Mobile Financial Services and Impact of Covid-19 on Its Growth:

In Context of Bangladesh

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A thesis submitted to the Department of Economics and Social Sciences in partial fulfillment of the requirements for the degree of Master of Science in Applied Economics

Department of Economics and Social Sciences

Brac University

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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
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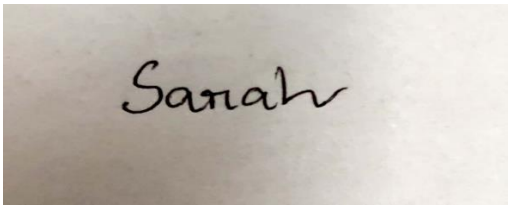

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Approval

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Ethics Statement

Hereby, I, Sarah Nuzhat Khan consciously assure that my research on "MOBILE FINANCIAL SRVICES AND IMPACT OF COVID-19 ON ITS GROWTH: IN CONTEXT OF BANGLADESH" following statements are fulfilled:

1) This material is my own original work, which has not been previously submitted elsewhere.

2) The research reflects my analysis in a truthful and complete manner.

3) The research properly credits the meaningful contributions of my supervisor.

4) The results are appropriately placed in the context of prior and existing research.

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Abstract

Mobile Financial Service is a method of providing services to the public through the use of mobile, allowing them to conduct financial transactions by financial organization. This thesis examines the Bangladesh's present situation of mobile financial services, top mobile financial service providers, customer's point of view in adopting MFS and Bangladesh's possibilities, problems and suggestions to overcome the problems. As well as this paper evaluates the changes of MFS usage in Bangladesh in COVID – 19 pandemic and identify the impact of the pandemic on the growth of it. This is a descriptive research in which quantitative data from primary sources was gathered. The primary data was collected via online survey, FGD and KII. The study has done econometric analyses using an online survey data. The findings of the study imply that mobile finance is growing in Bangladesh, but that service diversity is needed to achieve sustainable success and there are still some insufficiency which is hindering its required progress. These findings can be used by policymakers and practitioners in Bangladesh to improve mobile financial services.

Keywords: Mobile financial services; Attitude; Customers; Financial inclusion; Contactless, COVID-19 pandemic.

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At first, I'd want to thank Almighty Allah for granting me the capacity to complete this research report. I’m really thankful to Dr. Wasel Bin Shadat, Department of Economics and Social Sciences, Brac University, for his amazing and scholarly direction, constructive criticism, and assistance in the preparation of this research paper. Finally, I'd like to express my gratitude to everyone who have contributed in this research report completion and made it a success.

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List of Acronyms

MFS	Mobile Financial Service
MC	M-Commerce
EC	E-Commerce
PDA	Bangladesh Bank
BB	Bangladesh Bank
SMS	Short Messaging Service
NFC	Near Field Communication
DFS	Digital Financial Service
SIM	Subscriber Identity Module
P2P	Peer to Peer
MNO	Mobile Network Operator
IFC	International Finance Corporation
BPO	Bangladesh Post Office
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action

Chapter 1 [Introduction]

1.1 [Context of the Research]

In Bangladesh, the use of mobile financial services (MFS) is developing and becoming more popular among customers. Mobile financial services are attracting an increasing number of unbanked people since they are simple and convenient to use, according to Bangladesh Bank (2018). "Mobile Financial Services (MFS) refers to electronic money (e-money) services given against a client's specific mobile or cell phone number (termed as mobile account), where the record of monies is held on the electronic general ledger," according to the definition. These services can be obtained by issuing precise payment instructions from the bearer's mobile phone or by using an alternate digital procedure or device that ensures the transaction's authenticity. Unlike e-money products, however, MFS accounts allow for cash encashment and cash withdraw as well as other facilities allowed through Bangladesh Bank (BB) at agent sites. The usage of mobile and internet as part of financial services innovation has become one of the regular trends in present financial business. Mobile banking allows a consumer to engage to financial institution using technology such as a smartphone or a PDA. In 1999, Deutsche Bank launched its M-banking service. Short messaging service (SMS) banking was a big part of mobile banking at first. Because of considerable technological advancements in mobile technology, m-banking now offers practically all e-banking services, such as online service and credit/debit card operation. Since its inception, the cost of using mobile banking has steadily declined. Mobile banking also allows users to execute fundamental banking operations such as checking balances, transferring funds, conducting account transactions, depositing utility bills, managing plastic money, and so on. Mobile banking is enabled by a number of capabilities on mobile phones. SMS/MMS, browsing options, and mobile apps are the three alternatives.

These banking service innovations have changed the way we think about inclusion of finance. For any country like Bangladesh, financial inclusion is a difficult task. As Gupta (2013) accurately stated, "mobile technology is transforming the global banking and payment market by delivering greater convenience to existing bank customers in industrialized economies and by providing new services to unbanked customers in emerging areas." Kabir (2020) looked into the increment of financial involvement as a result of technological advancements. Many sorts of financial innovation, according to him, assist South Asian countries in achieving large financial inclusion at a faster rate.

The COVID-19 disease, caused by the virus “SARS-CoV-2,” has wreaked havoc around the globe (WHO, 2020). Bangladesh was similarly hit by COVID-19, which was initially revealed on March 8, 2020, and as a result, the entire country had to go in the process of lockdown on March 26, 2020. (Alam and Khatun, 2021). Due to the impossibility to pay in person and the requirement for safe transactions, mobile banking services saw a surge in demand during the pandemic. Furthermore, the government has facilitated digital payment methods for reducing the economic impact on COVID patients, which would have an impact on transactions. Similarly, in the aftermath of the COVID-19 issue, regional officials are hoping for a faster uptake of e-wallet users.

1.2 [Objectives]

The financial systems has been severely impacted by the rapid rise of information and communication technology for more than a decade. Most countries target to create a cashless society with paperless financing. COVID - 19 has forced the whole financial industry to be digital as a result of its outbreak. The purpose of the thesis is presenting the current state of mobile financial services, the regulatory environment, discover the importance of upgrading

mobile financial services, and find out recent progresses of MFS industry as well as to detect the hindering facts for MFS in Bangladesh and give opinions for the improvement. Another objective of this study is to find out the changes in MFS usage in Bangladesh during COVID – 19 pandemic and identify the impact of the pandemic on the growth of it.

1.3 [Research Questions]

Even though the Bangladeshi mobile financial industry has improved a lot in the recent years, the use of MFS has not succeed as it is there in UK, China, Sweden, Japan, India etc. There can be questions that can be asked among the analysts, tech people, and all the researcher working in the country's digital financial ecosystem are-

1. What is the current situation of MFS in Bangladesh?

   The answer of this question determines the most important part of mobile finance in Bangladesh. This question intends to find out the current state of MFS including the current MFS usage rate, top MFS providers, supply and regulatory side, positive attitude for MFS in Bangladesh.

2. What is the growth rate of MFS in Bangladesh and how it's affecting country's economy?

   By answering this question the growth rate of MFS in Bangladesh can be found. As well this answer intends to find out the economic acceleration due to this growth.

3. What are the Government's initiatives and policies to accelerate MFS?

   This question's answers can find out what steps government has taken to promote MFS and based on that more initiatives can be taken to recover the sectors of MFS that are lagged behind.

4. What types of transactions methods are noticed in Bangladeshi MFS industry?

The answer of this question can find out the transactions methods that are used in digital transactions in Bangladesh.

5. What is the perception of consumers in adoption of MFS in Bangladesh?

   By answering this questions the factors that leads people to adopt digital payments are determined. This answer also can find out customers points of view in using MFS.

6. How MFS is affecting the economy during the COVID -19 pandemic?

   MFS is used more during the Covid-19 pandemic situation than general situation. This answer tends to find out how the economy is accelerated during the COVID -19 pandemic via MFS.

The answers of these research questions will help to find out the current state of mobile financial services, the regulatory environment, recent progresses of MFS industry as well as to detect the hindering facts for MFS in Bangladesh and give opinions for the improvement. Another objective of this study is to find out the changes in MFS usage in Bangladesh during COVID – 19 pandemic and identify the impact of the pandemic on the growth of it.

1.4 [Research Methodology]

The research is done into two phases:

- In the Phase 1, research questions were framed on different perspectives and dimensions of MFS in Bangladesh.
- An online survey was done with a set of questionnaires which covers the research questions within different demographic condition.
- This online survey data was used as primary data.

- In the phase 2, the collected data were analyzed on different econometric and statistical analysis
- A final key findings of the research was determined through this analysis.

1.5 [Analytical Framework and Data]

To explore the effects of the mobile payment system in Bangladesh, this thesis used both exploratory and econometric methods. This paper is primarily established upon qualitative research methods. The research topic that is selected is a recent popular research issue and there are lots of scopes to improve. The collection of data's is taken by a survey.

1.6 [Significance]

This research points to detect a gap in the digital payment systems by adding empirical evidence to the current body of knowledge in Bangladeshi mobile financial systems. The concept of mobile financial systems is very new, and there has been little detailed research on the subject in Bangladesh to yet. The goal of this thesis is to determine the present situation of Bangladesh's mobile finance system. Furthermore, because to the global proliferation of COVID-19, the use of currency has decreased. Mobile payments are the only method to compensate for the loss of contactless trade while also balancing the economy. This study also strives to find out impact of Covid-19 on MFS growth in Bangladesh.

1.7 [Limitations]

The sample size for this research is small and as a result of the small sample size, the conclusions obtained from this study might be limited. Moreover there is very less research about impact on MFS during Covid-19 outbreak. And this thesis data was based on the survey of author's acquaintances so the demographic characteristics of this research is not so vast.

This paper also doesn't show details about why there is lacking in MFS sectors in Bangladesh comparing to developed countries which is intended as future works.

1.8 [Structure of the thesis]

The paper is divided into eight chapters. The first section contains the study context, research objectives, research questions, analytical framework and data, significance and limitations. Chapter 2 presents a brief literature overview on MFS. The 3rd chapter discusses the current situation and top providers of MFS in Bangladesh and global context. In chapter 4 the concept, significance, benefits, regulatory framework, SWOT analysis and types of MFS are discussed. The impact of MFS on customer is discussed in chapter 5. In chapter 6 post COVID scenario of MFS is presented. All the data analysis are all covered in Chapter 7. The conclusion and policy recommendations are found in Chapter 8.

Chapter 2 [Literature Review]

According to the central bank of Bangladesh; Bangladesh has attained remarkable growth in the financial sector in terms of banking, moneymaking operations, innovative service design, and competitive manner as a result of financial reform and technological adaption. Except this development, the majority of population, specially the poor and those living in rural areas, yet unable to access various financial systems because of their lack of access to many financial institutions and proper financial programs, high service charges, and lack of direction. Bangladesh permitted banks to launch MFS in 2011 as a result (Nabi, Sarder, Moula & Sarder, 2017). Because of the easiness of accessibility, service availability and convenience of use of MFS provided by bKash, Nagad, Rocket, and others, digital money users in Bangladesh has increased significantly in recent years (Kabir, 2020).

Modern telecommunications revolutions have created innovative banking entry ways, one of which is MFS, in which a customer contacts with bank via a mobile (Shezan M., 2015). Mobile financial services, according to Shezan (2015), include account balance and transaction history queries, payment of bills, cash transfers, trading of stock and ordering of insurance through a mobile. Mobile financial service (MFS) and mobile banking are nearly indistinguishable, according to Shezan M. (2005). As a result, the mobile banking idea must also be clarified.

Financial organizations have acknowledged the importance of innovation in achieving sustainable development and profitability. While cost-cutting and efficiency-boosting strategies may produce short-term outcomes, they will not provide financial institutions with long-term benefits (Wilkes, 2014). “Innovation in financial services necessitates an interdisciplinary approach,” according to Mention (2014). To active an innovative policy in financial services, experts in every sectors must share their thoughts.

In recent years, the financial services industry has seen enormous growth in terms of innovation. Electronic cash transfers, digital payment, and m-banking, among many more innovative implementations, are hardly possible in today's financial system (Fonseca, 2004). The mobile banking service supplied by banks is one of several financial service advancements. It was discovered that number of customers using m-banking has increased over time, with a good percentage (43%) of bank account holders using MFS. (Rubin, 2017).

