A STUDY ON IMPACT OF COVID-19 ON MOBILE FINANCIAL SERVICE AND SAVING PRACTICES: THE CASE OF BANGLADESH

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CERTIFICATE

This is to certify that thesis entitled, ***"AN EMPIRICAL STUDY ON IMPACT OF COVID-19 ON MOBILE FINANCIAL SERVICE AND SAVING PRACTICES: THE CASE OF BANGLADESH"*** *submitted to the Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of* ***MASTER OF SCIENCE IN AGRIBUSINESS AND MARKETING,*** *embodies the result of a piece of bona fide research work carried out* ***ANIKA NAWAR FAGUN****, Registration No.* ***15-06747*** *under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.*

I further certify that such help or source of information, as has been availed of during the course of this investigation has duly been acknowledged.

Dated:

Place: Dhaka, Bangladesh

Dr. Md. Mizanur Rahman Sarker
Professor
Dept. of Agricultural Statistics
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Supervisor

Dedicated

To

My Beloved Parents

ABSTRACT

The world is passing a grievous phase because of a fast-spreading disease named COVID-19. Almost all countries have experienced the impact of coronavirus on their economy. Unexpectedly, due to that situation some industries like retail chain shops, online grocery shops, mobile financial service, IT firms are experiencing growth in Bangladesh. Mobile financial service is relatively new concept but a fast-growing industry in our country. But there are some issues that MFS users face, especially rural people. History of economics shows that countries that succeeded in accumulating high levels of domestic investment largely financed by domestic savings, achieved faster rates of economic growth and development. So, understanding peoples saving behaviour is crucial. Therefore, this paper focused on finding the impact of COVID-19 on saving practice of mobile financial service users of rural area as economic growth and development depend on a country's level of domestic savings. To fully understand the situation, the researchers aimed to find the answers to some key questions: (1) Did mobile financial service reach to rural people in this pandemic? (2) Did saving rate increased during pandemic? (3) What is the impact of mobile financial service on saving behavior of people? (4) What are the key determinants of saving practices of mobile banking users? Both descriptive and advanced statistical analysis were used for analyzing the data and a cross sectional survey on user of mobile financial services was performed. The study area was three sub districts (Phulbaria, Nandail, Gouripur) of Mymensingh district in Bangladesh. A four-stage sampling technique was used for data collection. First three villages were chosen from the three selected sub-districts. Then, the highest MFS user villages were surveyed for collecting information through primary survey. Simple random sampling method has been used in selecting sample and collecting data from the respondent. A total of 210 users was interviewed from the selected areas. Statistical packages such as SPSS was used for data analysis. Researchers found that mobile financial service industry has significantly grown during pandemic but the saving practices of rural people have decreased. Age, occupation, average monthly family income, saving habit, monthly income during pandemic are the significant factors of the saving practices of mobile banking users. The findings will be useful to overcome the pandemic crisis and to achieve the sustainable development goals.

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December, 2021 The Author

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CHAPTER 1: INTRODUCTION AND BACKGROUND

The world is passing a grievous phase because of a fast-spreading disease named COVID-19. It has already spread over 216 countries all over the world and still continuing. Almost all countries have experienced the impact of coronavirus on their economy. In a recent study by Baldwin & Mauro (2020), revealed that coronavirus outbreak situation causes the economic downfall of countries like G-7 who have 65% of joint share in world's manufacturing units further there has been 60% of a falling rate of world's demand and supply, and 41% of world exports have been badly affected by this outbreak (Baldwin & Mauro, 2020). Asian Development Bank (ADB) estimates that the world can lose 0.089 percent to 0.404 percent of its GDP due to the outbreak, which is between USD 77 Billion and USD 347 Billion in monetary terms.

1.1. What is COVID-19?

World Health Organization (WHO) defined COVID-19 as "the infectious disease caused by the coronavirus, SARS-CoV-2, which is a respiratory pathogen". Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases. A novel coronavirus (nCoV) is a new strain that has not been previously identified in humans. The new virus was subsequently named the "COVID-19 virus". WHO first learned of this new virus from cases in Wuhan, People's Republic of China on 31 December, 2019. Four months later on 11 March 2020, WHO declared the coronavirus outbreak a pandemic, after it spread over several countries affecting a large number of people.

Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe. These particles range from larger respiratory droplets to smaller aerosols.

1.2. Corona situation around the world

As per the global tally kept by the Worldometer, until December 26, 2021, the virus has already killed 5,413,682 people and approximately 279,851,295 cases have been confirmed. The World Health Organization (WHO) stated that only 15% of cases were projected to have severe symptoms, and one-third of the severe cases required critical care; the main priority of the WHO is to mobilize resources to improve community healthcare practices. (WHO, 2020). Lockdown measures have been used by governments to try to stop the virus from spreading. Despite the fact that the initial wave of the virus has passed and vaccinations have been introduced in many countries, the world is still far from safe. A dramatic increase in infection and death rates has triggered the second wave in several nations.

COVID-19 also placed the world economy to a halt, generating supply and demand shocks. The IMF estimated that the global economy shrunk by 4.4% in 2020. The organization described the decline as the worst since the Great Depression of the 1930s. Advanced economies are projected to shrink 7 percent (WB, 2020). As a result of this weakening, emerging market and developing countries are expected to fall by 2.5 percent this year as they deal with their own local epidemics of the virus. The only major economy to grow in 2020 was China. It registered a growth of 2.3%. According to another forecast from the International Monetary Fund and World Bank, GDP per capita at the end of 2021 is still expected to be lower than December 2019 in most countries and global growth will be driven primarily by countries such as India and China, forecast to grow by 8.8% and 8.2% respectively (Canuto, 2020).

Recovery is projected to be slower in large, services-based economies that have been heavily damaged by the pandemic, such as the UK or Italy. Most countries are expected to face recession in 2021.

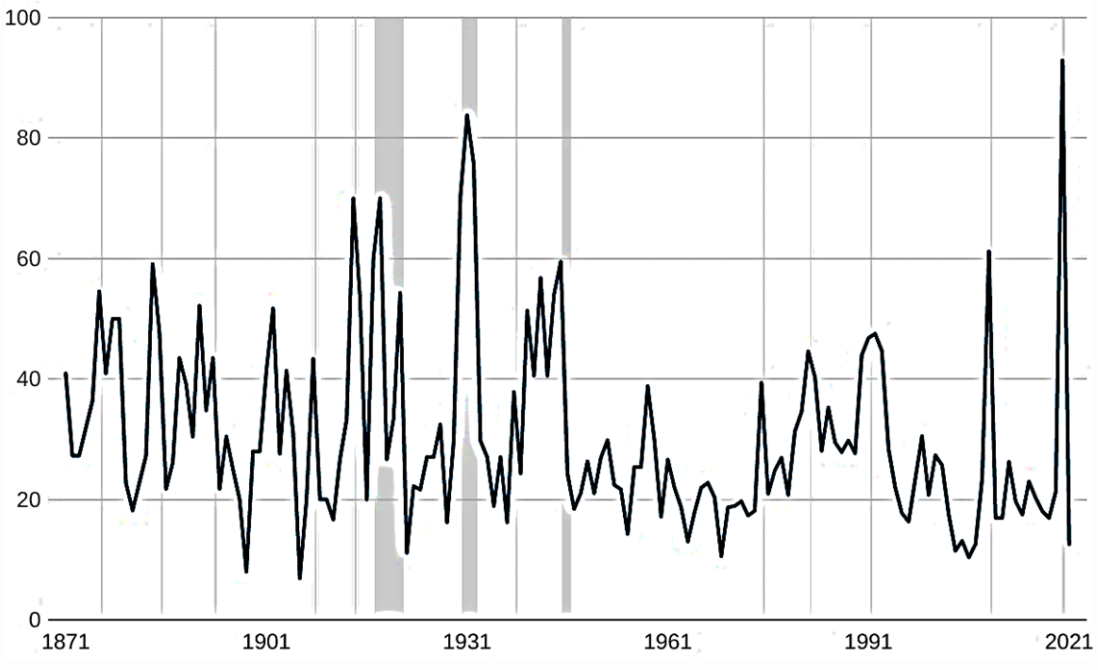

Figure 1: The proportion of economies with an annual contraction in per capita GDP (Shaded areas refer to global recessions)

= global recession

Source: World Bank

Stock market fluctuations can have an impact on the value of pensions and individual savings accounts. As the number of Covid-19 cases increased in the early months of the crisis, the FTSE (Financial Times Stock Exchange 100 Index), Dow Jones Industrial Average, and Nikkei all suffered significant drops. The major Asian and US stock markets have recovered following the announcement of the first vaccine in November, but the FTSE is still in negative territory. The FTSE dropped 14.3% in 2020, its worst performance since 2008 (Jones et. al., 2021; WB, 2020).

Unemployment rates have increased across major economies. Many people have lost their jobs or seen their incomes cut. According to Dr. Rizwanul Islam, though economic downturns generally affected the labor markets adversely, the Covid-induced recession did not affect all nations in the same way. For example, unemployment rate increased in the United States sharply during the spring of 2020. According to the International Monetary Fund (IMF), the number of people out of work has reached an all-time high of 8.9%, signaling the end of a decade of jobs expansion. At the

same time, countries like France, Germany, and the United Kingdom could avert such sharp rise in unemployment. In case of developing countries, India experienced a sharp rise in the unemployment rate during the period of strict lockdown. China, however, has been able to avoid such a situation (Dr Rizwanul Islam;2021).

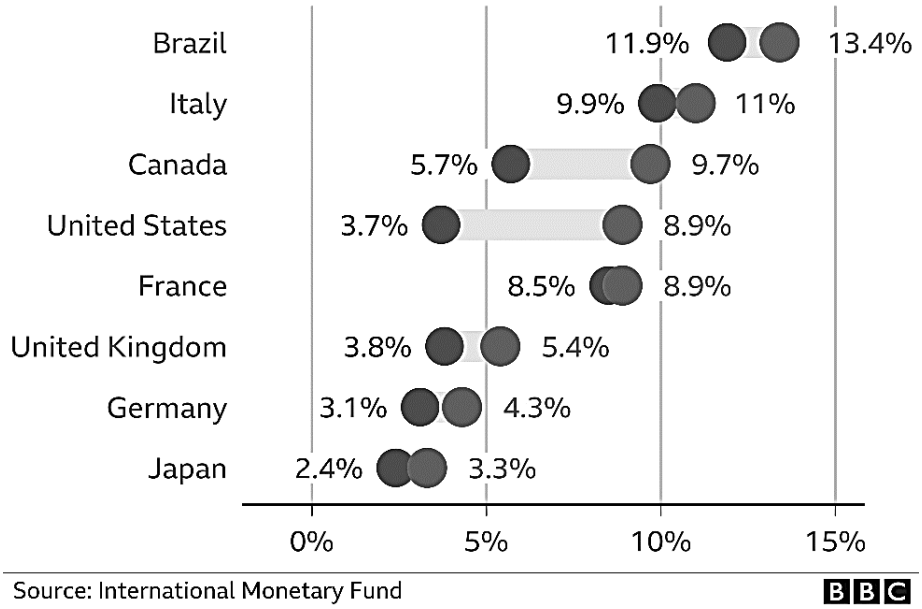

Figure 2: Yearly unemployment rate change, 2019 and 2020 compared

According to a projection by the United Nations Conference on Trade and Development (UNCTAD), global FDI would drop by 42% to USD 859 billion in 2020, down from USD 1.5 trillion in 2019. However, the decline in FDI flows across the developing economies was uneven as developing nations in Asia performed better owing to positive FDI inflows to China and India in the high-tech sectors in terms of merger and acquisition in ICT and pharmaceutical respectively (Islam and Hussain, 2021).

