offer mobile banking solutions on any type of device. Some of these devices support WAP browser or only SMS.

4.2 Security

Security of financial transactions, being executed from some remote location and transmission of financial information over the air, is the most complicated challenge that needs to be addressed jointly by mobile application developers, wireless network service providers and the banks IT departments.

4.3 Scalability & Reliability

Another challenge for the banks is to scale-up the mobile banking infrastructure to handle exponential growth of the customer base. With mobile, the customer may be sitting in any part of the world (true anytime, anywhere banking) and hence banks to ensure that the systems are up and running in a true 24 x 7 fashion.

4.4 Application distribution

Due to the nature of the connectivity between banks and its customers, it is impracticable to expect customers to regularly visit banks or connect to a web site for regular upgrade of their mobile banking application. It will be expected that the mobile application itself check the upgrades and updates and download necessary patches (so called Over the Air updates).

5 PROPOSED SOLUTION AND SECURITY MEASURES

The findings of this study has implication for mobile banking system implementation. It is important to ensure that bank customers use mobile banking as a new form of banking. In order to achieve this goal, the following suggestions may render ways to attract bank customers to utilize mobile banking.

- Banks should ensure that safety measures such as firewalls, intrusion detection and other related security devices are properly developed and enforced in the mobile banking systems. In addition, banks should also stress the importance of confidentiality of personal identification number (PIN) in mobile banking.
- The technology used must be secure and at the same time convenient to deploy and cost effective i.e, banks must deploy only secure channels that provide a non repudiable to transact.
- Bangladesh Bank should issue guidelines on mobile banking operation and act as a supervisor over the entire risks associated with mobile banking as a part of its regular inspection of banks.
- Bangladesh Bank should also urge banks to put in place a robust technological and information control and security measures to ensure confidentiality and integrity of financial transactions while limiting operational risks and build confidence in such mobile banking services.
- as a regulator, Bangladesh bank should continue to exercise firm oversight of the payment system as needed to safeguard the soundness of the financial system.
- the overall security framework should be ensured. Encrypt-

ed messaging/session between consumer's phone and third party service provider/telecom Company. Minimum encryption standards to be specified to make the transaction banking grade.

→ All subsequent routing of messages to the bank's servers must be with the highest level of security with dedicated connectivity like leased lines.

→ All transactions that affect an account (those that result in to an account being debited or credited, including scheduling of such activity) should be allowed only after authentication of the mobile number and the PIN associated with it.

6 PROPOSED SECURITY POLICY

In the course of research for this report, which included interviews with key informants such as bank sector, multilateral donor and INGO officials, it is evident that despite recent successes, the private and public sector have some ways to go to actualize the potential for financial inclusion in Bangladesh.

With regard to the private sector, if one considers agent banking, it is evident that not all participating banks have a coherent strategy and business model with which to target segments of the underbanked market. Banks can capitalize on investments already made, even if they have been made by non-banking entities, such as International NGOs (INGOs) and other potential development sector partners, which tend to be better at understanding this segment of the market. A few banks have already begun to partner with INGOs to better understand how to approach this market.

Banks with agent banking licenses must carefully consider the early-mover advantages to the business of financial inclusion and devise governance processes in line with coherent corporate strategies. These strategies should encourage short-term investments in view of long-term returns, both in terms of profitability and branding value propositions. Capacity building is another important area, as banks need to build capacity to recruit, train, and manage agent banking networks, respecting both the uniqueness of agent banking operations relative to existing banking products, while not rendering them too exceptional to be integrated into strategic priorities.

The government of Bangladesh, through various ministries, departments and initiatives, has taken cognizance of the importance of and potential for financial inclusion and DFS, respectively. Salient are the role of the Bangladesh Bank and the Access to Information (A2i) initiative. The latter has sought to create Union Digital Centers (UDCs) to serve as agent banking points. The MRA and Palli Karma-Sahayak Foundation (PKSF) have also worked closely with international partners and multilaterals to refresh their thinking on financial inclusion.