According to a survey done by Md. Rabiul Islam and Syed Zabid Hossain (2018) on 442 users in Dhaka, Rajshahi, and Chottogram, cost, time, convenience, reliability, safety, and usefulness remain important criteria in MFS adoption. This data reflects the dramatic increment of m-banking users around the globe over the previous few years, opening the door to far-reaching financial services via mobile devices. Furthermore, a report claims that mobile banking is continuing to challenge traditional banking methods. The fusion of mobile technology and financial services can be defined as MFS (Chung & Kwon, 2009) where a mobile and a network connection are needed. Rather mobile payment is a subset of m-banking, which is stated as the use of a mobile device to commit transactions in which money is sent from payers to receivers through a medium or directly (Mallat, 2006).

M-banking is becoming more popular in developing countries. According to the World Bank (2013), mobile phone usage in poor countries increased from 29 to 77 percent between 2000 and 2010, which is higher than in developed countries. According to Abdinoor & Mbamba (2017), perceived usefulness, perceived advantages, and costs of using MFS were all variables impacting its acceptance in Tanzania. Mobile banking has already been introduced in SAARC nations such as Pakistan, India, and Nepal, and a large section of their population is adopting it to replace traditional banking operations.

In 2011, the Dutch Bangla Bank initiated first mobile banking service of Bangladesh. Only about a third of the country's 160 million residents had bank accounts at the time, while nearly half of the country's primarily rural population had mobile phones. Recognizing the importance of mobile financial services in the global economy, Bangladesh bank embraced guidelines for MFS in 2011 and amended them in July 2015. Customers can use their cell phone or personal digital assistance to access mobile financial services. MFS might include everything from mobile banking to various payment methods (Cheney, 2008). Mobile banking transactions in Bangladesh are primarily limited to basic services like cash encashment and withdraw, P2P transfers, payment of salary, and payment of utility bills. Only 5% of transactions were undertaken for utility bill payments and salary disbursement, while like 95% were assisted by cash encashment and withdraw and P2P transfers in terms of monthly total transaction value (BB, 2017).

The goal of mobile banking is to supply MFS to a wide variety of consumers rather than to eliminate the banking branches infrastructure. Mobile financial services have a bright future in Bangladesh, and they may contribute to the country's digital agenda. Paying utility bills, transferring funds, shopping, and withdrawing cash from a designated ATM or Cash point are just a few of the services available through m-banking (Islam, 2013). According to Islam (2013), the following issues influenced the use of MFS in Bangladesh: security and privacy, a preference for dealing money physically, a lack of understanding of technical gadgets, and overall aversion to change. However, a number of factors encourage the usage of MFS, including its low cost, distant connectivity, and overall convenience of executing financial transactions (Dona, Mouri, Hasan and Abedin 2014). Bangladesh Bank seeks to ensure market development with service providers, conduct test-runs on a variety of technologies, deploy various types of agent networks, and maintain a wide range of products, according to a study

on Mobile Financial Services published by Bangladesh's Central Bank (2012).Bangladesh Bank seeks to ensure market development with service providers, conduct test-runs on a variety of technologies, deploy various types of agent networks, and maintain a wide range of products, according to a study on Mobile Financial Services published by Bangladesh's Central Bank (2012).The increased use of mfs can be due to a number of factors. According to Mattila, "The most important factor in growing the use of mobile banking was the expense of doing business" (2003). Furthermore, "Perceived risks, trust, convenience, and comparative benefits are the components driving mobile consumers' behavioral intention to utilize mobile banking services in Bangladesh." according to the study (Kabir, 2013). In the face of increasing competition, financial institutions can use mobile technologies to gain a competitive advantage by retaining consumers and providing better services (Barnes & Corbitt, 2003). According to Kabir (2020), 70% of adults in the South Asian area have a personal or combined digital money account. Digital money accounts are growing in popularity in this region, which is good news for banks and MFS providers who offer creative financial goods and facilities. "In the financial inclusion index," according to Sarma (2008), "Bangladesh ranked 69th, India 50th, Pakistan 67th, and Sri Lanka 63rd among 100 nations in terms of ease of availability and usage of financial systems." Furthermore, other global investigations employing Technology Acceptance Models (K.P. 2017) have yielded comparable outcomes. With the World Bank's ambition to achieve universal financial inclusion by 2020 and its efforts to make it a reality, a growth in MFS adoption is necessary and unavoidable for banking institutions to keep up and get the most out of their technology resources.

Chapter 3 [Mobile Financial System: Global Scenario and Bangladesh Perspective]

3.1 [Mobile Payment: Global Scenario]

In 2019, the total digital payment was worth USD 1139.43 billion. PayPal, Samsung Pay, Apple Pay, AliPay, and WeChat Pay are just a few of the mobile payment apps that stores and services are quickly adopting and integrating to accept payments. Mobile phones have become an indispensable product in the quickly expanding global economy. Similarly, for many people, the internet has become an integral part of their lives. This has broadened the global usage of mobiles and internet, propelling the mobile payment business forward. Because of the industry's rapid expansion, businesses are spending heavily in mobile payment technology. In India, for example, WhatsApp is collaborating with ICICI Bank to develop UPI-based digital payment functionality. Most governments are inspiring banks to construct a structure in rural areas to enable secured digital payments, which presents a huge chances for merchants. This industry faces a tremendous difficulty in closing turning off the distance between consciousness and implementation of the technology.

3.4.1 bKash

Among Bangladesh's most initial mobile finance providers, bKash, now takes over 80% of the market, which makes it the sector leader. It launched as a joint venture between Bangladesh's BRAC Bank Limited and the United States' Money in Motion LLC, and is a BRAC Bank subsidiary now. Following bKash's extraordinary success and impact on Bangladesh’s financial systems, the IFC created an equity partnership in 2013 and the Bill & Melinda Gates Foundation became an investor in 2014. Alipay, a subsidiary of Alibaba Group, became yet

another foreign investor in the company in 2018. By cooperating with all 5 mobile network carriers, bKash has efficiently served MFS across the country MNOs. It now has over 180,000 agents and more than 30 million registered accounts around the country.

3.1.1Status of Mobile Payment in five different countries:

3.1.1.1 United Kingdom:

In terms of technological and innovative business strategies, mobile payment in the United Kingdom has progressed faster than its European rivals. There are various types of mobile payment methods, some of which do not require the active participation of mobile network providers and financial organizations. The many kinds of digital payment systems available on different markets and the players' engagement in the payment methods, are briefly covered.

PAYFORIT: (http://www.payforituk.com) Payforit is a joint venture among most of the main MNOs, including Vodafone, three, T-Mobile, Orange, and O2. This technology essentially serves as a bridge connecting the user and the network operator. This is a web-based service aimed mostly at micropayments. This service is available for transactions of less than ten pounds.

RINGGO MOBILE: (http://www.ringgo.co.uk) Cobalt Telephone Technologies (CTT), a major automated financial solution supplier in the UK, invented RingGo, the first mobile-based parking system. They are primarily focused on providing service to public transportation, with the ability to manage and handle millions of pounds in transactions each year. This service is available throughout the United Kingdom, and Oxford is one of the most prominent cities in the initiative, with over 7000 transactions.

3.1.1.2 France:

The introduction of a NFC-based digital payment system in France has moved mobile payments to the next level. Cityzi, Payez, and other recent projects In partnership with all significant MNOs, banks, tech suppliers, and agents, the French market is producing a motion among customers.

PAYBYPHONE: (https://paybyphone.co.fr) Parkeon and parking operator Vincipark SA have created Paybyphone, a new revolutionary mobile-based parking system. By the year 2009, it has been implemented for the first time in Issy-les-Moulineaux, France. Parkeon Parkfolio networked systems control tariff application, back office operations, and enforcement, effectively connecting all Parkeon Pay and display equipment to a central PC. The key advantages of this method are that it is more ergonomic, that a ticket may be purchased sitting on a remote place, and that the parking cost is only counted for the period spent, among other things. All of these characteristics are generating interest among customers.

BUYSTER: (https://www.buyster.fr) Buyster is a new mobile payment system launched by 3 major French mobile operators, Orange, Bouygues, and SFR, in collaboration with an IT organization, Atos Origin. Buyster's main goal is to become a major e-commerce payment player and France's mCommerce leader.

PAYEZ MOBILE: (http://www.payexmobile.com)] The Payez digital payment system is based on technology of credit/debit cards and NFC technology, which is installed in the consumers mobile. The major goal of this system is to make payments easier for customers by supplying them with a quick, convenient, and secure mobile-based software for their regular transactions.

3.1.1.3 Sweden:

Compared to other countries of Europe, mobile payments in the Nordic regions, particularly in Sweden, have always witnessed significant development. Sweden set a new record for non-cash transactions per person in 2009, with 298 transactions per person. Except that, the government and many financial organizations are conducting initiatives to promote the use of innovative mobile financial systems.

MOBILL: (http://www.mobill.se) Mobill Scandinavia AB is a private equity-backed software company that begun with mobile parking as its initial service. Following the success of its digital parking service, it began to expand its activities to include applications such as providing public transportation tickets, vending machine solutions, and point-of-sale environments, among others. Mobill's facilities covers the Mobill Service Platform, Mcode tickets, and coupons, which are scanned and validated at the time of redemption using the mobile phone screen. Mobill offers a variety of applications, and each case study examines a specific application. As it's the first mobile-based parking technology in Sweden, so it's accepted.

WYWALLET: (http://wywallet.se/) WYWallet is a digital payment system introduced by 4T, a joint venture of Swedish telecommunications companies Telia, Telenor, Three, and Telia. Its goal is to reach 97 percent of Swedish mobile phone users with a mobile wallet solution.

3.1.1.4 Turkey:

In terms of new payment technology, Turkey is regarded one of the fastest growing countries. Following the 2008 financial crisis, it is clear that financial organizations play a critical role in the success of MFS. With its NFC technology, the country is now in the next stage of development, and all the concerns are putting their efforts into it.

TURKCELL: (http://www.turkcell.com.tr) Turkcell and Garanti Bank had established a modest MFS before, and NFC technology was employed to advance it to the next level. In 2008, the pilot project was started for the first time. Employees of Turkcell and Garanti were given NFC phones, and shops were given terminals to receive payments during the pilot phase. The pilot project is part of the GSM Association's "Pay-Buy-Mobile" program (MPW 101, 108), which aims to support SIM card-based NFC technology. It's the beginning of its type in the world. This pilot project also includes technology companies Giesecke & Devrient, E-Kart, and Venyon.

3.1.1.5 India:

With a yearly turnover of USD 1.3 trillion dollars, India's economy is regarded the second fastest expanding economy after China. Because mobile user's number is expected to reach 95% by the end of 2015, this rising economy has widened the way for MFS providers. This is higher than the rate of unbanked accounts, because only 59 percent of urban residents have bank accounts. Because mobile phone coverage is higher than bank penetration, all of these circumstances lead to the launch of a MFS that can solve the financial problem for rural and poor e people.

AIRTEL MONEY: (http://www.airtelmoney.in) Airtel is the world's 3rd largest mobile operator. With around 180 million subscribers as of the end of March 2012, it is also India's largest cellular operator. Soon after Nokia's mobile payment service, "Nokia Money," was shut down in April 2012, Airtel established India's first digital payment service, "Mobile Money." The main advantage of this method is that it only requires a basic handset to operate, and it does not rely on a GPRS connection to complete the transaction. Customers can now pay with their phones instead of cash or debit/credit cards, thanks to this new mobile payment platform.

It's similar to refilling digital wallet and using it to do transactions like power and phone bills payment, book movie and tickets online, and do groceries, among other things.

PAYMATE: (http://www.paymate.co.in) PayMate is a third-party MFS supplied by Ajay Adiseshann and Probir Roy, founders of a Mumbai-based wireless transaction platform provider. Kleiner Perkins Caufield & Byers, Sherpalo Ventures, and Mayfield Fund are among the venture capital firms that have invested in PayMate. PayMate has partnered with almost all main network operators, financial organizations, agents, and technology companies to advertise their services, with users paying no additional fees to use it.

3.2. [Mobile Payment: Bangladeshi Scenario (Pre-COVID)]

Bangladesh now has 59 banks with a total of 10,467 branches (till 2019). In many cases, however, this figure is not enough to fully incorporate the Bangladesh's large population into the digital wallet system. Furthermore, financial systems are not as convenient in rural areas as they are in urban areas. Central Bank is trying best to bring unbanked citizens into proper financial system. 3 private banks launched mobile banking services in 2011: Dutch Bangla Bank Limited (DBBL), BRAC Bank Limited, and Trust Bank Limited. For example, BRAC Bank's "bKash" and DBBL Mobile Banking (Now Rocket) have quickly turned into immensely popular digital wallet. As a result of the introduction of these facilities, Bangladesh's financial inclusion has risen considerably, especially after 2013. In most instances, the mobile finance is still primarily utilized for cash encashment and withdraw, P2P transactions, online purchases, and occasional payments of bills. On September 22, 2011, the Bangladesh Bank announced administrative rules for mobile finance – "Guidelines on Mobile Financial Services (MFS) for Banks" – after a lengthy assessment and extempore permissions on MFS. In December of that year, it was changed again. The bank-led model of mobile finance would be approved in the

country at most, according to the guidelines. As a result, a consumer's MFS account that is accessible by mobile will be referred to as a "Mobile Account" and held by bank. It would be a non-chequing account, as opposed to a conventional banking account as well.