There's no denying that the epidemic, which began with the global spread of the deadly coronavirus, has taken a toll on lives, livelihoods, and economies throughout the world. The World Bank Group's reaction is focused on four core areas, using a combination of new projects, restructuring and emergency components of current activities, and disaster finance instruments. Which are-

1. Saving lives threatened by the pandemic

2. Protecting the poor and vulnerable
3. Helping save jobs and businesses
4. Working to build a more resilient recovery

These aims are stated in the World Bank's operational strategy to the COVID-19 problem, titled "Saving Lives, Scaling-up Impact, and Getting Back on Track." (WB, 2020).

As of November 20, 2021, 53.9% of the world population which is almost 4.14 billion people has received at least one dose of a COVID-19 vaccine. Around 7.66 billion doses have been administered globally, and 27.25 million are now administered each day since first vaccine distribution December, 2021 (Josh, 2021; OWD, 2021).

1.3. Corona Situation of Bangladesh:

In Bangladesh, the first case was detected on March 08, 2020. After one week, the government initiated countrywide lockdown intending to mitigate the spread possibilities. Moreover, on the 24th of March 2020, eventually, the government declared holiday along with the shout-down of all educational institutions, business enterprises, factories, shopping malls, and only necessary goods suppliers shop allowed to open for a stipulated time. The lockdown was further extended several times by the Government. As of December 26, 2021, Bangladesh confirmed case 1.58Million people and 28 thousand deaths.

According to World Bank, the COVID-19 pandemic decelerated economic growth in 2020. The pace of poverty reduction slowed down, exports declined, inequality increased across several dimensions and the poverty rate increased to 18.1 percent from 14.4 percent. A study of Sarker and Fagun (2021) showed that in the first phase of pandemic the farmer consumer alliance was greatly hampered because of economic shutdown with the restriction of travel which had created an imbalance between demand and supply of food. Day laborer, marginal and poor people, vulnerable women and children were mostly affected by this pandemic in Bangladesh. Food inflation fell in May 2020 and stood at 5.09 percent. Non-food inflation rates have been falling over from April-September 2020. Nominal Wage Rate Index (WRI) in the industry and service sectors fell in recent times, which now appear to be recovering. The national inflation rate has not been affected much based-on point-to-point changes (Siddiquee et. al., 2020).

The first vaccinations were given on 27 January 2021 in Bangladesh. As continuing full lockdown situation was impossible for Bangladesh because of its economic condition, partial lockdown situation was existing in the country with only closing educational institutions and prohibiting mass public gathering.

Bangladesh is already in a very difficult position as it is a developing country and the country has more than 50 million workers in the informal sector (Islam and Divadkar, 2020). In 2021, Bangladesh's GDP growth rate is 5.47%. Bangladesh recorded its lowest GDP growth rate ever in 2020 which is 3.51%. The economic crisis that the pandemic has caused will outlive it and last for several years, may even last for a decade or more. A report published by the International Labor Organization (ILO) on May, 2020 concluded that the economic effect of the pandemic was delivering a 'triple shock' to young people by destroying their jobs, disrupting their education and training and creating obstacles to seek or move between job (Mahmood, 2020). However, according to the ADB, Bangladesh's GDP expected to grow by 7.2% in 2022.

1.4. Unexpected growth of industries:

Unexpectedly, due to that situation some industries like retail chain shops, online grocery shops, Mobile Financial Service, IT Firms are experiencing growth in Bangladesh (Alam, 2020). This change in shopping behaviour has significantly boosted online retail, with a global revenue of $3.9 trillion in 2020.

E-commerce is relatively new to this country as most of the people did not have access to internet and was not familiar with online shopping. So, they were not comfortable to shop online and trust issues were high. But this pandemic situation showed us an unpredicted side, at the initial stage of lockdown people saw a frenzy of panic buying and stockpiling of essential products as they tried to avoid going to crowded places. But prolonged lockdown situation eventually led to online shopping as household food stock was not sufficient for long time. Although, people bought from online, the transaction process remains risky because the virus can spread through droplets from infected person. An article of TIME magazine revealed that previous studies have claimed, paper money can carry more germs than a household toilet. This directly points towards the risk of being infected by using banknotes and coins in financial transactions. This risk led to growth of Mobile Financial Service industry. Payment through Mobile Financial services reduce contact with the delivery personnel through cash and reduced risk. It also provided financial aids and helped in

payment of utility bills such as electricity, telephone and such. According to a report of Daily Star (2020), electricity bills paid through digital platforms has increased from 5 percent to 60 percent during the pandemic. Recently, to aid the lockdown situation the Prime Minister announced BDT 2,500 cash incentive to 5 million poor families as part of measures taken to keep the economy stable. All of these will be paid out using Mobile Financial Service directly to the families to ensure transparency (Islam, 2020).

1.5. Mobile Financial Service of Bangladesh:

Mobile Financial Service (MFS) commonly known as "Mobile Banking" in Bangladesh is relatively new concept but a fast-growing industry in our country. Mobile financial service refers to branchless banking whereby financial services are offered to both banked and unbanked people efficiently under reasonable charge-rates (Tabassam, 2020). It offers advanced-level financial services combining traditional banking system with the wireless telecommunication technology to assure instant and secured money transaction process. The agents of respective banks enable these services after registering the mobile account and account owner can withdraw cash, send or receive money without visiting any bank through independent agent locations.

The first Mobile financial service was introduced in 2011 and from then it has grown rapidly and gained popularity among users. In less than four years there were more than 10 service providers in Bangladesh. A study found that despite having a very clear mobile financial service market leader, competition is growing quickly (Parvez at el., 2015). However, the central bank of Bangladesh has allowed 16 leading banks to offer Mobile Financial Service till now (Tabassum, 2020). According to Bangladesh Bank's MFS comparative summary statement currently 15 banks are providing the service. Bangladesh's mobile market is also relatively under-developed, though it has experienced strong growth over the last six years. The incentives both from government and public sectors have helped the industry grow and it is now one of the biggest industries in Bangladesh. As a populous country, its huge market has attracted many foreign investors. Mobile money technologies make sending money quick and relatively cheap (Gates Foundation, 2013), but their social and economic impacts have been hard to evaluate since, especially in early stages, adoption is highly self-selected.

Bangladesh had 971,000 MFS agents who, on average, conducted 7.33 million daily transactions worth USD 156 million. It has a total of 11,320 agent banking outlets that serve 5.26 million

customers until December, 2019. In addition, nearly 92% of the population now live within 5km of a financial sector access point (Tiwari and Islam, 2020). An article published on "Fortune" revealed that the world's fourth-largest economy, China, already has 600 million users, moving it very close to a cashless economy. The COVID-19 outbreak is urging the world to follow suit with China and reduce the usage of cash. The leading MFS providers of Bangladesh are bKash, Rocket, SureCash, Nagad etc. Among them the spectacularly successful provider is bKash which is backed up by BRAC Bank. bKash started their MFS program in 2011 and by 2019 it had 3.1 crore active users. With some 180,000 agents countrywide effectively acting as bank branches to facilitate their user base, bKash is holding above 80 percent share of the total MFS market in Bangladesh. Up to July 2019, more than TK 37,477.35 crore has been transacted through bKash MFS (Tabassam, 2020).

1.6. Saving of Bangladesh people:

Saving is one of the important variables for economic development for any country and it is crucial for developing countries. The greater is the saving rate, the higher is the growth rate a country can attain. To understand a country's economy, understanding the saving practices of the people is a must. Saving practices of developing country rely mainly on informal sector like saving in livestock or jewels, saving at home "under a mattress", saving with a neighbor etc. (Allen *at el.,* 2014). A study showed that, it is difficult to find any correlation between using mobile money and saving practices for predictable events, but it seems to increase the propensity of individuals to save for health emergencies (Ky *et al*., 2017).

Bangladesh boasts of some convincing progress with economic development, like increasing per capita income, poverty alleviation and so on (Rahman and Uddin, 2012). History of economics shows that countries that succeeded in accumulating high levels of domestic investment largely financed by domestic savings, achieved faster rates of economic growth and development. According to Mujeri et.al. (2013), one significant feature of the trends in savings and investment rates in Bangladesh is that the country's economic growth has been financed predominantly by domestic savings. The dependence on foreign savings (equivalently, on current account deficit) has been rather modest (Mujeri and Chowdhury, 2013). Different commercial banks, post office and other financial institutions collect a greater portion of private savings through their activities (Rahman and Uddin, 2012).

According to Ministry of Finance of Bangladesh, personal savings in Bangladesh increased to BDT 6067.90 Billion in 2019 from BDT 5138.92 Billion in 2018. Bangladesh Bureau of Statistics recently estimated and found that gross saving rate has also increased which is a positive thing for Bangladesh. Gross savings rate was measured at 30.1 % in June 2020, compared with 29.5 % in the previous year. The data reached an all-time high of 30.8 % in June 2016 and a record low of 27.4 % in June 2018 (BBS, 2020).

1.7. Justification of the study:

Siddiquie (2014) showed in a study that, Mobile Financial Service is very effective in a country that is geographically challenged like Bangladesh, Kenya, and Nigeria. According to Ahmed *el. al.* (2011), Mobile Financial Service is much more effective in developing savings habits. Although this concept is new in Bangladesh but its potentiality is high. Respondents thought it saves time than traditional banking, less costly and speedy. Also, Ahmed (2018) found that customers have positive attitude towards mobile financial services as it makes their life easy and also for convenience, trust, security, risk reduction, availability of agents points etc. of the MFSP. Regarding saving rate, Rahman and Uddin (2012) found that, the growth rate and real rate of interest have a positive impact on savings rate. Also, the financial reform index has a significant positive effect on savings rate indicating that the financial sector reform has ultimately enhanced savings rate in Bangladesh.

So, it can be said that, several studies were conducted to find out the impact of COVID-19 on economy and growing industries till now. But, this study aims to extend the studies, focusing on mobile financial service industry in Bangladesh and saving behaviour of rural people during COVID-19. Hence, this study is approaching to identify the factors affecting MFS users and saving practices of rural people in this pandemic. To fully understand the situation of coronavirus the researchers aim to find the answers to some key questions:

(a) Did mobile financial service reach to rural people in this pandemic?

(b) Did saving rate increased during pandemic?

(c) What is the impact of mobile financial service on saving behavior of people?

(d) What are the key determinants of saving practices of mobile banking users?