As next steps, it is important for the government to set specific, measurable targets related to accomplishments in financial inclusion in line with global standards followed by the Alliance for Financial Inclusion as part of their Maya Declaration targets. Consumer protection has recently been announced through the September 2017 Prudential Guidelines. However, this remains an area where coordination with financial services providers and civil society entities remain important, so that customers of agent banking and mobile financial services are aware of the redress mechanisms and protection facilities.

Financial technology, or Fintech, as it is widely known, will also be a clear driver and catalyst for DFS-led financial inclusion. There remain several opportunities for the public and private sector to maximize the benefits and mitigate risks associated with Fintech. Fintech will entail integration of legacy systems in banks with IT systems required for MFS and agent banking. This is likely to be time-consuming and fraught with near-term challenges that bank boards need to embrace. Fintech entities, start-ups or more established companies, should also welcome and if necessary, make the case for "regulatory sandboxes" in which to operate within prescribed time-lines to showcase the utility of their innovation (Brookings, 2017). The central bank should also mandate that Fintech companies be subject to cyber-security assessments and risk management trainings.

Last but not least, a much-needed Fintech-related innovation that is hopefully forthcoming is electronic KYC, or e-KYC. The UNCDF's Shift Project identifies e-KYC and "tiered KYC" as one of the salient challenges to including the under-banked. Existing KYC procedures constitute a significant barrier to formal financial inclusion. The database of National Identity (NID) that the Bangladesh Election Commission (BEC) has been developing, can facilitate the introduction e-KYC by financial services providers, and drive DFS adoption and financial inclusion. The UNCDF in Bangladesh prescribes a set of steps (See the figure on Steps towards E-KYC and Tiered KYC) in order to actualise e-KYC and tiered KYC. As is evident, improved coordination between firstly regulators, subsequently private sector players in harmonizing KYC can lead to development of practical guidelines on e-KYC and tiered KYC, which can remove a significant barrier to adoption of DFS.

Bangladesh Bank is planning to add a tool in its payment system to monitor transactions through Bkash and other mobile financial services in real time to check money laundering and terror financing, a highly placed central bank official said.

A recent report published by the USAID said, Bangladesh is among the biggest mobile banking market in the world and accounted for almost 8% of total registered global mobile banking users. Since a large number of population don't have access to conventional banking, mobile banking has become an instant hit in the country.

But the report has identified safety as one of the major critical points for mobile banking in Bangladesh. Concern has always been expressed by various stakeholders of MFS market regarding money laundering and terror financing through mobile phone system.

With careful planning that includes all the stakeholders, pro-

cesses and technologies involved, the opportunity exists to make security an intrinsic element of all mobile payment systems.

Main issue that should be taken care of for electronic payments system is Authentication which identifies buyer and also makes sure that person is who he/she claims to be. Used methods are i.e. digital signature, finger prints, two steps verification (like Gmail), password or smart cards etc. Data integrity which means, that there must be a way to verify that data is not changed during the transactions. Confidentiality must also be preserved.

Security for Online Systems Security of a customer's financial information is very important, without which online system could not operate. There are set up various security processes to reduce the risk of unauthorized online access to a customer's records, but there is no consistency to the various approaches adopted. The use of a secure website has become almost universally adopted. Though single password authentication is still in use, it by itself is not considered secure enough for online system in some countries. Basically there are two main systems for transaction security, secure socket layer and secure electronic Transaction.

Secure Socket Layer (SSL) SSL is the widely used secure service system and is an important measure to establish trust between online seller and buyer [8]. Encryption and decryption allow secure transfer of information between an Internet browser and server. Data cannot be intercepted or changed during transmission. SSL also permits merchant identification through SSL server certificates. The SSL standard has been widely adopted because it is relatively simple and easy to use and does not place excessive demands on the average consumer's home PC. SSL has an over 90% share of security measures, about the same as credit cards among online payment systems. Until recently, SSL provided services exclusively for fixed networks. But as mobile networks are increasingly important e-commerce markets, SSL services for wireless devices have been developed.