3.3 [Current State of MFS]

With over 1 million agents, MFS is presently offered by 15 banks across the country. In addition to banks, the Bangladesh Post Office offers mobile finance through DFS platform. There were 925.73 million registered MFS users as of July 2020, with 426.78 million active accounts. In that month, these accounts processed a total of TK 62,999.42 crore in transactions. In addition, as digital transactions grow more crucial in the current COVID-19 epidemic, MFS receives a significant boost. These services are the most preferred way for the government to provide allowances and incentives. Several government and corporate institutions use MFS to pay their employees' salaries all at once.

3.4 [Bangladesh's top mobile financial service providers].

Except the case that the country has 16 MFS providers, bkash and Rocket lead the MFS world by holding the largest share in that market. In recent years, Nagad, as example, has seen substantial growth. Consumers can use USSD codes to access services, and all mobile finance services offer mobile apps with various capabilities to their consumers.

3.4.2 Rocket

The Dutch Bangla Bank Limited (DBBL) was Bangladesh's initial bank to serve financial services through mobile networks. DBBL Mobile Banking was the first mobile finance to serve a full range of financial services. In 2016, it was named as Rocket and now offers a broader span of services than before. With a market share of nearly 17%, it is currently the country's second-largest MFS supplier. Rocket has about 18.2 million active users and roughly 267,000

agents scattered across the country via 277 distributors. Rocket has always provided its consumers with additional benefits, such as cash out from bank offices and ATMs. It is also very efficient in case of of corporate money collection, wage payment, allowance payment, scholarship payment, and other services. Rocket accounts are currently used by 611 organizations across the country to pay salaries and allowances.

3.4.3 Nagad

MFS is being effectively delivered in Bangladesh by Nagad, a Bangladesh Post Office (BPO) DFS. In 2018, BPO relaunched Nagad, combining its previous project of Money Transfer Systems with the Postal Cash Card. Its popularity has increased its vast scope of MFS. It's serving popular services like Cash encashment/withdraw, Send Money, and Mobile Recharge, but it now also provides Bill Payments and Deposits (Sanchay). As of July 2019, it had 2.5 million customers and 32,000 agent locations around Bangladesh. Nagad is the country's first mobile finance system to implement Digital KYC, a consumer onboarding solution that includes Bangla OCR, mechanized identity verification, and localized data.

3.4.4 SureCash

SureCash, a progressive platform, was built by Progoti Systems Limited in 2014. It's a nationwide open payment system that collaborates with four local banks and 1,500 payment partners. One of the network's associate institutions is Rupali Bank Limited, one of the country's main state-owned banks. According to corporate authorities, SureCash employs 180,000 retail agents around the country and services 20 million people. They've initiated their unique technology, which is aimed at utilities, educational institutions, and government educational programs, among other things.

3.4.5 MyCash

In 2012, Mercantile Bank Ltd launched MyCash, another potential MFS which presently has network accessibility with every MNO in Bangladesh and provides a wide range of financial facilities. MyCash offers over 95,000 agent locations and over 840,000 subscribers across the country.

Chapter 4 [Mobile Finance: Conceptual and regulatory Framework]

4.1 [The Concept of Mobile Finance]

Mobile Financial Services is a process through which a financial organization serves public through the use of a combination of banking and mobile, allowing users to conduct transactions. After completing registration and receiving an account, customers can 'deposit' actual currency at a business or representative in exchange for mobile money into their mobile account. An SMS is sent to confirm the transaction. Mobile-enabled payment systems and mobile banking are examples of MFS, which leverage the concept of a "mobile wallet" account to provide security and convenience for transfers, payments, and savings. MFS are currently accessible in over 70 countries and handle tens of billions of dollars in monthly payments. MFS has the ability to provide social and financial inclusion in cash-centric societies. MFS should be accessible, dependable, and responsive to the requirements of the world's developing country's people in order to achieve financial inclusion. MFS billing structures should, in this context, ideally be tailored to the levels of disposable money typical of a consumer living on less than $3 per day. Bangladesh bank, bKash, dutch-bangla bank limited, Mercantile bank limited, iFic bank limited, Mastercard, one bank limited, united commercial bank limited, trust bank, islami bank bangladesh limited, First Security islami bank limited, international Finance corporation, and others are among the supply and regulatory institutions in Bangladesh.

4.2 [Prospect and Challenges of Mobile Financial Services in Bangladesh]

Financial organizations have gradually increased the number of people who can subscribe to their services. Despite this, Bangladesh has over 35 million people without a bank account, and they are apart from the country's legal economy. Financial technology (FinTech) can help solve

this problem if it is backed up by the right regulatory infrastructure and technological help. FinTech aspires to put traditional financial institutions to the test in terms of financial service delivery. It's a new company that leverages technology to boost financial activities by shortening service cycle times and lowering costs while also enhancing service quality. FinTech is a type of technology that aims to increase financial inclusion in developing countries like Bangladesh. In some developing countries, like India, financial institutions have already embraced more FinTech traits and are reaping the benefits. With over 100 million mobile phone subscribers, Bangladesh offers a lot of promise in terms of financial inclusion. Although there are targets to accomplish MFS benefits, such as expanding OTC channel usage without using a personal account, addressing ML and TF issues, and increasing OTC channel usage without using a personal account, there are also goals to achieve MFS benefits.

Due to high transaction costs, a big part of country's micro and small companies avoid using m-banking services for business use. Telecommunications businesses, in contrast are barred from offering m-banking facilities. If mobile operators are given the option to provide service, the scenario may change. The Bangladesh Bank's recent policy of limiting mobile cash-in to Taka 15,000 per day, down from Taka 25,000, and limiting maximum cash-out to Taka 10,000, down from Taka 25,000, may have an impact on transactions. The limitations of MFS is one of the main reasons for the recent drop in mobile banking transactions (which declined by Tk. 3113.6 crore (9.0 percent) to Tk. 31512.6 crore in February 2019 compared to January 2019, threatening financial inclusion. The MFS provider isn’t responsible if the sender sends money to an incorrect number. Because the consumer enters the receiver's phone number as well as his or her personal identification number, he or she is responsible in the event of an inaccurate transaction (PIN). For a wrong transaction, the MFS supplier does not refund the money and does not accept any responsibility. Because there is no regulation for money transfer from a

faulty transaction, the Bangladesh bank can provide policy advice for this event. Users of MFS are regularly the victims of frauds, with criminals stealing money by sending masked SMSs. By sending masked anonymous SMSs, scammers might induce clients to transfer money into their accounts. For the time being, it appears that the mobile financial services provider has no way of dealing with this form of fraud.

4.3 [Types of MFS]

MFS are financial services delivered to consumers, particularly unbanked persons, using a mobile phone. MFS can provide a slew of benefits to everyone, especially the unbanked. Bangladesh has chosen the bank-based model for delivering MFS. The Bangladesh Bank, in accordance with guidelines established in 2011, allows the following Financial Services on the Go:

1. Incoming foreign remittances disbursement;
2. Payments from an individual to a business (e.g., utility bills);
3. Cash encashment\withdraw of a mobile account at banks, ATMs, agents and mobile operator outlets;
4. Payments from businesses to individuals (e.g., salary disbursement by corporations, industries, and offices);
5. Payments made by a person to the government, such as taxes and levy payments;
6. Payments by the government to individuals
7. Payments between individuals and account owners of the same bank and

8. Other payments, such as microfinance, overdraft, insurance premiums, DPS, and so on. Banks in Bangladesh have launched a slew of measures, spurred on by country's central bank, to enjoy the benefits of mobile technology-based financial inclusion.

4.4 [Benefits of Mobile Financial services]

MFS can provide a slew of advantages to everyone.

- For a substantial segment of the unbanked population MFS increases access to financing, hence expanding financial intermediation.
- By minimizing transaction costs, saving helps to increase capital.
- Encourages the establishment of new firms by allowing them to invest and increase their capital over time.
- Make government transfers more efficient and speedier.
- For cross-border economic cooperation MFS offers a lot of opportunities.
- Allows users to do a variety of financial operations comfortably, promptly, and securely.
- Consumers are able to check their account balances, analyze latest transactions, transfer funds, pay bills, find ATMs, deposit checks, and manage their investments, among other things.
- MFS is available every moment a year.
- For most mobile users in distant rural areas who want to receive financial services at a cheaper cost because conventional banking is not practical from a business standpoint MFS is simple and convenient, and an excellent solution for them.
- It’s stated that mobile finance is claimed to be safer than online or internet banking.

4.5 [Significance of Mobile Financial Services]

There are lots of research on the impacts of mobile financial services on socioeconomic conditions in nations that use them. The Boston Consulting Group (2011) conducted a study that found that mobile financial services have beneficial effects. In the following some of the study's key findings are discussed:

- Mobile financial services help with financial inclusion. According to a Boston Consulting Group study of Pakistan, Bangladesh, India, Serbia, and Malaysia, the impact of MFS ranges from a 20 percentage point increase in financial inclusion in Pakistan (from 21 percent to 41 percent) to a 5 percentage point increase in Malaysia (from 90 percent to 95 percent). The effect on another 3 countries is projected to be around ten to twelve percentage points.
- Mobile banking services, according to the Boston Consulting Group (2011), can improve GDP by up to 5%. In India's situation, MFS has the potential to increase economic development by up to 5%. MFS might boost GDP by up to 3% in Pakistan, Bangladesh, and Serbia by 2020, but the impact on Malaysia is smaller, at around 0.3 percent, indicating a weaker financial inclusion benefit.
- MFS can assist the disadvantaged in anticipating and responding to shocks, such as natural catastrophes. Easy Paisa introduced a relief payment distribution mechanism in Pakistan. This type idea was also employed to deliver earthquake help in Haiti. Kenya’s M-UAP Pesa's Insurance, which covers poor farmers under weather-related crop failures via mobile phones is another example.

- Mobile finance tends to contribute to the reduction of income inequality through providing chances for the poorest members to benefit from financial services, hence reducing income and expenditure volatility.

Masha, I. (2016) found that mobile financial services (MFS) or mobile money have significant micro and macroeconomic effects in a review of research findings. Three major macroeconomic effects are identified: influence on economic growth, inequality and financial sustainability .The macroeconomic effect of digital money stems mostly from research that applies cross-country financial development theory.

- The proliferation of mobile money services represents a broadening and deepening of financial intermediation.
- The degree of financial intermediation, according to financial development theory is positively connected with growth, employment, and look for having a causal impact on growth.

• Key channels: (i) decreased transaction costs (ii) better capital and risk distribution across the economy (iii) increased access to bank deposits can all contribute to financial stability.

• According to empirical studies, broadened financial inclusions are positively related to growth.

• According to research, low transaction costs with good capital and risk distribution across the economy increased development.

• Financial inclusion can broaden the efficiency of government payments of social secured transfers, which, in addition to the immediate economic benefits, improves the efficiency of government spending.

4.6 [Regulatory Framework of MFS in Bangladesh]

Bangladesh Bank created the framework for MFS apps and their direction on MFS for banks in September 2011. In December 2011, revised guidance was released, followed by regulatory recommendations in July 2015. In July of 2018, the most recent guideline was published. According to the most recent bank guidelines, MFS providers will be managed by the expected commercial. Previously, banks that engaged in MFS activities may preserve their present license or create a secondary of that, but new applicants will be obliged to create a subsidiary. The parent banks must control at least 51 percent of the shares in the subsidiary, but they are permitted to seek equity partners from alternative banks and non-bank financial institutions, NGOs, investment and fin-tech enterprises. MNOs, NGOs, and the postal service were left off the list of approved partners, however they were allowed to evolve into distributors or super-agents. Because MNOs are controlled by the BTRC rather than the Bangladesh Bank, this is nearly justified. Mobile operators, in contrast, are not permitted in MFS; in the Bangladesh Mobile Financial Services Regulations, 2018. Bangladesh bank authorized mobile operators to own up to 49 percent of MFS providers.