1.8. Objectives:

Based on the research question the specific objectives of this study are:

1. To assess the socio-economic condition of mobile financial service users of rural areas.
2. To observe the influences behind saving practices of rural people.
3. To determine the factors impacting saving practices of rural people during COVID-19.
4. To find out the situation of using MFS during COVID-19 of rural people.

CHAPTER 2: REVIEW OF LITERATURE

In this chapter, an attempt has been made to review of pertinent literature keeping in view the problem entitled, "**An Empirical Study on Impact of Covid-19 on Mobile Financial Service and Saving Practices: The Case of Bangladesh**". Again, some of these studies may not entirely relevant to the present study, but their findings, methodology of analysis and suggestions have a great influence on the present study. Review of some research works relevant to the present studies, which have been conducted in the recent past, are discussed below.

In studies regarding the situation of COVID-19, **Rahman et. al. (2021)** found that, although Bangladesh government ruled preventive strategies such as nationwide lockdown, social distancing, contact monitoring, quarantine, and isolation, it was difficult to implement those due to lack of public awareness, inappropriate attitudes and so on. Moreover, the overburdened healthcare system had a weak response at initial stage because of insufficient healthcare facilities. Consequently, this pandemic affected severely almost all the important sectors of the country, specifically the economy, agriculture, education, and health sector.

Janssen et. al. (2021) conducted a study on changes in food consumption that occurred during the COVID-19 pandemic among residents of Denmark, Germany, and Slovenia and found that people across all three countries shopped less frequently during lockdown and there was an overall reduction in the consumption of fresh foods, but an increase in the consumption of food with a longer shelf life in Denmark and Germany. Depending on the type of food, 15–42% of study participants changed their consumption frequency during the pandemic, compared to before.

In studies regarding Mobile Financial Service, **Unnithan and Swatman (2001)** studied the drivers for change in the evolution of the banking sector, and the move towards electronic banking including mobile banking by focusing on two economies; Australia and Bangladesh and suggested strong growth potential of new banking channel in Bangladesh.

Ashta, (2010) mentioned that after the launch of mobile banking in India, mobile banking transactions have seen some growth. What attracts customers to mobile banking is the round the clock availability and ease of transactions.

Thomas (2010) mentioned in his article that in countries as diverse as China, Brazil and Kenya the number of new users of mobile banking ascended over 100% in 12 months, as banks

leapfrogged traditional service models and moved directly to mobile. In fact, a new mobile banking report from Juniper Research (2014) predicts that more than 1bn people will use their mobile devices for banking by the end of 2017.

Nabi *et al.* (2012) Although it is on blooming stage in Bangladesh, Banks and MNOs share the view that the potential for MFS lies initially with P2P (peer-to-peer), small merchant payments and mobile top ups.

Akhter and Khalily (2020) found that individuals engaged in the non-agriculture sector, those from households with the head having higher education, those from non-poor households and those from urban areas have higher probabilities of MFS use.

Batista and Vicente (2017), in a field experiment in rural Mozambique, show that access to a mobile money savings account increased savings and increased use of agricultural inputs and also expenditures, particularly on goods that are purchased relatively infrequently. They suggest that this reflects decreased pressure in the treatment arm to share resources with friends and family.

C-Kunt *et al* (2018) showed that, MFS usage is widest among better-off Bangladeshis: 39% of the top three income quintiles reported digital payments in 2017 versus 26% of the bottom 2 income quintiles. Just 14% of adults with primary schooling (or less)—a group overlapping most of our rural sample—had mobile money accounts. Still, Bangladesh is a global leader overall: just 5% of adults in developing economies had mobile banking accounts in 2017.

Suoranta (2003) found that in Finland, the average mobile banking user is married, 25 to 34 years old, has intermediate education and average income in clerical work. She found that age and education have a major influence on the use of the mobile phone in banking service. The adoption theories assume that use of internet banking precedes the adoption of the mobile phone in banking. However, some mobile banking customer omit Internet banking option when adopting the mobile phone for banking actions.

Lee *et al.* (2018) conducted an experimental study on very poor rural households whose family members had migrated to the city. They experimentally introduced mobile banking to rural and urban populations in Bangladesh to investigate inequality-reducing transfers. One year later, urban-to-rural remittances increased by 30% relative to a control group. For active mobile money users, rural consumption increased by 7.5% and extreme poverty fell. Rural households borrowed

less, saved more, and consumed more in the lean season. Urban migrants, however, bore costs, reporting substantially worse physical and emotional health.

Frączek and Matula (2019) showed that the quality of saving behavior is attributed to incomes and the level of own knowledge and financial skills as well as individual traits of particular financial consumers.

Ahmed (2018) found that customers have positive attitude towards mobile financial services as it makes their life easy and also for convenience, trust, security, risk reduction, availability of agents points etc. of the MFSP. It was also found that customers intend to purchase other company's products owing to different offers that come with the combination of MFSP and other company that sells products. Many online shopping is taking place where payments are being made using these mobile financial services.

Ahmed *el. al.* (2011) showed that Mobile Financial Service is much more effective in developing savings habits. Although this concept is new in Bangladesh but its potentiality is high. Respondents thought it saves time than traditional banking, less costly and speedy.

Agur *et al.* (2020) found that digital financial services allow for social distancing; they allow governments to disburse funds to those in need quickly and effectively; and allow many households and firms to rapidly access online payments and financing.

Laforet and Li (2005) found that reasons behind the barriers to mobile banking adoption were lack of awareness and understanding of the benefits provided by mobile banking.

Siddiquie (2014) showed in a study that, Mobile Financial Service is very effective in a country that is geographically challenged like Bangladesh, Kenya, and Nigeria. Still there are some issues that MFS users face. Mainly rural people face problems using the service as they have limited access to information technology and that leads to limited trust on technology, medium of communication is English which is really inconvenient for ignorant people, also error rectification, high charge are some limitations.

Shahneaz *et al.* (2017) made an important contribution through a study which identified certain issues MFS users as well as non-users face in Bangladesh which are Mobile handset operability,

Security/privacy, Standardization of service, Customization, Downloading and installing application software, Telecom service quality.

Sharma and Singh (2009) found that Bangladeshi mobile banking users are specially concern with security issues like financial frauds, account misuse and user friendliness issue- difficulty in remembering the different codes for different types of transaction, application software installation and upgradation due to lack of standardization.

Numerous studies have been done on the factors that affect savings. Savings not only benefit for the individual but also to the economy (**Katona, 1975; Bernheim, 1991**). Saving is the money that person has saved, especially through bank or official scheme. There are many reasons for saving. **Keynes (1936),** stated that there are three motives for saving, which were for transaction, precautionary, and speculative. **Modigliani and Brumberg (1954)**, suggest that individuals formulate financial plans for retirement. Individual practice saving habit throughout their lifetime, beginning slowly in their early years, peaking during forties and fifties and finally accumulating sufficient funds to retire (**Karpel, 1995**); however, according to **Modigliani and Brumberg (1954)**, saving levels are low for the young, rise and peak during the middle years, then become lower again among the old.

Hafeez *et. al.* (2010) presented a study aims at investigating the determinants of households' saving in Multan district of Pakistan. The study concluded that Spouse participation, total dependency rate, total income of household and size of landholdings significantly raise household savings. Education of household head, children's educational expenditures, family size, liabilities to be paid, marital status, and value of house significantly reduce saving level of households.

Nandhi (2012) found that in India, the ability to save has improved for a majority of users through EKO mobile banking by comparison to earlier practices such as keeping cash on hand.

Rahman and Uddin (2012) found that, the growth rate and real rate of interest have a positive impact on savings rate. Also, the financial reform index has a significant positive effect on savings rate indicating that the financial sector reform has ultimately enhanced savings rate in Bangladesh. Population per branch of scheduled banks, on the other hand, is negatively related to savings rate suggesting that increased availability of branches of banks can stimulate the saving tendency of people. Further, financial savings in turn, foreign direct investment and literacy rate positively

affect the growth rate of the economy. The findings also confirm the saving-growth simultaneity reflecting that savings and growth positively affect each other and go hand to hand.

Ismaila *et. al.* (2013) showed in a study that five determinants are identified as factors affecting the saving behavior which are as follows: services quality, religious belief, knowledge, social influences, and media advertisement. They also found that except for media advertisement; services quality, religious belief, knowledge and social influences become the important determinants that influence attitude towards saving behavior. Moreover, social influence is found to be the best determinant to the attitude towards saving behavior.

Messele (2015) revealed in a study that rural poor individuals can save if they are provided with customized trainings, appropriate financial products like credit availability as per their need and in addition, their income level and education status have an effect on their saving level.

Ahsan (2016) has found five core factors for peoples saving behavior in a study, i.e., 1. Have a facility in old age, 2. Have enough social security, 3. Purchase land/house, 4. Dependent persons, and 5. Good profit/interest. There are several factors that affect rural people's saving behavior also.

Ky, Rugemintwari and Sauviat (2017) investigate whether the use of mobile money can help individuals build savings to face predictable and unpredictable life events. Studying the case of Burkina Faso, they showed that although it is not possible to detect any correlation between using mobile money and saving for predictable events, it seems to increase the propensity of individuals to save for health emergencies. They also found robust evidence that using mobile money increases the propensity of disadvantaged groups such as rural, female, less educated individuals and individuals with irregular income to save for health emergencies. In further investigations, they addressed the mechanisms underlying individual saving behavior and found that safety and the possibility to transfer money within the sub-region associated with mobile money may be factors that increase the propensity of mobile money users to save for health emergencies.

Above reviewed studies cover MFS industry's potential, problems and prospects in Bangladesh and the saving behavior of Bangladesh's people. Studies aiming to find out the factors affecting MFS users and saving practices of rural people in this pandemic are possibly a few in the country. Therefore, this paper intends to highlight the overall situation of saving behavior and MFS industry during pandemic.

CHAPTER 3: METHODOLOGY OF THE STUDY

3.1. Introduction:

Methodology is an important and fundamental part of any research. The use of proper technique is a must for excellent research. “Methodology is the philosophical framework within which the research is conducted or the foundation upon which the research is based” (Brown, 2006). The acceptance and reliability of a specific research finding depends on the appropriate methodology used in the study. Inappropriate methodology very often leads to misleading the research result. So, careful considerations are needed by an author to follow a scientific and logical methodology for carrying out the study.

This chapter discuss the study area, type and source of data, sampling procedure and sample size. It also presents the survey design, methods of data analysis, theoretical framework and empirical models. It concludes with definition, measurement and a-priori expectations of variables.

Any survey's design is largely defined by the study's nature, goals, and objectives. It is also contingent on the availability of the required resources, supplies, and time. Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012). The essence of survey method can be explained as “questioning individuals on a topic or topics and then describing their responses (Jackson, 2011).

The "survey approach" was used in this research for two key reasons:

i. The survey allows for rapid study of a large number of instances, and
ii. The findings are more widely applicable.