Secure Electronic Transaction (SET) SET is an alternative, more complex security system based on digital certificates and signatures [9]. SET needs specific software and is more difficult for cardholders to obtain and use, and despite the high level of security offered it has not gained widespread use.

7 WHAT THE GOVERNMENT CAN DO TO SPUR GROWTH?

The government has been extremely supportive of the ICT industry with significant funds flowing into digitization. However, for payment gateway integration a few supports has become essential. At this stage given the mobile internet ecosystem of Bangladesh (~60 million internet users, 95% of whom are on mobile devices) DCB (Direct Carrier Billing) has become an important issue. DCB will allow consumers to directly use their mobile balances to purchase via their smart devices directly. This will make

the user purchase experience extremely smooth and will add growth points for the local tech ecosystem who can have a direct monetization channel. The adaptive behavioral change will definitely add to the e-banking growth.

Centralization of citizens' database via social security numbers to ensure credit history and accountability will help account maintenance and tracking experience. While we understand that smart card is a good start adding more centralization algorithms will reward consumers with proper credit history and will make due-diligence by the financial institutions a lot more fluid and hassle free.

8 INTO THE NEXT LEVEL?

Digital Banking is the future – the Telecom revolution is a testament that consumers here are adaptable and open to moving into the cyber age. We just need to figure out how we integrate more immersive FinTechs while sufficiently addressing their concerns on security and mobilize the right stakeholders.

4 CONCLUSION

Though banking customers grow increasingly with the digital lifestyle, most Bangladeshi customers are not aware about m-banking in the country. They are not fully aware of the power of technology and do not seek to leverage it to enjoy better control over their banking operations and reap the benefits of m-banking. Instance, creating new markets, and reducing operational costs, administrative costs and workforce are increasingly important aspects for the banks' competitiveness, and m-banking may improve these aspects as well.

As mobile banking is still relatively new in Bangladesh, an understanding of the prospects and challenges to use mobile banking may influence its implementation. The findings of this study offer insight to commercial banks in Bangladesh in promoting the use of mobile banking among bank customers. In order to achieve this it is important for commercial banks to take into account the factors that this study had found on the use of mobile banking. The study results indicate that consumers are interested in assessing a wide range of banking services via mobile phone. The ability to access account balance enquiries via a mobile phone is the most compelling consumer banking service, followed by mobile fund transfers.

A second-tier of mobile banking opportunities includes reports for potentially fraudulent behavior, which reflect some of the security concerns around mobile banking and stock market information. The customer's perception was found to be overwhelmingly positive. The most appreciated feature was ubiquity and the overview over bank account. Fast reaction to market developments often cited as one of the most attractive feature of mobile banking did not find high appreciation. Security concern was found to be widespread followed by the cost of using mobile banking services. This means that

the technology used must be secure and cost effective and at the same time convenient to deploy.

The plea for lower cost was found to be the preferred factor that will make mobile banking more attractive. This is followed by high speed of data transmission. Several factors including technical and security standards, regulatory and supervisory issues, and business and legal issues were found to be the main factors that may hinder mobile banking implementation in Bangladesh. Connectivity and secure communication platform and encrypted messaging system were found to be the factors that will enhance mobile banking implementation in Bangladesh. So, Bangladeshi banks should take the advantages of m-banking in the country and also take care of the factors that can make the m-banking service more attractive and user friendly.

Adoption rates of mobile banking are very high in some countries and this includes Bangladesh, and this is evidence of the tangible benefits and potential opportunities associated with mobile banking. While the main service that is supported at present is cash transfers the scope for offering more bank services is there. There are risks and costs associated with mobile banking for vulnerable people and these are associated with the consumer's own limited resources, structural inequality, and the asymmetry of power and resources the consumer faces vis-a-vis mobile bank suppliers. Some of these have been well documented by field work undertaken by CGAP.

Development practitioners can play a critical role in managing these risks and costs so that vulnerable people benefit from mobile banking. This will improve the likelihood that poor people benefit, that adoption by others continues, and that mobile banking contributes to national level development. Practitioners will need to understand the complex process of social innovation that requires they communicate with and gain the trust of local people and simultaneously working with mobile bank providers

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