4.7 [Mobile Financial Services SWOT Analysis]

The objective of the SWOT analysis of MFS is to find out the strengths, weaknesses, opportunities and threats of mobile finance in Bangladesh. This SWOT analysis was done based on country's recent MFS state and people's perspective on using MFS. From the recent Bangladesh bank's data on mobile finance, different MFS providers market positions and consumers point of view some findings are detected. These are-

- Most use MFS as it's a simple, fast and convenient way of payment.
- People can complete transactions any time of the day via MFS
- MFS is becoming very famous and many people are adopting MFS as their way of payment in a positive manner
- But MFS is mostly used in urban area rather than rural one which is still lagged behind
- Though MFS is a very efficient way of payment still many avoid it due to lack of security, fraud cases and technical errors

Based on these findings a SWOT analysis was done.

STRENGTHS

- Simple, convenient to pay
- 24/7 accessible
- Payments are Traceable
- Fast and efficient

WEAKNESSES

- Rural people are unfamiliar with advanced technology
- People have Trust Issue
- System or Power failure

OPPORTUNITIES

- Expanding Market
- Positive Environment
- Emerging market

THREATS

- Fraud Practices
- Security Issues
- Technical Glitch

Chapter 5 [The Impact of MFS on Customer]

5.1 [Customer's Point of View towards Mobile Financial Service:]

During the last decade, there has been a substantial number of study on MFS. Most of these studies utilized research models and frameworks that have been around for a long time in the IS literature. Among all the models that have been proposed, the TAM (Davis, 1989), which was created from the TRA (Ajzen & Fishbein, 1980), seems to be mostly recognized among the tech researchers. According to the TAM, a user will embrace a latest information system if he intends to use it, which is reliable on the user's views in the system. Two beliefs, namely perceived utility and perceived ease of use, are key in understanding the disparities in consumers' intents, according to the TAM (1989). Furthermore, future tech acceptance studies should investigate how additional aspects influence utility, simplicity of use, and user acceptability, according to Davis (1989). As a result, perceived ease of use, convenience, and functionalities may not properly reveal behavioral goals for using m-banking, necessitating the look for other criteria that can better predict m-banking approval. As per Rogers (2003), there are 5 perceived features of innovation that might be exploited to establish a positive or negative attitude toward it. Relative benefit, compatibility, complexity, trialability, and observability are the factors to consider. The frameworks can be utilized to examine the impact of various factors on mobile bank service acceptance. There were six elements at play, and they are as follows:

1) Self efficacy: It refers to a person's belief in his own ability to execute a task.

2) Trailability: This metric reveals how much a user would like to try out an invention before committing to its adoption.

3) Compatibility: The state to which an invention is regarded as reliable and consistent with users' present values.

4) Complexity: This refers to how difficult an invention is to comprehend and use.

5) Risk: This is the sensation of danger associated with the revealing of personal and financial information.

6) Relative advantage: This is the degree to which a person considers an invention or innovation to be superior to earlier methods of completing the same task.

Due to a lack of standardization, it is discovered that MFS customers are mostly concerned about security facts such as account mismanagement, financial swindles, and user kindness issues. Consumers in developing nations, on the other hand, place a higher value on accessibility and affordability as a result of network exposure, quality connections, and cost. However, some general characteristics, such as social risk, utility and performance issue have a direct impact on attitudes toward mobile banking, and attitude is the most important element in mobile financial service uptake.

5.2 [The Role of Mobile Financial Services in Customer Purchase Decision:]

Customers are increasingly intending to buy anything online with digital money in recent years. In today's digital economy, digital money as a payment option is gaining popular, and it has

comparable effects on consumer behavior as credit cards (Diba F. et al, 2013) and global society is turning into paperless.

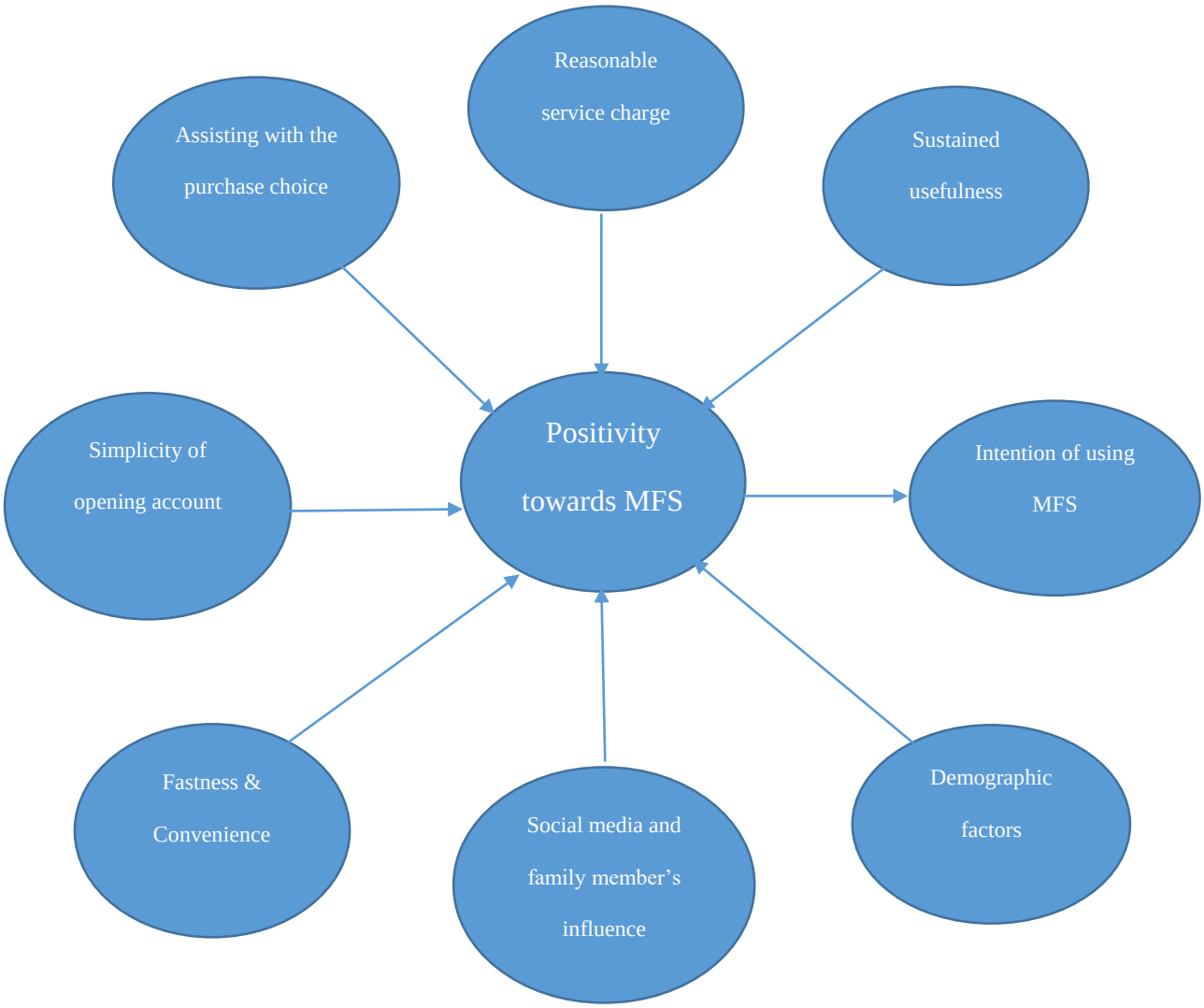
In case of payment, money has developed over time, becoming digital than physical in recent decades. "Money's fate looks to be to become digital," says one expert (OCDE, 2002). As a result of advanced technologies and digital innovations; mobile devices added many more dimensions, some of that are advanced payment modes such as mobile money. The word "digital money," also known as "electronic money," "digital cash," or "electronic currency" (Chida, Mambo, & Shizuya, 2001), has been applied to a variety of financial instruments. However, in the payments industry, the terms "mobile" and "digital" are frequently interchanged. Mobile wallets, according to TMG Financial Services (2018), are payment apps that are stored on mobile devices such as smartphones. Consumers who have signed up for digital wallets, on the other hand, can choose whether or not to connect with them on their mobile devices. Consumers use mobile wallets mostly for in-person purchases, while they utilize digital wallets for internet buying, according to TMG Financial Services (2018).

In recent years, Bangladesh has seen a significant increase in the use of digital payments. Furthermore, government enterprises like Digital Bangladesh will serve as essential drivers and enablers of this transformation. In Bangladesh, mobile wallets are a relatively new concept that has swiftly gained traction among consumers. Everyone in our neighboring country, India, is enamored with mobile wallets and welcomes them with open arms. According to Rahman H. (2016), Vijay Shekar Sharma's Paytm has 20 million active users. This figure exceeds the total number of credit cards issued in India. He also noted in 2016 that bKash is one of the oldest companies in the payment sector, despite the fact that the company recently entered the mobile wallet market. Customers who use their bKash account to buy products from 441 locations

across the country representing 56 renowned companies can get up to 20% cash back, according to Rahman H. (2016). The campaign includes Yellow, Cat's Eye, Aarong, Menz Klub, Lotto, ajkerdeal.com, iferi.com, chaldal.com, Foodpanda, Pathao, HungryNaki, and other prominent companies. When customers use bKash to make payments or receive cash back, they do not have to pay any fees. Online buying is also possible with DBBL rocket.

5.3 [Conceptual Framework:]

Figure 1 Conceptual Framework



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Chapter 6 [Mobile Payment: Bangladeshi Scenario (Post-COVID)]

The COVID-19 Effect on Digital Payments:

When the epidemic first broke out, the city was put under lockdown, and more people began to rely on contactless payment systems to purchase necessary goods and consume services. This convenience of transaction take Bangladesh's mobile financial ecosystem in reaching another high level.

Volume of Digital Transactions and Accounts Increment:

Following the commencement of the pandemic in March 2020, there was a drop in such payments due to widespread panic and company closures, but payments soon resumed their upward trend. The increment of MFS is the most visible of them, as using these facilities has turned into more convenient over time. Despite the fact that the epidemic has slowed trade and commerce across the country, the surge in digital payments implies that an increasing number of people are using digital payment systems for their company and day-to-day needs. By eliminating human interaction, this has aided financial inclusion as well as improved COVID-19 hygiene standards. Furthermore, critical services like supermarket delivery and online purchasing are benefited enormously from the simplicity of mobile payment.

Aside from the volume, the accounts for all services has increased as well. Customers have increased dramatically in both mobile financial services and internet banking. This rise in the number of accounts implies that the pandemic has resulted in greater financial inclusion. This also means that, because to their simplicity of use and availability, such services have become more accessible to the general public.

Figure 2 Volume of Digital Transaction

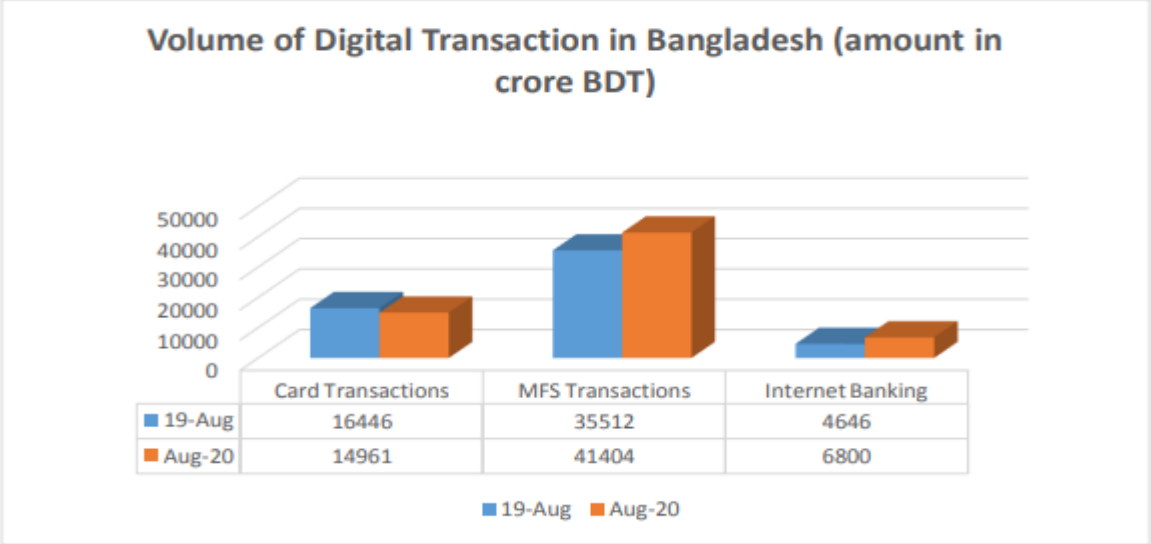

Figure: Volume of Digital Transaction in Bangladesh/ Source: Bangladesh Bank

Growth outside of Urban Areas:

Because of their general appeal, digital financial services have also infiltrated the rural populace. In comparison to other ways, mobile financial services are more prevalent in these places. According to various data, MFS accounts are more prevalent in rural areas than in metropolitan areas, and these accounts have grown steadily during the epidemic. Such accounts are beneficial to Bangladesh's ecosystem since they improve financial inclusion for all parties involved. People can also use mobile financial services to send money home, which has increased the likeliness of MFS in rural and semi-urban areas.