3.2. Study Area

The study was conducted in three Upazilas of Mymensingh district in Bangladesh namely Phulbaria, Nandail, Gouripur. Mymensingh is a district in Mymensingh Division, Bangladesh, and is bordered on the north by Meghalaya, a state of India and the Garo Hills, on the south by Gazipur District, on the east by the districts of Netrokona and Kishoreganj, and on the west by the districts of Sherpur, Jamalpur and Tangail. Mymensingh town is the district headquarters. It is the largest district of Bangladesh with an area of 4,363 km² and a population of 58,00,159 as of the 2020 census. Currently, Mymensingh district has a city corporation, eight municipalities and thirteen upazilas. It is ethnically, culturally, and topographically diverse region and has 13 subdistricts. It

was created in 2015. The literacy rate of the district is 68%. The majority of the population relies on subsistence farming and a small portion of population relies on Small and Medium Enterprises (Bangladesh National Portal, 2021).

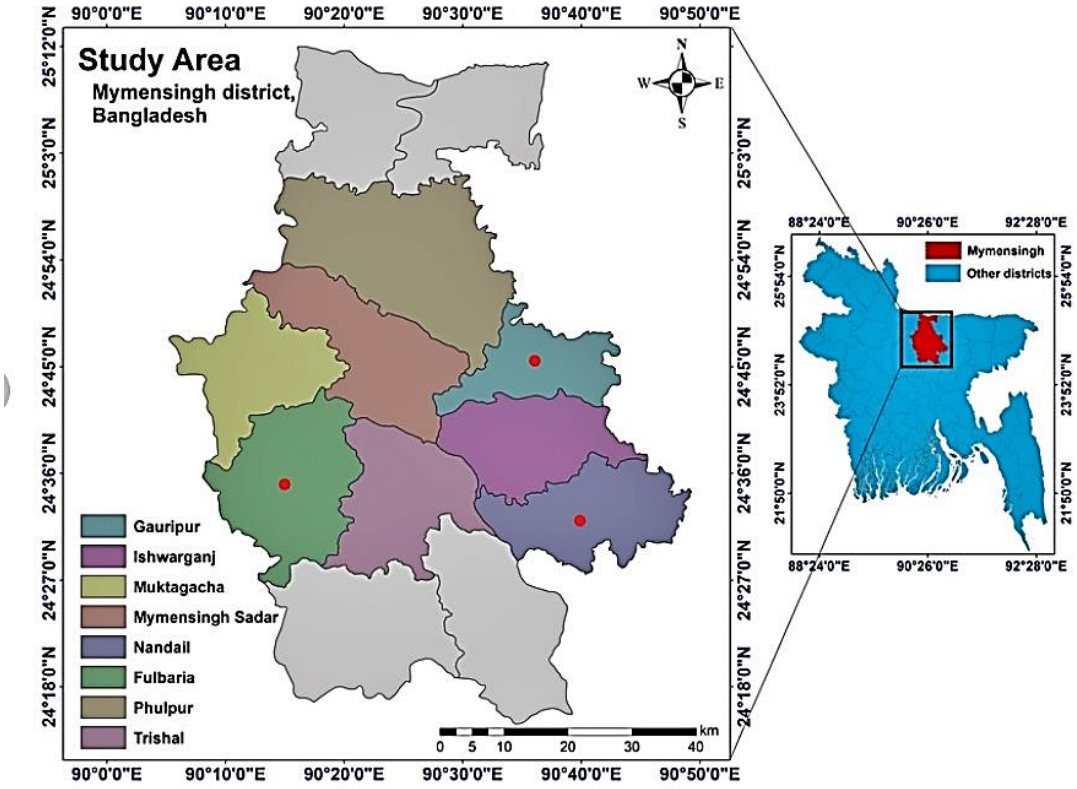

Figure 3: Map of Mymensingh district, Bangladesh

3.3 Sampling method:

It is impossible to collect information from the whole population in an empirical investigation. So, researchers are drawn inferences based on information derived from a representative sample of the population. The size of the sample, extent of variation, usually affect the quality of information obtained from the survey. Using appropriate sampling methods, both factors can be controlled (Scheaffer, 1979). The aim is to devise a sampling scheme, which is economical and easy to operate, and provides unbiased estimates with small variance (Barnett, 1991). The selection of a sample from the population is commonly used in economics and other socio-economic research because of limitations of covering the whole population (Barnett, 1991; Kinnear and Taylor, 1987). The authors consider that cost is the main constraint to carrying out interview of the whole population. Given limitations in terms of money, time, efforts and data management, a sampling

is a more appropriate method. They argue that sampling not only saves cost and time but can also give more accurate results than a census. In a census survey more staff is required to carry out the task, therefore, supervision of staff and management problems will arise. Sampling theory provides an opportunity to minimize cost and to achieve acceptable results (Casley and Kumar, 1988; Kinnear and Taylor, 1987).

3.3.1. Study type and study population

Study population can be defined as the sector or element under investigation, the sampling unit, the extent of investigation, and the duration of investigation (Kinnear and Taylor, 1987). In the study a cross sectional survey on user of mobile financial services was performed to determine the factors impacting saving practices of rural during COVID-19 and also to figure out the situation of using MFS during COVID-19 of rural people. Rural people of the three areas Phulbaria, Nandail and Gouripur were the study population. To accomplish the objectives of the study, a structured questionnaire was formed.

3.3.2. Sampling design

The researcher wishes to avoid bias in the sample selection process to achieve accuracy in the estimates, which is to have a small standard error (Kinnear and Taylor, 1987). The best way to avoid bias in the sample selection process is use of simple random sampling in which each unit of the population has an equal chance for selection (Scheaffer, 1979). Either increasing the sample size or imposing various restrictions and modifications on the simple random sampling procedure can achieve an increase in precision of the sampling procedure.

To select a representative sample, a four-stage sampling was done for data collection. First of all, Mymensingh district was selected purposively. Secondly, selection of three Upazila from the district was done. Then, one village from each Upazila was selected randomly. Thus, a total of 3 villages were selected. The villages were Chorpara, Musulli, Bekurhati. Finally, from each villages users of MFS were selected randomly using simple random sampling method for face-to-face interview.

3.3.3. Sample size

When choosing samples for a research, two criteria must be taken into account. The sample size should be as big as possible to ensure that the statistical analysis has enough degrees of freedom. Field research administration, data processing, and analysis, on the other hand, should be manageable within the constraints imposed by physical, human, and financial resources (Mannan 2001). However, because to the variability of the technological and human environments, it is required to sample a large number of people before drawing any conclusions. As a result, sampling is used to pick a subset of the population that is representative of the whole population (Rahman 2000). According to Casley and Kumar (1988) and Kinnear and Tayler (1987), a good survey sample should have both a small sampling error and minimum standard error. This can be obtained if one has unlimited resources. As a rule, the larger the sample size the higher the reliability, the lower the error and the greater the confidence one can place on the findings reflecting the characteristics of the population as a whole. But, faced with the inevitable constraints of time and money, the researcher invariably has to compromise between optimum and acceptable levels of confidence, reliability and error.

Simple random sampling method was followed in the study in selecting sample and collecting data from the respondent. Due to time, money and manpower constraint, from each village, 70 users were selected randomly for face to face interview. Thus, a total of 210 users were being interviewed from the selected areas of three Upazila. Both qualitative and quantitative information were collected through questionnaire. At every stage of the selection of respondents, priority was given on the objectives of the study.

3.3.4. Preparation of the questionnaire and Pretesting

For the purposes of this research, a structured questionnaire was used. Questionnaire designing is a difficult task during the planning stage of a survey research (Casely and Lury, 1981). The questionnaire was divided into different sections: socio-demographic information, situation of using Mobile Financial Service, saving behaviour of people, impact of covid-19 on saving behaviour etc. The questionnaire developed sought information on socioeconomic characteristics of the sampled respondents such as age, sex, education level, occupation and land ownership, income and expenditure etc. The situation of MFS using included questions regarding reason for using MFS, duration of using and problems when using MFS. In the part saving behaviour of

people solicited information on saving frequency, amount, reasons for saving etc. The last part of the questionnaire asked for information on saving during pandemic, saving amount, income and expenditure during pandemic.

Prior to final data collection the questionnaire was pre-tested on a few respondents to check for the possible errors that could affect the quality and accuracy of data collected. The final survey questionnaire was prepared on the basis of results of the pre-test survey. Pre-testing questionnaires is an essential step in the survey development process as pretesting on questionnaires helps focusing on how people are answering the questions. It helps determining if respondents understand the questions as well as if they can perform the tasks or have the information that questions require. Pre-tests also provide the most direct evidence for the validity of the questionnaire data for most items. The nature of variables and types of respondents requires both qualitative and quantitative procedures of data collection. The questionnaires were in English but questions were asked in the local languages from the respondents.

3.4. Collection of data:

Primary data were used in the study. Data were collected through conducting field survey. Data collection period was 3 months. After collection, data were properly edited and analyzed.

3.4.1. Processing, Editing and Tabulation of Data

Data were collected using "KoBoToolbox". The collected primary data were checked and verified for the sake of consistency and completeness. Editing, encoding and decoding were done before putting the data in computer. All the collected data were summarized and analyzed carefully to eliminate all possible errors. Data were presented in the graphs and tabular form, because it was of simple calculation, widely used and easy to understand. Besides, functional analysis was also adopted to arrive at expected findings. Data entry and analysis was done by using the concerned software like Microsoft Excel and SPSS.

3.4.2. Analytical techniques

Both descriptive and advanced statistical analysis was used for analyzing the data.

3.4.2.1. Descriptive analysis

Frequency distribution and cross tabulation analysis were being used to find out socio-demographic profile of the respondents, observe the influences behind saving practices of rural

people and to figure out the situation of using MFS during COVID-19 of rural people. The frequency distribution was used to determine the age, literacy rate, gender and occupation of the user of MFS. It is simple in calculation, widely used and easy to understand. It was used to get the simple measures like average, percentage and frequency.

3.4.2.2. Advanced statistical analysis

Advanced statistical model was used to achieve the objectives of the study such as Logit model. Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables and to get the probability of certain outcome (yes/no) for different categories of independent variable. So, in this study binary logistic regression analysis was being used. The dependent variable of this model was saving during pandemic. In this study to determine the contribution of the important variables to save during pandemic of rural people, the logit of the logistic regression function can be written as

$$\ln [P(Y=1)/(1-P(Y=1))] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \cdots + U_i$$

Where, Y_i = Saving during pandemic (if saved= 1; otherwise = 0),

X_1 = Age	X_2 = Gender
X_3 = Occupation	X_4 = Regularity of income
X_5 = Monthly income before pandemic	X_6 = Monthly income during pandemic
X_7 = Land	X_8 = Work during pandemic
X_9 = Saving habit	U_i= Disturbance term

β_1 to β_9 are coefficients of the respective explanatory variables. Coefficients (β_1, β_2, β_3, β_4, $\beta 5_5$, β_6, β_7, β_8, β_9) and intercept (β_0) was estimated using the maximum-likelihood method. Odds Ratio (OR) was reported with 95% confidence interval. Statistical packages SPSS was used for data analysis.

3.4.3. Variables to be used

A variable is any property that may take on varied or distinct values in subsequent individual occurrences (Ezekiel and Fox, 1959). A well-structured piece of study would often have at least two significant variables, referred to as dependent and independent variables.

3.4.3.1. Dependent Variable

The dependent variable is the variable that is assessed in an experiment or the variables that are altered during research. In this study the dependent variable was saving during pandemic.

3.4.3.2. Independent Variables

The independent variables are those that the researcher modifies in order to examine the dependent variables. Or variables that may take on changing values and thereby affect the values of other variables. The researcher chose 9 qualities of the respondent as independent variables in this study. The independent variables for this study are- age, gender, occupation, regularity of income, land, saving habit, income before pandemic, income during pandemic, work during pandemic.

Table 1: Description of all the variables used in the study

Variables	**Description**
Dependent variable	
Saving during pandemic	If the participant saved during pandemic=1. Otherwise=0
Independent variables	
Age	
Gender	If the gender of a participant is male=1, otherwise=0
Occupation: Business	If business=1, otherwise=0
Occupation: Driver	If driver=1, otherwise=0
Occupation: Farmer	If farmer=1, otherwise=0
Occupation: Job	If job holder=1, otherwise=0
Occupation: Worker	If worker=1, otherwise=0
Occupation: Housewife	If housewife=1, otherwise=0
Occupation: Other	If other=1, otherwise=0

Regularity of income	If participant has regular income=1, if otherwise=0
Monthly income before pandemic: 0- 10000 BDT	If participant's monthly income before pandemic was 0-10000 BDT= 1, if otherwise=0
Monthly income before pandemic: 11000-20000 BDT	If participant's monthly income before pandemic was 11000-20000 BDT= 1, if otherwise=0
Monthly income before pandemic: 21000-30000 BDT	If participant's monthly income before pandemic was 21000-30000 BDT= 1, if otherwise=0
Monthly Income During Pandemic: 0-10000 BDT	If participant's monthly income during pandemic was 0-10000 BDT= 1, if otherwise=0
Monthly Income During Pandemic: 11000-20000 BDT	If participant's monthly income during pandemic was 11000-20000 BDT= 1, if otherwise=0
Monthly Income During Pandemic: 21000-30000 BDT	If participant's monthly income during pandemic was 21000-30000 BDT= 1, if otherwise=0
Land	If participant own any land=1, otherwise=0
Work during pandemic	If participant had work during pandemic=1, otherwise=0
Saving habit	If participant had saving habit before pandemic=1, otherwise=0

3.4.3.3. Test of multicollinearity:

In linear regression, it is important not to have any linear relationship between independent variables (Webster, 2013). When two independent variables are highly correlated, a change in one would result in a change in the other, which causes the model results to vary greatly. Given a slight modification to the data or model, the outcomes of the model will be unstable and highly variable (Wu, 2020). Multicollinearity is a situation that shows a strong correlation or relationship between two or more independent variables in a linear regression model. If there is multicollinearity in a multiple regression model, then the beta coefficient value of an independent variable can change dramatically if there is an addition or subtraction of the independent variable in the model. Variance inflation factor (VIF), Pearson correlations between independent variables, and examination of the eigenvalues are three statistical techniques frequently used to test for multicollinearity issues (Amalia, 2018). In this study also, Variance Inflation Factor (VIF) was used to assess the multicollinearity among independent variables.

3.5. Limitations:

A general disadvantage of the questionnaires however is their fixed and strict format, which eliminates the possibility for more in-depth or abstract observation (Bell, 2005). This study was not an exception. Moreover, due to pandemic the transportation facility was disturbed. In addition to that, people from rural areas were not so expressive when it comes to questionnaire and personal information. Data might not be exactly accurate due to imprecise information.

CHAPTER 4. RESULT AND DISCUSSION

This chapter provides a comprehensive and conclusive explanation of the findings of the scientific research investigation. This Chapter is divided into four subsections. The first segment examined social profile of the respondents. The second portion investigated impact of COVID-19 on saving practices of rural people. The third segment explored the factors that influence the saving behaviour of rural people. Finally, the final segment explored rural people situation of using MFS during COVID-19.

4.1. Socio-economic condition of MFS users of rural area:

4.1.1. Demographic condition:

The respondents of the study were the user of Mobile Financial Service of rural areas. Among 210 respondents 61.9% (130) were male. 80.5% (169) were married, 11.9% (25) were unmarried, 6.2% (13) were widowed and 1.4% (3) were divorced. Most of the family's head were male (92.4%). Average number of family member was 4 and total dependent on family head was 3 ranging from 0 to 9 member. Average age of the respondents were 37 years with minimum age of 15 and maximum 80 years. Average Monthly income of the respondents was BDT 14690 and average expense BDT 12742. Around 48.6% of respondents own a land and average size of the land holdings were 0.13 acre (7.87 katha). Minimum and maximum land holding were respectively 0.017acre (1 Katha) and 0.330 acre (19.97 Katha).

Table 2: Demographic status of respondents

Variables	Minimum	Maximum	Mean	Std. Deviation
Age	15	80	37.8	12.056
Number of family member	1	12	4.41	1.65
Total dependent on family head	0	9	3.12	1.327
Size of the land holding (acre)	.017	.330	.133	.13875
Monthly income	1000	30000	14690.48	6252.992
Monthly saving amount	300	6000	2112.24	1537.32
Monthly expense	1000	30000	12742.86	5692.526

Source: Field survey, 2021 *1 USD= 85.20 BD

Among respondent the highest portion (43.8%) were 31-45 years old where 32.4% were 16-30 years old and 4.3% year above 60 years old.

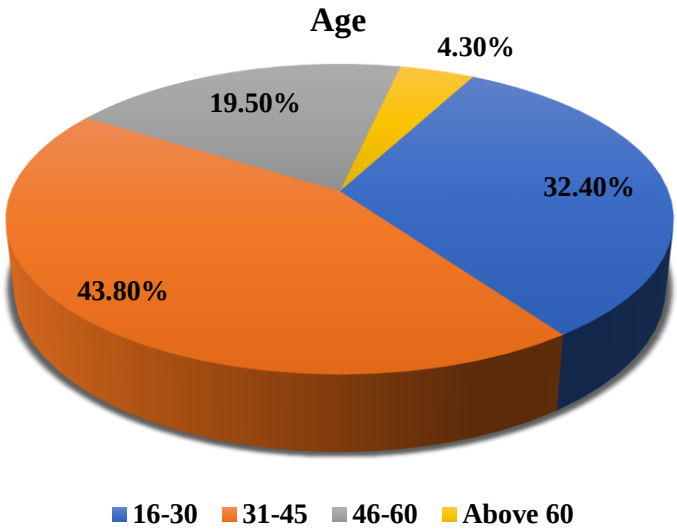

Figure 4: Age range of the respondents

Source: Field survey, 2021

4.1.2. Education:

Education level of the family head is important as educated people tend to be more cautious in saving. From the figure 5, we can see that illiteracy rate of the people of the study area was 18.6% while the illiteracy rate of the Mymensingh district is 60.9% (Bangladesh National Portal, 2021). Most of the MFS users completed only primary level and the percentage was 29% in the study area. Around 27% completed the secondary level and 10% completed the higher secondary level. About 10.5% of the respondents were graduates and 4.3% were post graduated user. The findings however, does not reveal the general situation of rural areas of Bangladesh possibly because of randomly selection of the respondents in the study area under review.

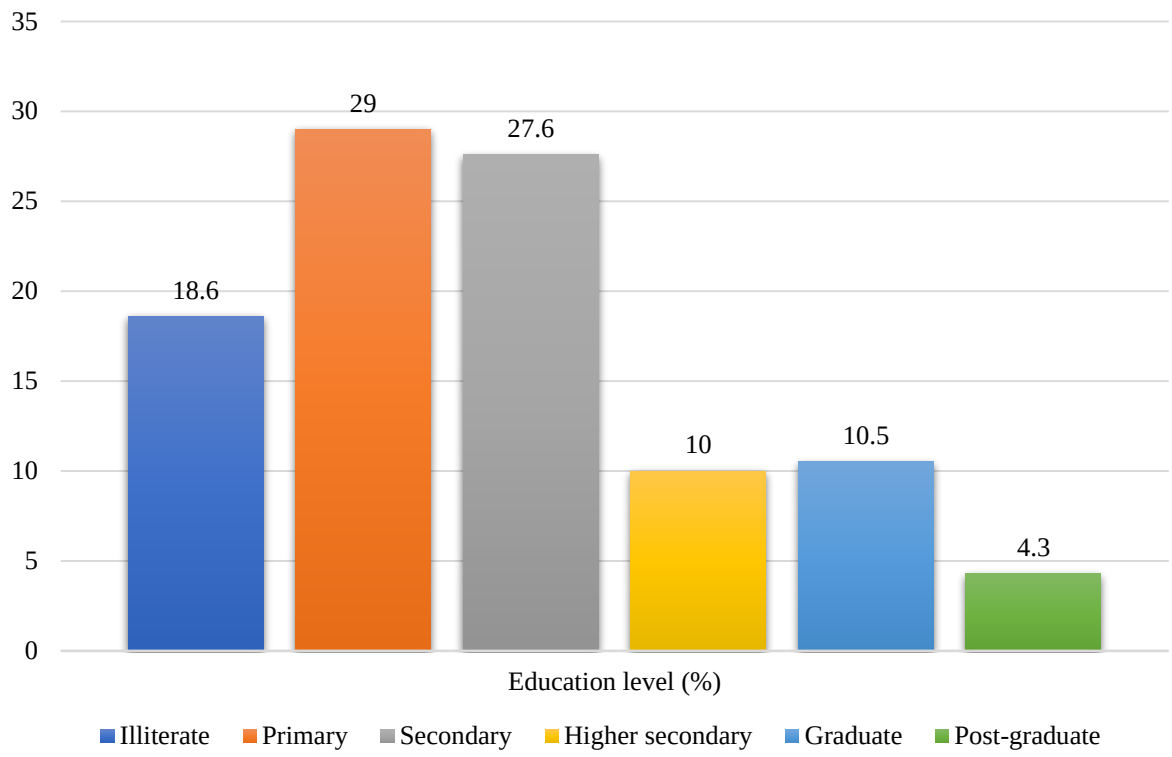

Figure 5: Education level of the respondents

Source: Field survey, 2021

4.1.3. Occupation:

Common occupations of the respondents were business (14.8%) and farming (12.4%). There were also respondents who were driver (7.6%), worker (8.1%) and job holder (11.9%). Other occupations were teaching, bus staff, NGO and garment worker. Around 28.6% MFS users were housewife and their spouse or elder child were the income source for the family. About 26.2% MFS users' spouse were active income earner, most of them (5.7%) were businessmen.