Figure 3 MFS User in Urban and Rural Area

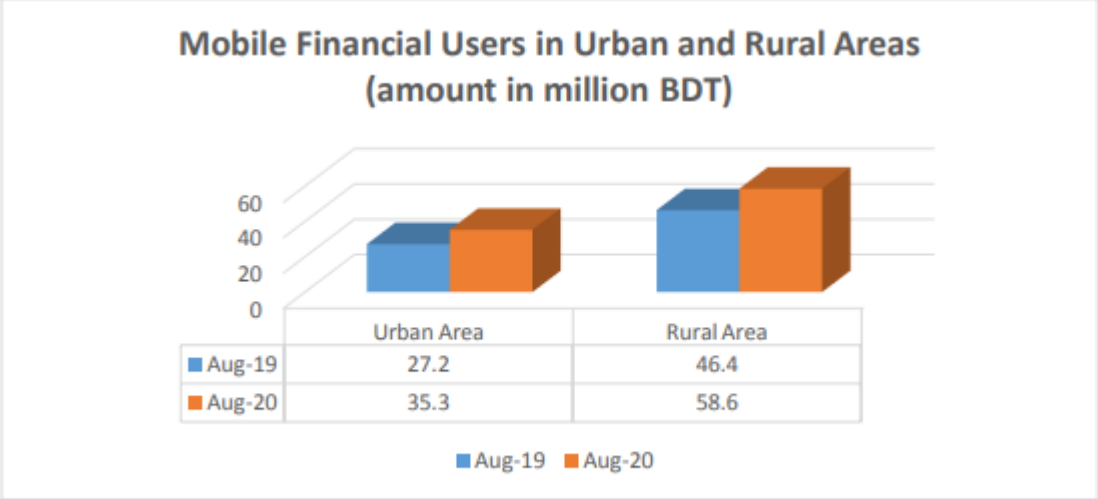

Figure: Mobile Financial Users in Urban and Rural Areas/ Source: Bangladesh Bank

Number of client's increment:

Following the commencement of the pandemic in March 2020, MFS providers saw a massive increase client number, which increased by about 1.5 crore from March to November, bringing the total number of clients to 9.64 crore. That indicates that in Bangladesh, more than 56% of the population now uses mobile banking services.

Figure 4 MFS Accounts in Bangladesh

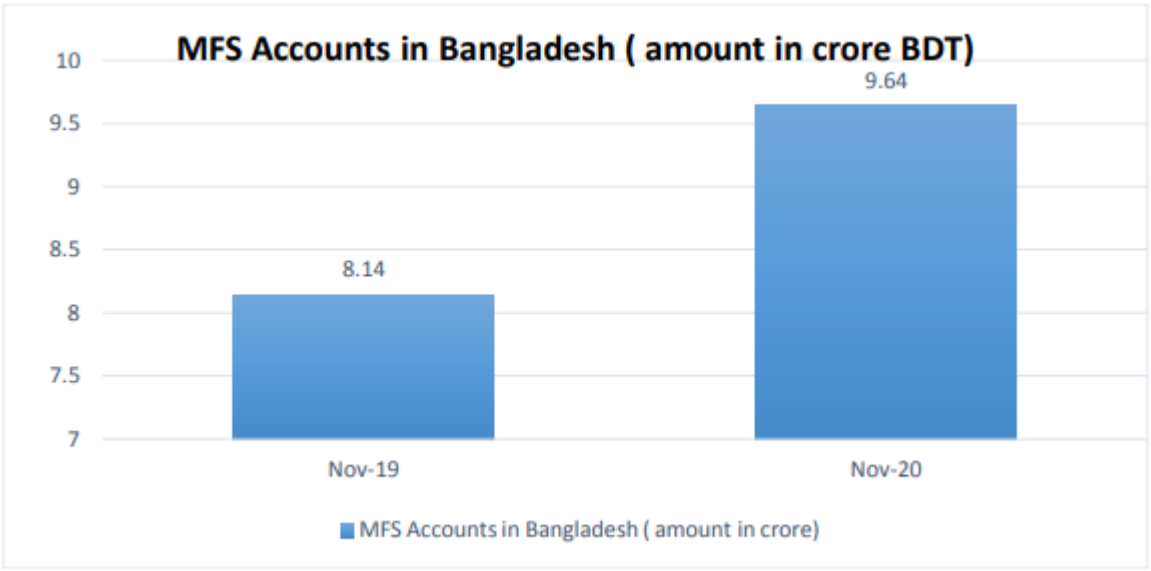

Figure: MFS Accounts in Bangladesh/ Source: Bangladesh Bank

Number of transactions increment:

From February to November last year, MFS transactions grew from TK 12,264 crore to TK 53,598 crore per month.

Figure 5 Number of Monthly Transactions

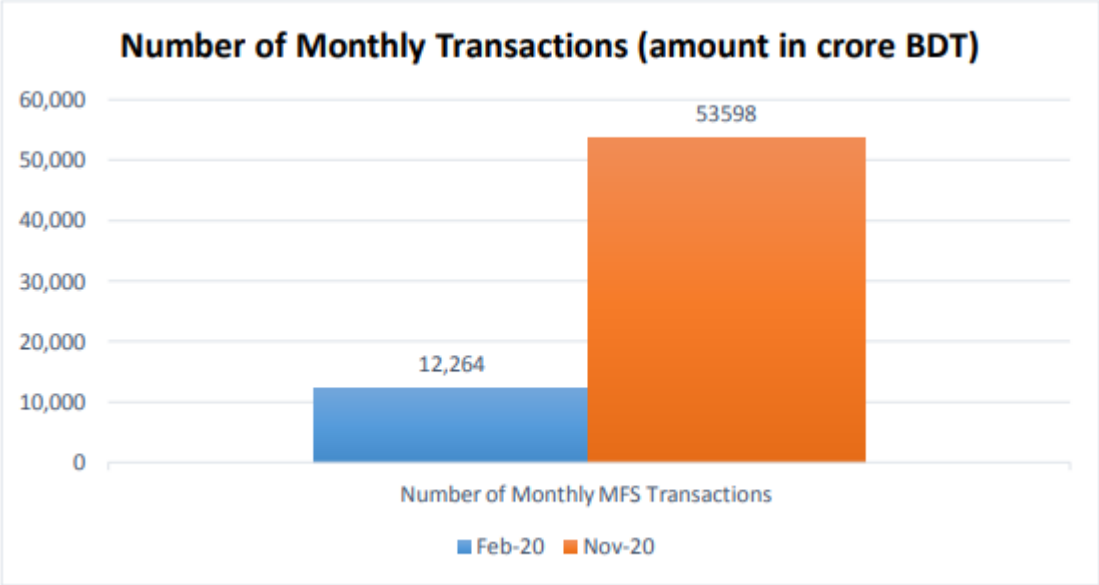

Figure: Number of Monthly MFS transactions/ Source: Bangladesh Bank

Utility bill payment and merchant payment increment:

From February to November, utility bill payments more than doubled, reaching TK 831.43 crore, up from TK 441.12 crore before the outbreak. From TK 581 crore in February 2020 to TK 1,879 crore in November 2020, merchant payments more than tripled.

Figure 6 Utility bill payment and merchant payment

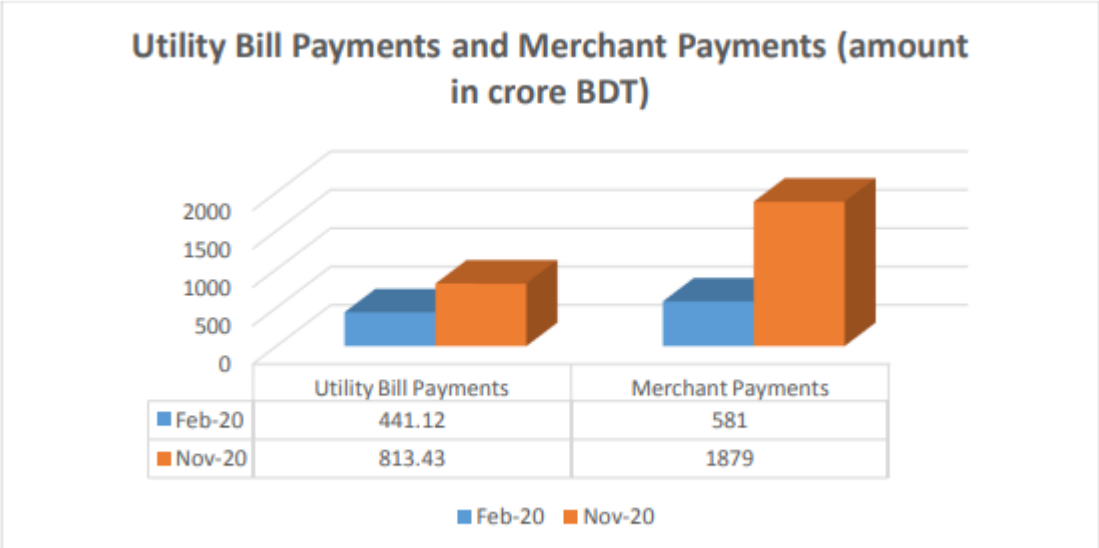

Figure: Utility Bill Payments and Merchant Payments by MFS/ Source: Bangladesh Bank

MFS's Comparative Summary of last two months of 2020:

In the first year of the COVID19 outbreak in Bangladesh, the levels in every MFS service grew from November to December. Despite being a developing country, the fact that the Bangladeshis are choosing modern technology for dealing with the international crisis is a positive indicator.

Figure 7 Comparative Summary of MFS

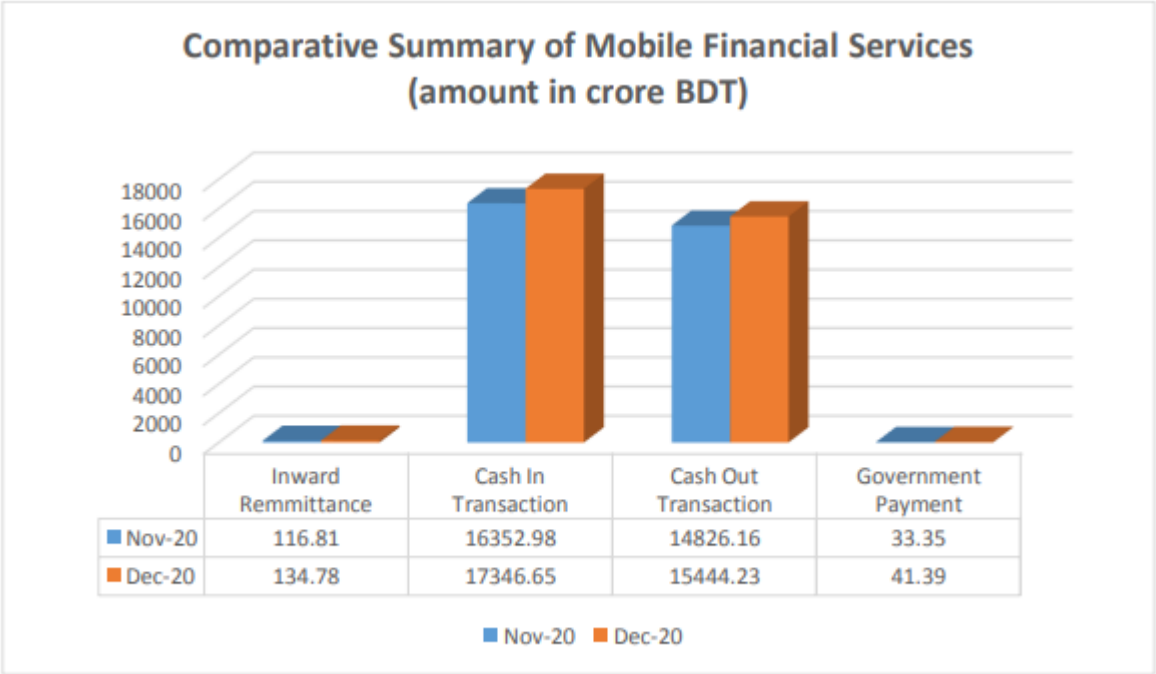

Figure: Comparative Summary of Mobile Financial Services / Source: Bangladesh Bank

In the Digital Payment Ecosystem, New Policies and Innovations:

The pandemic has prompted all stakeholders to reconsider the digital ecosystem, resulting in a slew of new policies and adjustments that have had both beneficial and negative effects on the ecosystem.

Chapter 7 [Data Analysis and Findings]

Research Technique: This study was created in a descriptive approach. The research was conducted in a quantitative manner. A survey of public's attitudes about mobile financial services was conducted to gather information.

Population: The population of this research is Mobile Financial Service users in Bangladesh. The population who uses financial services such as bkash, Rocket, Nagad, surecash, and others is appropriate for this research to be surveyed.

Sampling Frame: The sample size appears to be adequate, as the research was compiled based on user perspectives on mobile financial services from people of different professions and ages via an online survey.

Sampling Technique: Respondents were sampled using the snowball non-probability sampling technique. For this research, an online survey was conducted among the author's acquaintances.

Questionnaire Design: The questionnaire's questions were based on a survey of the unique characteristics of Bangladeshi people and the market environment. The questionnaire's items are based on customer attitudes about the adoption of MFS, as well as the effectiveness of MFS during the Covid-19 outbreak.

Data Collection: The sample size determinations are mostly focused on cost, convenience, frequency of using MFS, customer attitudes and acceptance of MFS. Using online Google forms, a total of 55 responds from the author's acquaintances were selected. Respondents filled out a standardized questionnaire, and the author kept track of their responses. The author also used FGD and KII to get a better understanding of Bangladesh's MFS sector.

Research hypothesis: The following hypotheses were developed in accordance with the study's objectives:

a. MFS is faster, more convenient, and secure, with a low service fee.

b. The media, family, and friends influence the use of mobile financial services.

c. MFS's offer aids in the purchase choice

d. The top MFS providers in Bangladesh and its distinguishing characteristics are determined

f. Covid-19 pandemic has an impact on MFS

7.1 [Descriptive Analysis:]

Table 1 Demographic Information

		Frequency	Percentage
Gender	Male	24	43.6
	Female	30	54.5
	Prefer not to say	1	1.8
	Total	**55**	**100**

		Frequency	Percentage
Age	15-25	21	38.18
	26-35	26	47.27
	Above 35	8	14.55
Total		**55**	**100**

		Frequency	Percentage
Income Monthly(BDT)	Below 10000	13	23.64
	11000-29000	15	27.27
	30000-49000	11	20
	Above 49000	16	29.09
Total		**55**	**100**

		Frequency	Percentage
Educational Status	No education	1	1.8
	HSC	1	1.8
	Undergraduate	14	25.5
	Graduate and others	39	70.9
	Total	**55**	**100**

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		Frequency	Percentage
Employment status	Employed	38	69.1
	Unemployed	17	30.9
	Total	**55**	**100**

		Frequency	Percentage
Professional Status	Businessman	5	9.1
	Service holder	4	7.3
	Engineer	20	36.4
	Doctor	3	5.5
	Student	16	29.1
	Housewife	4	7.3
	Others	3	5.5
	Total	**55**	**100**

Findings- Gender: According to the table, 43.6% of the respondents are male. That means there are 24 males out of 55 total. On the other hand, 54.5% of the population is female. That means there were 30 female respondents out of 55 total. And 1.8%, 1 out of 55 didn't prefer to disclose their gender. As a result, the majority of the respondents are female.

Findings- Age: Table shows that 38.18 percent of respondents are between the ages of 15-25, 47.27 percent are between the ages of 26-35, and rest are above 35 years.

Findings-Income: According to the data in the table, 23.64% of respondents have a monthly income of less than BDT 10,000. 15 responders' income ranges from BDT 10,000 to BDT 29,000. This signifies that 27.27 respondents' income falls inside the BDT range for this income category. The respondents' 20% income ranges from BDT 30000 to 49000. That means 11 of the respondents earn between this ranges per month. The remaining 29.09 percent earn more than BDT 49,000, accounting for 16 respondents.

Findings- Educational status: The table demonstrates that 1.8%, only 1 responder has no education. 0% responders are found up to primary, under SSC and SSC passed category. 1.8 % of the respondents with 1 out of 55 are HSC passed. A total of 14 undergraduates make up 25.5 percent of the respondents. 70.9% of the responders, 39 people, are graduates and others. As a result, the majority of the respondents have completed their graduation and above that.

Findings- Employment status: According to the table, 69.1% of the respondents are employed. That means there are 38 employed out of 55 total. On the other hand, 30.9% of the population is unemployed. That means there were 17 unemployed respondents out of 55 total. As a result, the majority of the respondents are employed.

Findings- Professional status: The table reveals that 9.1% of the respondents are doing business, with 5 out of 55 respondents, 7.3% of the total, with 4 respondents are service holder. There are 20 engineers in total which is 36.4% and 29.1 % of the total, with16 respondents are students. The homemakers account for 7.3 percent of the total, with 4 respondents and 5.5%, 3 responders are of other profession. As a result, the majority of the respondents are engineer.

Table 2 MFS Usage Profile

		Frequency	Percentage
Acquainted to MFS	Yes	54	98.2
	No	1	1.8
	Total	**55**	**100**

		Frequency	Percentage
Frequency of using MFS	Daily	11	20
	On Average	44	80
Total		**55**	**100**

		Frequency	Percentage
Attitude towards MFS	Positive	41	74.55
	Negative	14	25.45
	Total	**55**	**100**

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Findings- Acquainted to MFS: According to the table, 98.2%, 54 out of 55 responders are known to the term MFS and 1.8%, only one responders haven't heard of MFS. So, we can say majority has heard of MFS.

Findings-Frequency of using MFS: According to the data in the table, 20% of respondents use MFS daily which is 11 out of 55. Rest 44 responders' use MFS on average basis which is 80% of the respondents. So it's observed that most respondents use MFS on average basis.

Findings- Attitude towards MFS: Most 74.55% respondents have positivity towards MFS.

Table 3 Context of Responders Responses

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Count	Total
MFS is speedier and more convenient	3.6% (2)	0% (0)	14.5% (8)	47.3% (26)	34.5% (19)	55	100%
MFS agent's service charge is affordable.	7.3% (4)	23.6% (13)	25.5% (14)	40% (22)	3.6% (2)	55	100%
MFS transaction	10.9% (6)	20% (11)	34.5% (19)	27.3% (15)	7.3% (4)	55	100%

charge is affordable.							
MFS's offer provides incentives in buying decision.	3.6% (2)	9.1% (5)	34.5% (19)	47.3% (26)	5.5% (3)	55	100%
MFS leads to sudden buying decision.	5.5% (3)	9.1% (5)	25.5% (14)	49.1% (27)	10.9% (6)	55	100%
Opening of MFS account is easy.	0% (0)	1.8% (1)	12.7% (7)	60% (33)	25.5% (14)	55	100%
Family and friends have influence to use MFS.	5.5% (3)	9.1% (5)	34.5% (19)	43.6% (24)	7.3% (4)	55	100%

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Social media have influence to use MFS.	5.5% (3)	5.5% (3)	23.6% (13)	41.8% (23)	23.6% (13)	55	100%

Findings: The table reveals that most responders; 47.3% agree on that MFS is speedier and more convenient than traditional payment system. Majority of them 40% agree on MFS agent's service charge being affordable but they are neutral (34.5%) on the fact that MFS transaction charge is affordable. Moreover many of them also agree on that MFS's offer provides incentives in buying decision (47.3%) and leads to sudden buying decision (49.1%). 60% agrees on opening of MFS account is easy which is the majority and they also agree on that family, friends (43.6%) and social media (41.8) have influence to use MFS.

Table 4 Background of using and avoiding MFS

		Frequency	**Percentage**
	Got a smartphone	**10**	**18.2**
	The ability to make mobile payments became available	**35**	**63.6**

Background of using MFS	**Became comfortable with the security of MFS**	**16**	**29.1**
	Liking the convenience of mobile payments	**36**	**65.5**
	A store that was visited started offering the service	**8**	**14.5**
	To take advantage of rewards points and discounts	**16**	**29.1**
	Others	**6**	**10.9**

Findings: For this data responders had independency to choose more than one option. This table shows that most of the responders started using MFS as they like the convenience of mobile payments and the ability to make mobile payments became available. Some of them started using MFS as they became comfortable with the security of MFS and to take advantage of rewards points and discounts. A very few of them started using MFS on getting a smartphone and stores they visited started offering the service. Some others said that they started using mobile payment on seller's demand as well as they can get and send money to their family from time to time and can recharge mobile anytime they want.

		Frequency	Percentage
Background of avoiding MFS	Concerned about the security of MFS	18	32.7
	Prefer cash or a credit/debit card	14	25.5
	Don't Find benefit using MFS	3	5.5
	Places of shopping don't accept MFS	9	16.4
	Not having the necessary features on phone	1	1.8
	Trust issue with technology	3	5.5
	Difficulties to set up MFS	3	5.5
	Someone else pays the bills	1	1.8

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	Don't understand different MFS options	**1**	**1.8**
	Others Option	**1**	**1.8**

Findings: For this data responders had independency to choose more than one option. This table reveals that most of the responders avoid using MFS as they are Concerned about the security of MFS and many other Prefer cash or a credit/debit card. Some of them don't use MFS as their places of shopping don't accept MFS. A few don't find benefit using MFS, have Trust issue with technology and face difficulties to set up MFS. A very few responders said of not having the necessary features on their phone, someone else pays the bills and don't understand different MFS options. Among the securities issues the respondents described of phone getting hacked or lost, malware or viruses being installed on phone, someone using their phone without permission to access their account, companies misusing their personal information due to insufficient protections etc. In spite of finding some negative issues some responders still prefer MFS as the most convenient way of transaction.

Table 5 Rank of MFS Providers in Bangladesh

		Frequency	**Percentage**
Preferred MFS Providers of BD	bKash	47	85.45
	Nagad	5	9.09
	Rocket	2	3.64
	Others	1	1.82
Total		**55**	**100**

Findings: This table shows that according to most of the respondents bKash is the best MFS provider in Bangladesh. The reasons they said are bKash account can be opened very fast and money can be sent and received very quickly in bkash as well as it's availability to use in everywhere. Some respondents choose Nagad as its transaction charge is low. Some of responders also choose Rocket as their preferred one. Moreover they suggested some other apps like Astha app brac bank etc.

Table 6 MFS during Covid-19

	Strongly Disagree	Neutral	Agree	Strongly agree	Count	Total
MFS has great impact in economy growth during Covid-19.	3.6% (2)	21.8% (12)	36.4% (20)	38.2% (21)	55	100%

Findings: The table reveals that most responders strongly agree on that MFS has great impact in economy growth during Covid-19 and there's a very less percentage of disagreement.

		Frequency	Percentage
Payment during Covid-19 pandemic	Online Shopping	42	76.4
	Order via phone call	4	7.3
	Purchase from nearby store	7	12.7
	Others	2	3.6
Total		**55**	**100**

Findings: This table shows that most of the respondents (76.4%) use to do online Shopping during Covid-19 pandemic situation. Some responders purchase from nearby store (12.7%) and some order via phone call (7.3%). A few responders choose others and explained they used other methods by maintaining safety issues.

Table 7 Payment during recent E-commerce Fraud

		Frequency	Percentage
Payment during recent E-commerce Fraud	Cash on delivery	36	65.5
	Pay via MFS upon delivery	16	29.1
	Pay via cards upon delivery	3	5.5
Total		**55**	**100**

Findings: This table reveals that most of the respondents (65.5%) prefer to via cash on delivery after recent e-commerce fraud situation. Some responders prefer to pay via MFS upon delivery (29.1%) and choose to pay via cards upon delivery (5.5%).