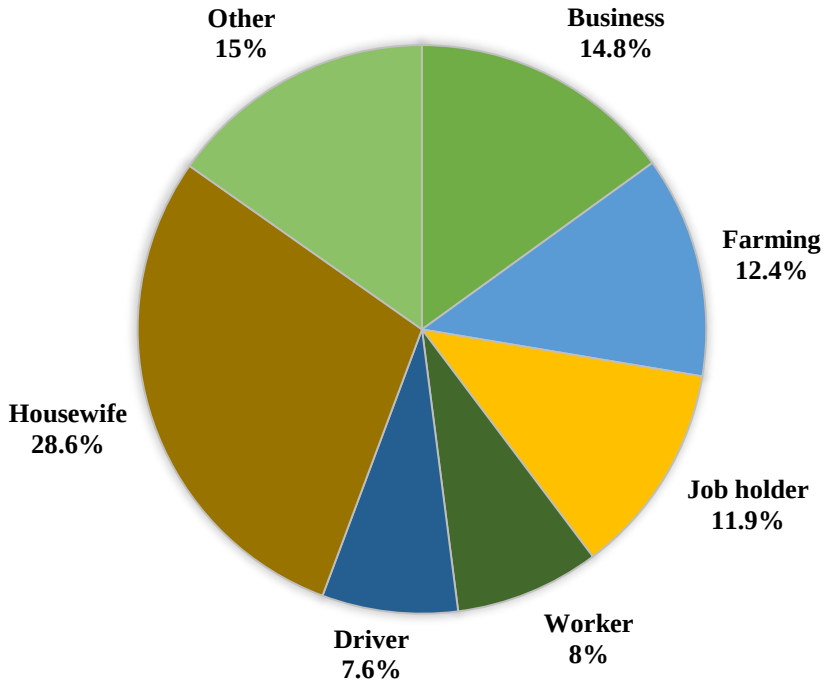

Figure 6: Occupation of the MFS users

Source: Field survey, 2021

If we look at the table 3, we can see that among family heads, the farmers and drivers (auto, van, truck) were comparatively more illiterate than all other occupations in the study area. Percentages of illiteracy were 30.8 for farmers, 25 percent driver and 17.6 percent worker in the study area during study period. The 8 percent illiterate job holder were working in saloon or as shopkeeper and they had no academic education. Drivers and workers' highest level of education were secondary level. About 25% Driver and 29.4% worker completed secondary education. Farmers highest level was graduation. Only 12% job holders, 3.2% businessmen and 8.6% other occupation (teacher, NGO worker) completed higher study among MFS users. Illiteracy rate was 6.5% among businessmen which is lowest among all other occupations. About 16.1% businessmen completed primary level, 45.2% completed secondary and 19.4% completed higher secondary level of education. The percentage of graduates were 9.7 and post graduates were 3.2%.

Table 3: Occupation wise distribution of education level of the family head

Occupation	Education level of family head (percent)					
	Illiterate	Primary	Secondary	Higher secondary	Graduate	Post graduate
Business	6.5	16.1	45.2	19.4	9.7	3.2
Driver	25.0	50.0	25.0	0	0	0
Farmer	30.8	34.6	23.1	7.7	3.8	0
Job	8.0	16.0	24.0	16.0	24.0	12.0
Worker	17.6	52.9	29.4	0	0	0
Other	17.1	28.6	14.3	14.3	17.1	8.6

Source: Field survey, 2021

Among land owners 19.6% were farmers, 19.6% were businessmen, 26.5% were housewife, 10.8% were job holders, 1% were drivers and 16.7% were teacher, bus staff, NGO worker etc.

Table 4: Occupation of land owner

Occupation	Frequency	Percent
Business	20	19.6
Driver	1	1.0
Farmer	20	19.6
Job	11	10.8
Worker	6	5.9
Housewife	27	26.5
Other	17	16.7

Source: Field survey, 2021

4.2. Determinants of saving practice of rural people during COVID-19:

Binary logistic regression was performed to assess saving practices of rural people during COVID-19. The model contained nine independent variables (age, gender, occupation, regularity of income, average monthly family income, land, saving habit, monthly income during pandemic, work during pandemic). The full model containing all predictors was statistically significant, $\chi 2$ (16, N = 210) = 134.04, $p < .001$, indicating that the model was able to distinguish between respondents who saved and did not save during COVID-19. The model as a whole explained between 47.7%

(Cox and Snell R square) and 67.5% (Nagelkerke R squared) of the variance in saving during pandemic, and correctly classified 87.9% of cases.

As shown in Table 5, total six of the independent variables made a unique statistically significant contribution to the model (age, occupation, regularity of income, average monthly family income, saving habit, monthly income during pandemic). The strongest predictor and base category of saving during pandemic was monthly income during pandemic whose income was between 21000-30000 BDT, recording an odds ratio of 14.82. This indicated that respondent whose income was between 21000-30000 BDT they were over 14 times more likely to save during pandemic than those whose income was between 0-10000 BDT, controlling for all other factors in the model. The odds ratio of 8.73 means that 11000-20000 BDT monthly income earners during pandemic were more than 8 times more likely to save during pandemic than 0-10000 BDT income earners, controlling for other factors in the model. This result consistent with a study of Horioka & Terada-Hagiwara (2012) in which they argued that income level is the determinants of savings in Asia. Also, a study of Hafeez et. al. (2010) also showed income of household as a determinant of saving in Pakistan.

Age is the predictor with significance level of .031 and .49 odds ratio. Which means that with the increase of age, respondents were less likely to save during pandemic. Occupation is another predictor. From the table we can see that job holders are .21 times less likely to save than businessmen. To clearly comprehend the result, there are currently insufficient peer-reviewed and direct-observational studies.

Regularity of income .15 odds ratio which is less than 1 means respondents who had irregular income were .15 times less likely to save during pandemic than those who had regular income. Odds ratio .14 indicates that respondents with average family income between 11000-20000 BDT were .14 times more likely to save than those with income between 0-1000 BDT. Frączek and Matula (2019) also showed that the quality of saving behavior is attributed to incomes which is consistent with the result. Respondent who had saving habit even before pandemic were .020 times more likely to save during pandemic than those who had no saving habit.

Table 5: Determinants of saving practice of rural people during COVID-19

Variable	B	Sig.	Exp(B)	95% C.I. for EXP(B)
Age	-.718	.031	.488	.254 - .936
Gender	-.317	.727	.728	.123- 4.320
Occupation				
Business		.057		
Driver	.889	.412	2.432	.292- 20.282
Farmer	.413	.656	1.511	.245- 9.306
Job	-1.533	.050	.216	.047- .999
Worker	-20.122	.998	.000	.000
Housewife	1.785	.181	5.962	.435- 81.679
Other	-1.269	.195	.281	.041- 1.915
Regularity of income	-1.881	.004	.154	.043- .541
Monthly income before pandemic				
0-10000 BDT		.040		
11000-20000	-1.907	.011	.149	.034- .648
21000-30000	-1.976	.082	.139	.015- 1.286
Monthly Income During Pandemic				
0-10000		.010		
11000-20000	2.167	.003	8.73	2.122- 35.936
21000-30000	2.696	.040	14.81	1.135- 193.423
Land	-.691	.179	.501	.183- 1.371
Work during pandemic	-.049	.940	.952	.266- 3.413
Saving habit	-3.898	.000	.020	.005- .079
Constant	7.302	.000	1483.84	

Age, Gender, occupation, Regularity of income, Monthly income before pandemic, Monthly Income During Pandemic, Land, Work during pandemic, Saving habit.

Source: Field survey, 2021

4.2.1. Sample Characteristics:

In the collinearity test, SPSS was used to calculate the degree of association between the independent variables (Wooldridge, 2013). The highest VIF value was 1.894 for the monthly income during pandemic and the lowest value of the VIF was 1.057 for the age of the participants (Table 6). The collinearity tests suggested that there was no severe multicollinearity problem among the independent variables used in the model. As for all the explanatory variables used in the model, the value of the VIF was less than ten (Table 6).

Table 6. Result of the variance inflation factor (VIF).

Variables	Variance Inflation Factor (VIF)
Age	1.057
Gender	1.527
Occupation	1.659
Regularity of income	1.338
Land	1.160
Work during pandemic	1.207
Monthly Income Before Pandemic	1.629
Monthly Income During Pandemic	1.894
Saving habit before pandemic	1.779

4.3. Factors behind rural peoples saving behaviour:

From the overall data we found that it is not common for rural people to save. Around 48.1% respondent had saving habit which is total 101 among 210 respondents. 54.5% of them had regular saving habit. Saving frequency of the people who saved were monthly saver 79.6% and weekly saver 20.4%. Saving proportion also varied, 21.9% of the respondents saved equal amount and 25.7% MFS users saving amount varied depending on situation.

Among the respondents who had saving habit most were within age of 31-45 (51.1%). This result is consistent with the study of Karpel (1995) in which he showed that individual practice saving habit throughout their lifetime, beginning slowly in their early years, peaking during forties and fifties and finally accumulating sufficient funds to retire. Respondents under 30 years of age and above 60 years were less likely to save, 44.1% and 44.4% respectively.

Table 7: Age wise saving habit

Age	Saving habit	
	Yes (%)	No (%)
16-30	44.1	55.9
31-45	51.1	48.9
46-60	48.8	51.2
above 60	44.4	55.6

Source: Field survey, 2021

This study is compatible with the findings of Fraczek (2011) that the level of savings depends on various factors such as income, interest rates, fiscal factors and demographics factors. About 43.8% respondents had regular income which had influence on saving habit. The percentage of save of regular income earners was more than irregular income earner. 65.2% regular income earners had saving habit compared to 34.8% of the irregular income earners. As for the reason of not saving of the irregular income earners, the common answer was unstable income. Around 34.7% of the respondents did not save money despite their income being regular and the reasons for not saving were; insufficient earning and some of them were simply not interested to save.

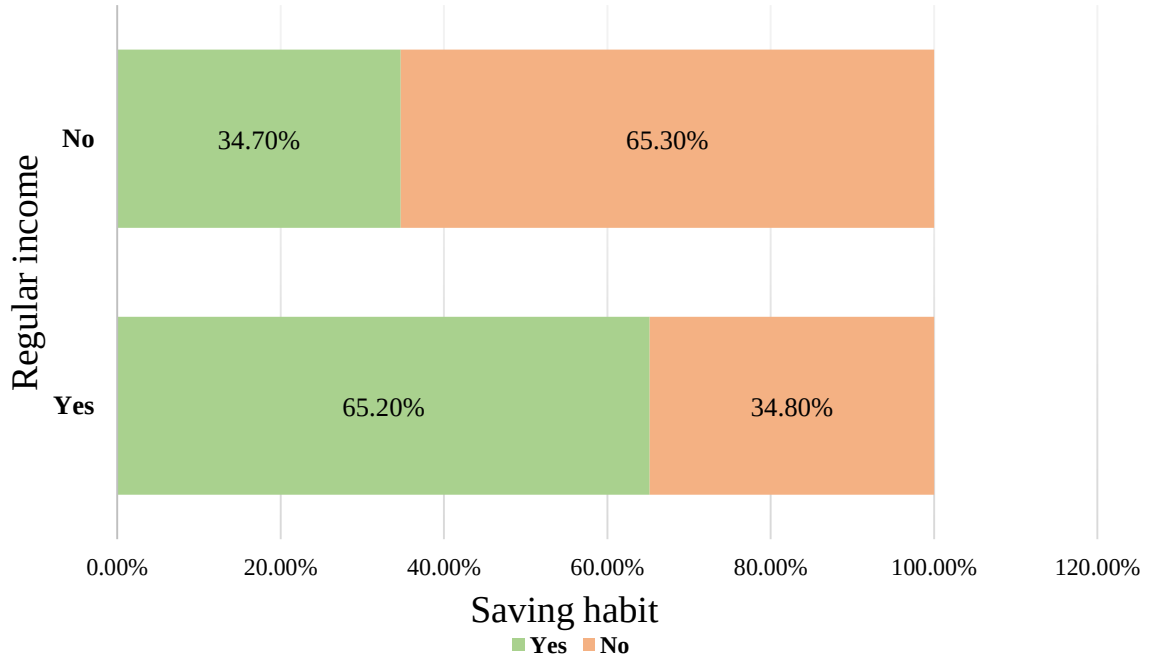

Figure 7: Saving habit in accordance to regularity of income

Source: Field survey, 2021

Income amount has also influence on saving habit. 32.2% among the respondents whose income were between BDT 0-10000 had saving habit. The percentage of saver increased as income increased. 50% of the respondent whose family income were between BDT 11000-20000 saved a portion of their income. Highest percentage was 72.4% and their income were between BDT 21000-30000. Their monthly saving amount also vary according to income. BDT 0-10000 income earners average monthly saving amount BDT 1500, BDT 11000-20000 earners average monthly saving amount BDT 2017 and BDT 21000-30000 earners average monthly saving amount BDT 3404.

Table 8: Family income wise saving habit and saving amount

Family income (BDT)	Saving habit	Average Monthly Saving Amount
0-10000	32.2%	1500
11000-20000	50.0%	2017.24
21000-30000	72.4%	3404.76

Source: Field survey, 2021

Another factor that has influence on saving habit was debt of individuals. 63% of the respondents who had no debt had saving habit compared to 32.4% of respondent who were in debt.

Table 9: Debt and saving habit

Debt	Saving habit			
	Yes	Frequency	No	Frequency
Yes	32.4%	33	67.6%	69
No	63.0%	68	37.0%	40

Source: Field survey, 2021

From the table 10 we can see that among the people who had saving habit 25.7% were businessmen, 5% of drivers, 14.9% farmer, 16.8% job holder, 5.9% daily worker and 20.8% were housewives. So, compared to other occupations housewives saved more. Around 65.4% of businessman of the study area used bank as their saving channel and 53.8% had regular saving habit. Drivers used informal saving channel like NGO or kept the money at home. Their saving pattern were irregular as they had no stable income. Only 6.7% farmer and 9.1% bus staff, teacher used MFS as saving

channel. About 73.3% of the farmers choose informal saving channel. 20% of them used Bank as saving channel. As for their saving pattern, 66.7% of the farmers saved irregularly. Among job holders 64.7% used bank and 35.3% used informal channel as saving channel. Saving pattern of job holders were mostly regular, about 52.9% saved regularly. Among the workers 66.7% saved informally. 33.3% saved regularly. 57.1% of housewives saved in bank and 52.9% of them saved regularly.

Table 10: Occupation wise saving habit, channel of save and saving pattern

Occupation	Saving habit	Channel of Save			Saving Pattern	
	Percent	Bank	MFS	Other	Regular	Irregular
Business	25.7	65.4		34.6	53.8	46.2
Driver	5.0			100	60	40
Farmer	14.9	20	6.7	73.3	33.3	66.7
Job	16.8	64.7		35.3	52.9	47.1
Worker	5.9	33.3		66.7	33.3	66.7
Housewife	20.8	57.1		42.9	81	19
Other	10.9	63.6	9.1	27.3	45.5	54.5

Source: Field survey, 2021

Among respondents, 55.2% considered that Mobile Financial Service charge is high. From the table 11, we can also see that only people under age 30 use MFS as saving channel (6.7%) and 55.9% among them considered the service charge is high. Respondents above 30 years of age use other channel like NGO or personal saving at home and most of them also think that the service charge is high. Most of the participant, be it age or occupation, their preferable channel of save were Bank and informal saving channel (NGO, home saving). This result can be explained in the light of the study of Sharma and Singh (2009) and Siddiquie (2014) that Bangladeshi mobile banking users mainly rural people are concern with security issues like financial frauds, account misuse and user friendliness issue, limited access to information technology and that leads to limited trust on technology.

Table 11: Age wise saving channel of respondents

Age	Medium of save			Service charge high	
	MFS (%)	Bank (%)	Other (%)	Yes (%)	No (%)
16-30	6.7	63.3	30	55.9	44.1
31-45	0	48.9	51.1	57.6	42.4
46-60	0	45	55	56.1	43.9
above 60	0	25	75		

Source: Field survey, 2021

The MFS users' main reason for saving was to handle any kind of emergency situation (70.3%) like health emergency, food emergency, accidents etc., which is consistent with the one of the seven reasons of savings, i.e., Save for emergency funds provided by Balance (2016). About 69.3% respondent saved for future use which is consistent with the result of the study of Ahsan (2016) which showed, the main cause of human saving is that the having future security. 39.6% respondent saved for education of the family member (children, siblings etc.) and 16.8% people saved for marriage of their children. Around 73.3% respondents chose multiple reason among which emergency situation and future use were common.

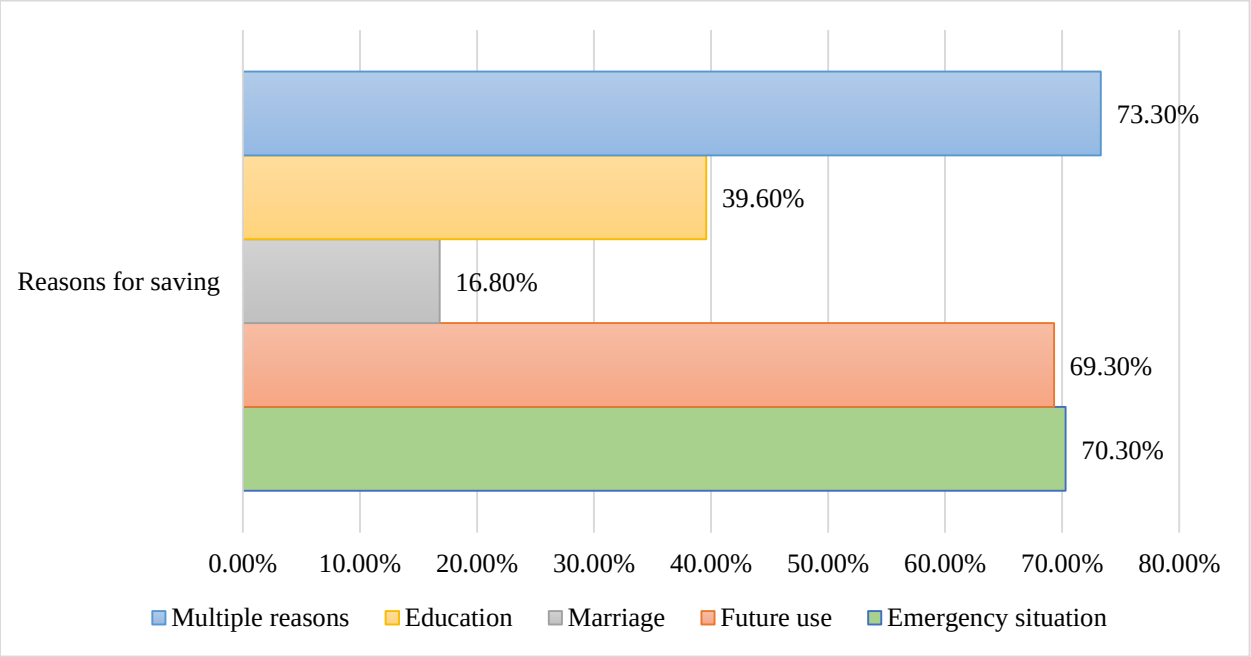

Figure 8: Reasons for saving of MFS users

Source: Field survey, 2021

4.4. Rural people situation of using MFS during COVID-19:

Mobile Financial Service has reached more rural people recently. As for the reason of using MFS 45.7% (96) respondents stated that it is easy and convenient which is consistent with the finding of Ahmed (2018) that, customers have positive attitude towards mobile financial services as it makes their life easy and also for convenience of. 80.5% (169) responded that it is easy to withdraw money and only 1.9% (4) stated that it was safe for saving. People frequently used options like send money (19.5%), cash out (96.2%), bill pay (0.5%), save money (0.5%) and transfer money (14.8%). Around 25.2% respondent believed that using MFS helped them to avoid unnecessary spending, 19.5% of them could not avoid unnecessary spending and 55.2% respondent were not sure about it. About 99% respondent stated that they can find cash out point near them which is also consistent with the study of Ahmed (2018) that availability of agents points is one of the reasons for having positive attitude towards MFS. Among participants' 10.5% faced difficulty in operating MFS.

From the figure 9, we can see that 59% people started using mobile financial service from 2 years ago to most recent 1 week ago. Which indicates that during COVID-19 more people started using mobile financial service. Around 31.4% people started using MFS 3-5 years ago, 6-8 years ago 8.1% respondents started using it and 1.4% respondents had been using MFS more than 8 years.

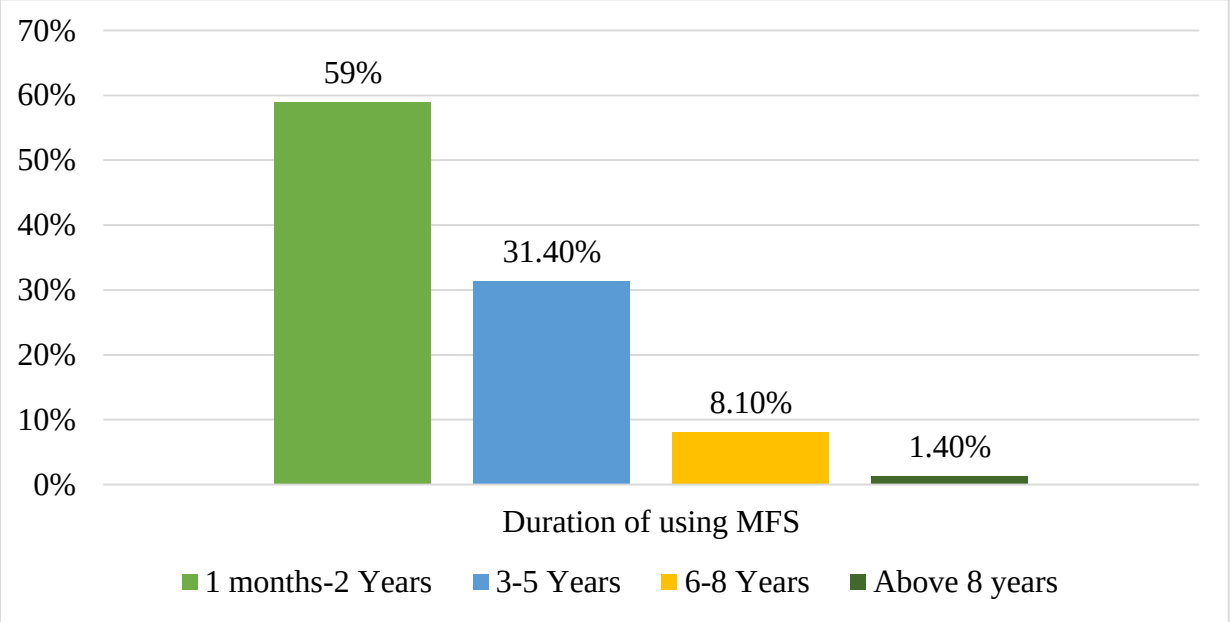

Figure 9: Duration of using MFS

Source: Field survey, 2021

Bangladesh government granted incentive for rural poor people during pandemic. Among the respondent 59.5% knew about the incentive. From the table 12, we can see that, 64% of the respondents who knew about the incentive started using MFS during COVID-19 (0-2 y). So, it can be said that govt. incentive had influence on MFS industry as it gained more customer and could reach rural people more. Around 26.4% respondent started using it 3-5 years ago, 7.2% respondent started 6-8 years ago and 2.4% of the people with incentive information are the user for more than 8 years.