Table 8 Responders Expectation from Government on MFS

		Frequency	Percentage
Government should take policies to accelerate MFS	Yes	47	85.45
	No	1	1.82
	May be	7	12.73
Total		**55**	**100**

Findings: This table shows that most of the respondents, 85.45% agrees on government should take policies to accelerate MFS.

Table 9 MFS's Level of Satisfaction

		Frequency	Percentage
Level of satisfaction	1	2	3.64
	4	14	25.45
	5	21	38.18
	6	13	23.64
	7	5	9.09
Total		**55**	**100**

Findings: This table reveals that most of the respondents (38.8%) are at satisfaction level of 5. Some at satisfaction level of 4 and 6. A very few have chosen level 1 and 7.

7.2 [Crosstab Analysis:]

Table 10 Crosstab analysis

Frequency of Using MFS						
Demographic Characteristics		Total	Daily User (%)	Less frequent User (%)	Row Total	Chi-square Value
Gender						5.2083
	Female	30	13.33	86.67	100	
	Male	24	25	75	100	
	Prefer not to say	1	100	0	100	
	Column Total	55				
Age						0.1465
	15-25	21	19.05	80.95	100	
	26-35	26	19.23	80.77	100	
	Above 35	8	25	75	100	
	Column Total	55				
Education						1.0165
	No Education	1	0	100	100	
	HSC	1	0	100	100	
	Undergraduate	14	14.29	85.71	100	
	Graduate and Above	39	23.08	76.92	100	

	Column Total	55				
Employment Status						0.0851
	Employed	38	21.05	78.95	100	
	Unemployed	17	17.65	82.35	100	
	Column Total	55				
Income						1.8781
	Below 10000	14	15.38	84.62	100	
	11000-29000	15	13.33	86.67	100	
	30000-49000	13	18.18	81.82	100	
	Above 49000	13	31.25	68.75	100	
	Column Total	55				

Attitude towards MFS						
Demographic Characteristics		Total	Daily User (%)	Less frequent User (%)	Row Total	Chi-square Value
Gender						4.232
	Female	30	30	70	100	
	Male	24	16.67	83.33	100	

	Prefer not to say	1	100	0	100	
	Column Total	55				
Age						3.1587
	15-25	21	38.1	61.9	100	
	26-35	26	15.38	84.62	100	
	Above 35	8	25	75	100	
	Column Total	55				
Education						4.5486
	No Education	1	100	0	100	
	HSC	1	0	100	100	
	Undergraduate	14	35.71	64.29	100	
	Graduate and Above	39	20.51	79.49	100	
	Column Total	55				
Employment Status						0.2031
	Employed	38	23.68	76.32	100	
	Unemployed	17	29.41	70.59	100	
	Column Total	55				
Income						2.7654
	Below 10000	14	15.38	84.62	100	
	11000-29000	15	40	60	100	

	30000-49000	13	27.27	72.73	100	
	Above 49000	13	18.75	81.25	100	
	Column Total	55				

Findings:

- The analysis shows most of the people are on average user of MFS; they don't use MFS on daily basis.
- Females are seemed to be using MFS more than male.
- People from a specific age group (26-35) are the most active users of MFS. According to the research MFS is seemed to be unpopular among the aged people.
- MFS is mostly popular among the educated people; people with no education and less education are barely aware of mobile payments.
- Employment status is a great factor in case of MFS usage. MFS is mostly used among employed people on regulation compared to unemployed.
- The best part of the analysis is MFS is well liked by people from all income range.
- Majority of people from all demographic condition has positive attitude towards MFS.

7.3 [Regression Analysis:]

Table 11 Regression on Frequency

	FrequencyLevel (Y)											
(X)	LPM				Logit				Probit			
	Coefficient	S.E	R-squared	p-value	Coefficient	S.E	R-squared	p-value	Coefficient	S.E	R-squared	p-value
Age	.0231417	.0799617	0.0016	0.773	.1434181	.4872688	0.0016	0.769	.0813667	.2781484	0.0016	0.770
Employment	-.0340557	.1188043	0.0015	0.775	-.2186892	.7503967	0.0016	0.771	-.1243031	.4240284	0.0016	0.769

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Table 12 Regression on Positivity

	Positivity (Y)											
(X)	LPM				Logit				Probit			
	Coefficient	S.E	R-squared	p-value	Coefficient	S.E	R-squared	p-value	Coefficient	S.E	R-squared	p-value
Employment	-.0572755	.1292405	0.0037	0.659	-.1751024	.3909027	0.0032	0.653	-.2946025	.6549253	0.0032	0.654

The formula of regression is Y=a+b1x1+ b2x2+b3x3+b4x4+b5x5+……+bnxn; where Y is dependent variable and X is independent variable.

Here FrequencyLevel is people frequency of using MFS and Positivity is their positive attitude towards MFS which are the dependent variables. From this table it's observed that for the frequency of using MFS the coefficients of age is positive and coefficients of employment is negative. So it can be said the frequency of using MFS increases if age increases and employment decreases. And for positivity employment has got negative coefficients so positivity towards MFS decreases if employment increases. Furthermore, the p-value for each term evaluates the null hypothesis that the coefficient is zero (no effect). A low p-value (0.05) suggests that the null hypothesis can be rejected. In other words, because changes in the predictor's value are related to changes in the response variable, a predictor with a low p-value is likely to be a useful addition to in this model. A larger (insignificant) p-value, on the other hand, indicates that

changes in the predictor are unrelated to changes in the response. It can be observed that the predictor variables are less than 0.05 in the output above. As a result, changes in the predictor's value affect the response value.

7.4 [FGD Analysis:]

A focus group discussion was done for this research for gaining effective insight into the differing viewpoints of many parties using different MFS. Most of the people attending the group discussion preferred bKash as the MFS provider in the country. They explained different reasons for choosing it, as example- they get various cash back offers from bKash in online shopping. Not only that they get vouchers from different food apps like- Pathao, Foodpanda, Hungrynaki if they pay via bKash. Most importantly they find bKash as the most convenient MFS provider. Some people also said they started using Nagad now a days to send money as its transaction charge is low. But different customer rewards and conveniences made bKash the most popular in the FGD.

7.5 [KII Analysis:]

A Key informant interview from a member of bKash family was done for this research to get a in depth idea of bKash's being the most popular MFS of Bangladesh and how other providers can do better. According to the interviewer bKash mainly focus on their branding policy; the brand awareness of bKash is very high in the market. They promote bKash by providing customer rewards points, cash backs, vouchers and so on. Not only that recently they also reduce their transaction charge as a part of attracting more customers towards them.

7.6 [Key findings:]

- bKash is the most popular MFS provider in Bangladesh according to most of the people; but in case of transaction charge some prefer Nagad.
- The market standard of other MFS providers like U-cash, Sure-cash, Mobicash etc. are very poor.
- Most of the people in Bangladesh are on average user of MFS; they don't use MFS on daily basis.
- MFS is mostly popular among the educated people; people with no education and less education are barely aware of mobile payments.
- People from a specific age group are the main users of MFS. According to the research MFS is seemed to be unpopular among the aged people.
- Employment status is a great factor in case of MFS usage. MFS is mostly used among employed people on regulation.
- The best part of MFS is it's well liked by people from all income range.
- Most of the people started using MFS as they like the convenience of mobile payments, the ability to make mobile payments became available to them and to take advantage of reward points and discounts. Some of them started using MFS as they became comfortable with the security of MFS, stores they visited started offering the service and to send money to their family from time to time.
- Many agree on that their family, friends and social media a great impact on their use of MFS and mobile payments impacts their purchase decisions as well.
- Most of the people use MFS for mobile recharge, bill payment, fund transfers and cash withdrawal purposes. But it's been using for saving purposes, buying essentials and to deposit money as well.

- Some have trust issues with MFS's security; some find mobile payments to be difficult to use and some prefer cards over MFS as well. In spite of having some negative issues mobile payment is still preferred as the most convenient way of transaction.
- Most people use MFS during this pandemic situation to pay as they are confined to e-commerce and m-commerce due to safety and according to them Covid-19 has a great impact in accelerating the growth of MFS.
- Many people prefer cash on delivery now a days after the recent e-commerce fraud scenarios.
- People from all demographic condition have positive attitude towards MFS.

Chapter 8 [Conclusion and Policy Recommendations]

This thesis examines the Bangladesh's current state of mobile financial services, the regulatory environment, top mobile financial service providers, customer's point of view in adopting MFS and Bangladesh's possibilities, problems and suggestions to overcome the problems. As well as this paper evaluates the changes of MFS's usage in Bangladesh for COVID – 19 pandemic and identify the impact of the pandemic on the growth of it. The study has done econometric analyses using an online survey data. From this research it's observed that bKash is seemed to take the majority of the MFS market in Bangladesh. Rocket and Nagad has a little place in the market but the market standard of other MFS providers like U-cash, Sure-cash, Mobicash etc. are very poor. These companies should adopt marketing policy and brand awareness from bKash to get a good market position. But still people aren't seemed to be satisfied with bKash's transaction cost rather they prefer Nagad in this case. These cost need to be reduced. The findings show that MFS is mostly popular among the educated, employed people and people with a certain age group. Government and concerned organizations should make policies like facilitating donation, expediting safety net funds, paying salaries, social benefits, conditional cash transfers, and pensions through MFS etc. to set MFS popular among people from all demographic condition. From the research it's found that one of the main reasons of people being hesitated to use MFS is security issues and recent e-commerce fraud scenarios. Some have trust issues with MFS's security; some find mobile payments to be difficult to use and some prefer cards over MFS as well. So government and MFS providers must be aware of these dangers, take necessary steps and continue to implement creative marketing strategies as per it and make MFS use easier as these are the reasons which is hindering this sector. But

it’s clearly noticed from the research that COVID-19 has a great impact in MFS’s growth as most of the people choose to pay via MFS during this pandemic outbreak due to lockdown and safety concern. Bangladesh is attempting to keep up with the developed technology. MFS providers have made life easier for people from every sphere by providing a variety of innovative services. In fact, the mobile wallet idea has gained a lot of popularity and everyday a large number of transactions are done using mobile wallets like as bKash, Rocket, and Nagad. However, without several recent problems that have surfaced, such as fraud, a lack of security, a violation of trust, and so on MFS has a great impact in Bangladesh's economic development acceleration.

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Appendix A.

Econometric results:

Crosstab Analysis: Table 10 shows the crosstab analysis of frequency level of using MFS and responders attitude towards MFS on different demographic conditions. Based on this cross tabulation it's observed that most of the people are on average user of MFS; they don't use MFS on daily basis. Females are seemed to be using MFS more than male. People from a specific age group (26-35) are the most active users of MFS. According to the research MFS is seemed to be unpopular among the aged people. MFS is mostly popular among the educated people and employed people on regulation compared to unemployed. Majority of people from all demographic condition has positive attitude towards MFS. A two way table Chi-squared statistical test was done on the crosstab analysis. Based on the best fitted Chi-squared value regression analysis was conducted.

Regression Analysis: Based on the Chi-squared value it's observed that age and employment are the fitted X variables for frequency level; and employment is the fitted X variable for positivity towards MFS. The formula of regression is Y=a+b1x1+ b2x2+b3x3+b4x4+b5x5+……+bnxn; where Y is dependent variable and X is independent variable. Logit, Probit and Linear probability model has been used in this analysis.

Here dependent variable FrequencyLevel is people frequency of using MFS and dependent variable Positivity is their positive attitude towards MFS which are the dependent variables. From table 11 it's observed that for the frequency of using MFS the coefficients of age is positive and coefficients of employment is negative for Logit, Probit and LPM. So it can be said the frequency of using MFS increases if age increases and employment decreases. And for

positivity employment has got negative coefficients for Logit, Probit and LPM; so positivity towards MFS decreases if employment increases. Furthermore, the p-value for each term evaluates the null hypothesis that the coefficient is zero (no effect). A low p-value (0.05) suggests that the null hypothesis can be rejected. In other words, because changes in the predictor's value are related to changes in the response variable, a predictor with a low p-value is likely to be a useful addition to in this model. A larger (insignificant) p-value, on the other hand, indicates that changes in the predictor are unrelated to changes in the response. It can be observed that the predictor variables are less than 0.05 in the output above. As a result, changes in the predictor's value affect the response value.

Survey Questionnaires:

1. Do you hear about Mobile Financial Systems?

a. Yes b. No

2. How frequently do you use MFS?

a. Daily b. Weekly c. Monthly d. On Average

3. Do you use any app for MFS?

a. Yes b. No

4. What is the first provider of mobile financial services that comes to mind or that you prefer?

a. Bkash b. Rocket c. mcash d. ucash e. Mobi-Cash f. others

5. Which MFS accounts do you have? (You can choose more than one option)

a. Bkash b. Rocket c. Mobi-Cash d. Surecash e. mcash f. ucash

6. The main purpose of using MFS?

7. Main reason to start using mobile payments?

8. MFS is speedier and more convenient than traditional payment system.

9. MFS agent's service charge is affordable

10. MFS transaction charge is affordable

11. Please Rank your preferences of using MFS platform and why do you prefer this most?

a. Bkash b. Rocket c. mcash d. ucash e. Mobi-Cash f. Others

12. MFS's offer provides incentives in your buying decision of the company's products

13. MFS leads you to impulsive or sudden buying decision

14. Opening a MFS personal account is easy

15. Family members/relatives have influence on my decision to use MFS

16. Mass/Social media (e.g. TV, newspaper, articles, radio, Facebook, Instagram) influence me to use MFS

17. Please tell us the reasons of not using mobile payments.

18. What is the security aspects of concern in case of using mobile payments?

19. Do you think government should fix specific policies to accelerate MFS?

a. Strongly disagree b. disagree c. neither disagree nor agree d. agree e. strongly agree

20. What method did you use to purchase stuffs during Covid-19?

a. Online Shopping b. Order via phone call c. Purchase from nearby store d. Others

21. Which payment mode you prefer to do online shopping?

a. Cash on delivery b. Debit or credit cards c. MFS (bKash,Nagad,Rocket etc.) d.Others

22. Which payment method you prefer to do safe online shopping in recent e-commerce fraud scenarios?

a. Cash on delivery b. Pay via cards upon delivery c. Pay via MFS upon delivery d.Others

23. MFS has a great impact in accelerating economic growth during Covid-19.

24. How old are you?

25. What's your gender?

a. Male b. Female c. Others

26. Your Educational Status?

a. No education b. Up to primary c. Under SSC d. SSC e. HSC f. Undergraduate g. Graduated and others

27. What is your employment status?

a. Employed b. Unemployed

28. What is your profession? a. Businessman b. Service holder c. Engineer d. Doctor e. Teacher f. Student g. Housewife h. Others (Please specify)

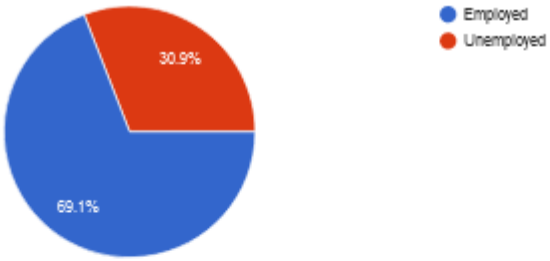
29. Your monthly gross Income (BDT)?

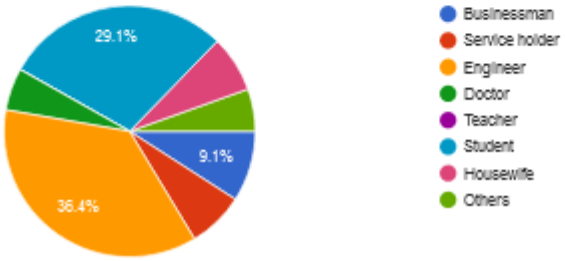
a. Below 10000 b. 11000-19000 c. 20000-29000 d. 30000-39000 e. more than 40000

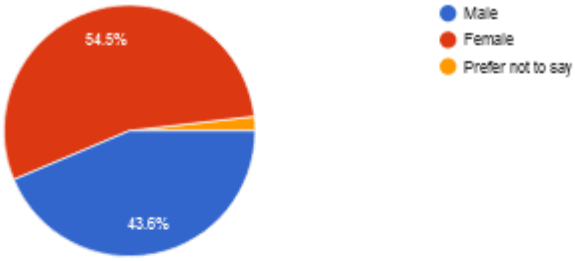
30. Based on experience attitude towards MFS?

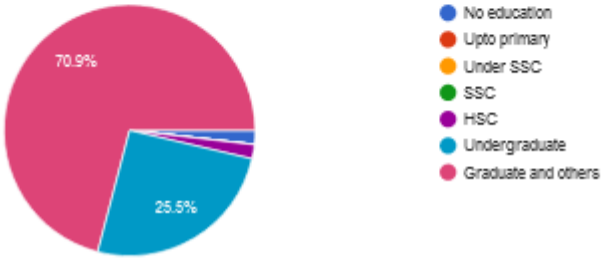
Level of Satisfaction: 1 2 3 4 5 6 7

Figures for Demographic Information:

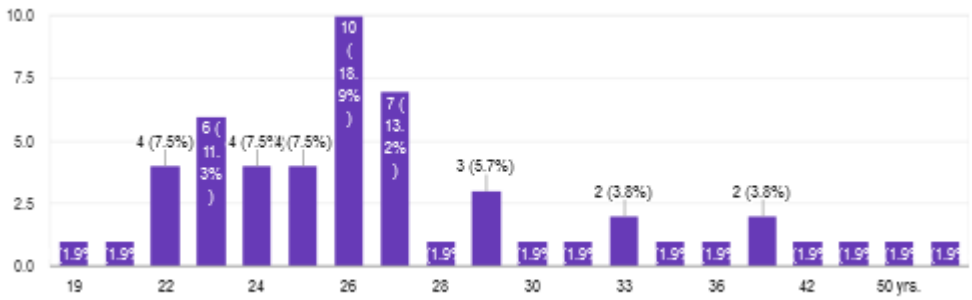

30.9%
69.1%
Employed
Unemployed


29.1%
9.1%
36.4%
Businessman
Service holder
Engineer
Doctor
Teacher
Student
Housewife
Others


54.5%
43.6%
Male
Female
Prefer not to say


70.9%
25.5%
No education
Upto primary
Under SSC
SSC
HSC
Undergraduate
Graduate and others

74



Figures for Acquaintance and App Use of MFS:

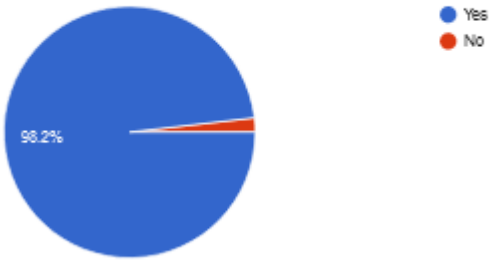


Fig: Heard of MFS

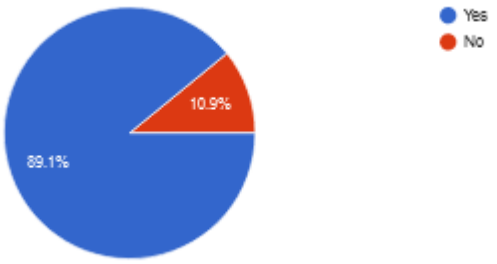


Fig: Use App for MFS

75

Figures for Agent and Transaction Charge Affordability:

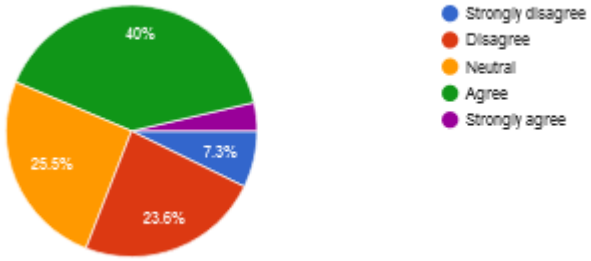


Fig: Agent Charge Affordability

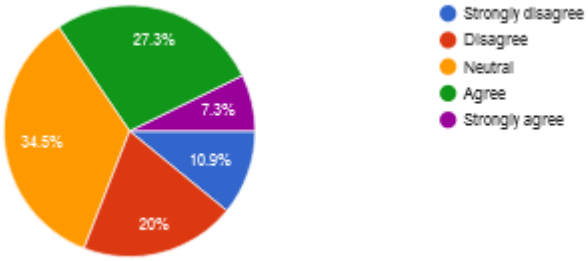


Fig: Transaction Charge Affordability

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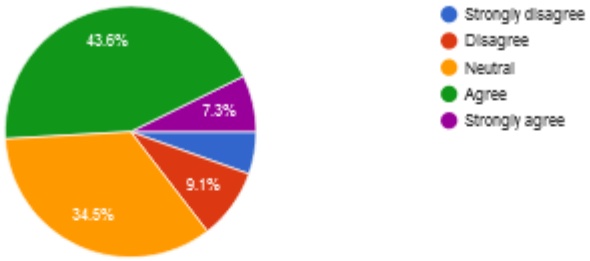
Figures for Family, Friends and Social influence:



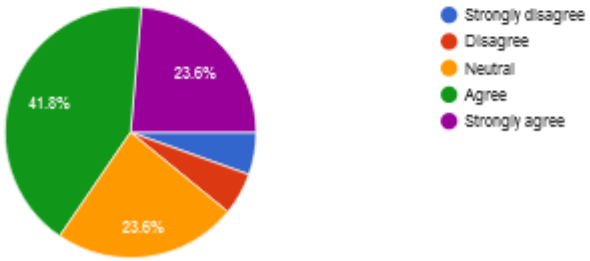
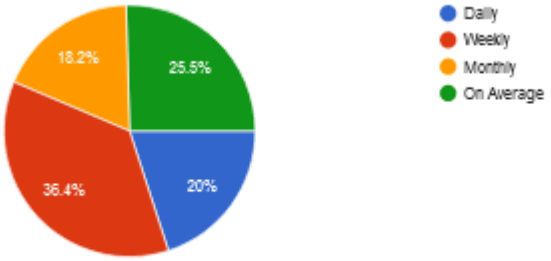


Figure for MFS Use Frequency:



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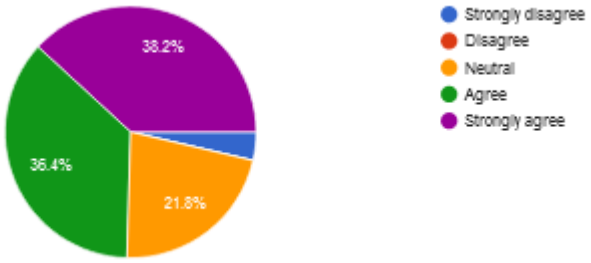
Figures for MFS Impact and Use in COVID-19:



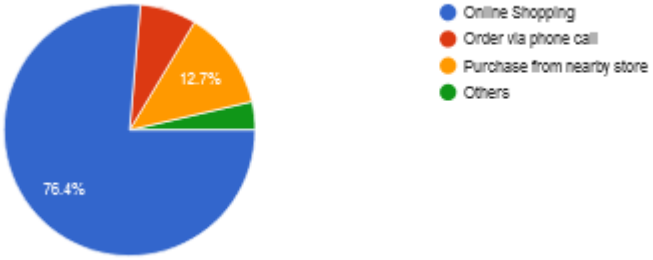


Figure for Expectations of Government Policy:

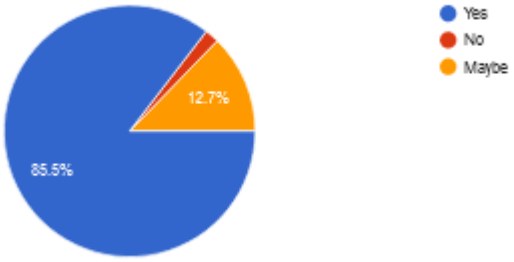
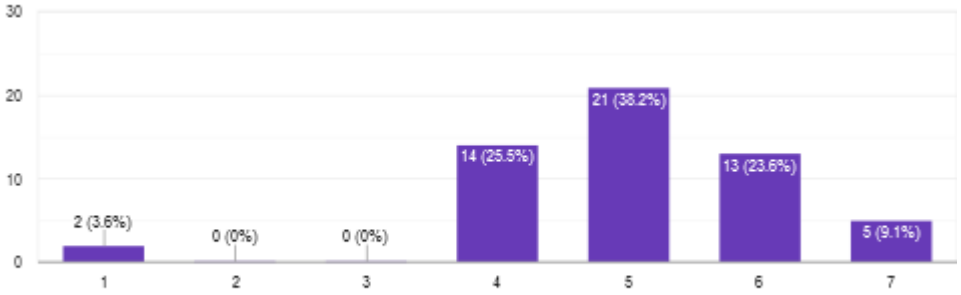


Figure for Level of Satisfaction:



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