Table 12: Duration of using MFS and government incentive information

Government incentive information	**Duration of using MFS**			
	0-2 years	3-5 years	6-8 years	Above 8 years
Yes (59.5%)	64.0%	26.4%	7.2%	2.4%
No (40.5%)	51.8%	38.8%	9.4%	0

Source: Field survey, 2021

A down side of MFS is that respondents still not comfortable to save using MFS. As we can see from the figure 10, only 2% respondent saved using MFS and 46.5% respondent saved informally (own, NGO). Bank still rule over as safe saving instrument, around 51.5% MFS users still used bank as their channel of save.

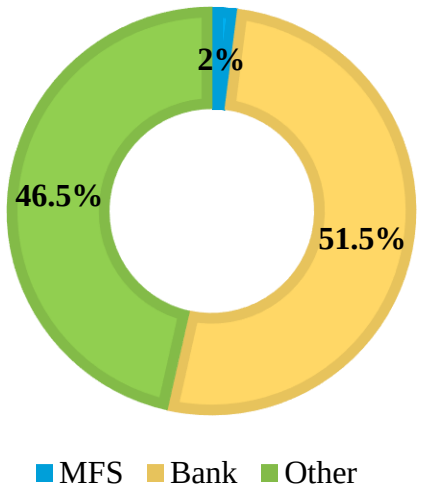

Figure 10: Channel of save of the participants

Source: Field survey, 2021

4.5. Situation of farmers:

Table 13. Shows the situation of the farmers of study area, Among the MFS users, 12.4% (26) were farmers. 76.9% of them had land to cultivate and 88.5% had work during pandemic. 57.7% had saving habit. But 46.2% stated that service charge of MFS is high. As stated before we know that, Bangladesh government granted incentive for rural poor people during pandemic. Although the news reached most of the farmers (61.5%), only 37.5% of the farmers received the incentive. Which is concerning. The importance of root level monitoring should be emphasized in order for the government incentive to reach all people through this service.

Table 13: Situation of farmers

Variables	Yes	No
Saving habit	57.7	42.3
Work during pandemic	88.5	11.5
Land holding	76.9	23.1
Service charge high	46.2	53.8
Govt. incentive knowledge	61.5	38.5
Govt. incentive received	37.5	62.5

CHAPTER 5. SUMMARY, CONCLUSION AND POLICY IMPLICATION

The present chapter focuses on the summary in the light of the discussions made in the earlier chapters. Conclusion has been made on the basis of study result. Policy recommendations are illustrated for improvement of the current situation of saving habit of rural people of Bangladesh.

5.1 Summary of Findings

The major findings of the study are summarized below:

5.1.1 Socio-demographic characteristics of the respondents

Age

Average age of the respondents were 37 years with minimum age of 15 and maximum 80 years. The highest portion (43.8%) were 31-45 years old where 32.4% were 16-30 years old and 4.3% year above 60 years old.

Education

The highest portion (29%) of the respondents have a primary level of education where 27.6% have a secondary level of education and 18.6% are illiterate.

Illiteracy rate were highest among farmers (30.8%) and lowest among businessmen. Highest level of education was mostly completed by job holders (12%) and businessmen (3.2%).

Total dependent on family head

The average number of dependent on family head is 3.12, while the maximum is 9 members.

Occupation

Most of the respondents (28.6%) were housewife where 14.8% were businessman,12.4% were farmers, 11.9% were job holders in the study area.

Land

- Average size of the land holding was 0.133 acre with highest 0.330 acre and lowest 0.17 acre.

- Among land owners' housewives were highest (26.5%) then were businessmen and farmers (19.6%).

5.1.2 Determinants of saving practice of rural people during COVID-19:

- Saving practice of rural people decreased during pandemic.
- Age was one of the determinants. With the increase of age, respondents were less likely to save during pandemic.
- Occupation was another predictor. Job holders were less likely to save than businessmen.
- Respondents who had irregular income were less likely to save during pandemic than those who had regular income.
- Respondents with higher average family income were more likely to save than those with lower average family income.

5.1.3 Factors behind Rural peoples saving behaviour:

- 48.1% respondent had saving habit.
- 54.5% of them had regular saving habit.
- Saving frequency were: monthly saver 79.6% and weekly saver 20.4%.
- Saving proportion also varied, 21.9% of the respondents saved equal amount every time.
- 63% of the respondents who had no debt had saving habit compared to 32.4% of respondent who were in debt.

5.1.3.1 Saving habit in accordance to regularity of income

- 65.2% regular income earners had saving habit
- 34.8% of the irregular income earners had saving habit
- 34.7% of the respondents did not save money despite their income being regular and the reasons for not saving were; insufficient earning and some of them were simply not interested to save.

5.1.3.2. Occupation wise saving habit, channel of save and saving pattern

- 25.7% of businessmen of the study areas had saving habit and they relied more on bank (65.4%). Most of them had regular saving habit (53.8%).

- Only 5% of drivers had saving habit and they used informal saving channel like NGO or kept the money at home.
- Only 6.7% farmer and 9.1% bus staff, teacher used MFS as saving channel.
- Among respondents, 55.2% considered that Mobile Financial Service charge is high.
- Respondent above 30 years of age does not use MFS at all. They use NGO, personal saving at home mainly.

5.1.3.3. Reasons for saving of MFS users

The MFS users' main reason for saving was

- To handle any kind of emergency situation (70.3%) like health emergency, food emergency, accidents etc.
- For future use, about 69.3% respondent.

5.1.4. Rural people situation of using MFS during COVID-19:

- As for the reason of using MFS 45.7% (96) respondents stated that it is easy and convenient, 80.5% (169) responded that it is easy to withdraw money.
- Around 25.2% respondent believed that using MFS helped them to avoid unnecessary spending.
- 10.5% faced difficulty in operating MFS.
- Government incentive had influence on MFS industry as it gained more customer and could reach rural people more during COVID-19. 64% of the respondents who knew about the incentive started using MFS (0-2 years).
- A down side of MFS is that respondents still not comfortable to save using MFS. Only 2% respondent saved using MFS and 46.5% respondent saved informally (own, NGO). Bank still rule over as safe saving instrument, around 51.5% MFS users still used bank as their channel of save.

5.1.5. Situation of farmers during pandemic

- 88.5% of the farmers had work during pandemic.
- 57.7% farmers had saving habit.
- Only 37.5% of the farmers received incentive.

5.2. Conclusion:

This paper presents an overall situation of using MFS of rural people, saving behaviour of rural MFS users, factors impacting them and impact of COVID-19 on these factors. Based on the findings achieved through quantitative and qualitative analysis, the study conclusions are drawn. This study shows that saving of rural people decreased during pandemic and age, occupation, regularity of income, average monthly family income, saving habit, monthly income during pandemic has significant impact on saving behaviour of MFS users. With the increase of age, respondents were less likely to save during pandemic. Users who had irregular income were less likely to save during pandemic than those who had regular income. Respondent who had saving habit even before pandemic were more likely to save during pandemic than those who had no saving habit.

Savings is not common among rural people since they are preoccupied with day-to-day life. Regularity of income was the significant influence of saving. The percentage of regular income earners was more than irregular income earner. But some of the respondents did not save money despite their income being regular and the reasons for not saving were; insufficient earning and some of them were simply not interested to save. Income amount has also influence on saving habit of MFS users. Respondent with higher income tend to have saving habit. Saving habit and debt of respondent were negatively related. Which means, if one had debt, he/she was less likely to save. Main reasons for saving were to handle any kind of emergency situation like health emergency, food emergency, accidents etc., for future use, for education of the family member (children, siblings etc.) and for marriage of their children. Mobile Financial Service has reached more rural people recently. As for the reason of using MFS, respondents stated that it is easy & convenient and easy to withdraw money, During COVID-19 more people started using mobile financial service and govt. incentive had influence behind it. Rural people could find cash out points easily which is another positive point for MFS industry as it could reach rural people more. But people still did not save using MFS. This study would contribute to knowledge about saving behavior of people of Bangladesh and create a basis for further research in this field which is crucial for the Govt. of Bangladesh for policy making and strategic planning.

5.3. Policy Implications

On the basis of observation and conclusions drawn from the findings of the study following suggestions are made.

1. The Mobile Financial Service business should focus on establishing trust with rural people in regards to saving, particularly among the elderly (above 30 years of age). They should hold different events to develop trust.
2. Service charge of mobile financial service companies is high. Because MFS serves a large number of really poor individuals, the operators should review their fees.
3. The mobile financial services industry should undertake initiatives to encourage users to open personal accounts.
4. Rural residents should be encouraged to save more in formal than informal channel.
5. Emphasis on Mobile Financial Service industry should be given as it can be the answer to the economic problem.

REFERENCE

Agur, I., Peria, S. M. & Rochon, C. (2020). Digital Financial Services and the Pandemic: Opportunities and Risks for Emerging and Developing Economies. *International Monetary Fund*.

Ahmed, S.M.S., Rayhan, S.J., Islam, M.A. & Mahjabin, S. (2011). "Problems and prospects of mobile banking in Bangladesh". *Journal of Information Engineering and Applications*. Vol 1, No.6, 2011

Ahmed, R. (2018). Mobile Financial Services (MFS) in Bangladesh: Measuring Its Consumers' Attitude & Its Role on Buying Decisions of Other Company's Products of the Consumers. Available at SSRN: https://ssrn.com/abstract=3170571 or http://dx.doi.org/10.2139/ssrn.3170571

Ahsan, M.K. (2016). Why do People have the Saving Behavior? A Reference from Sylhet City. *ABC Journal of Advanced Research, 5, 77-90*. Available online: http://hdl.handle.net/20.500.11903/jar.v5n2.3

Akhter, N. & Khalily, M.A.B. (2020). An Analysis of Mobile Financial Services and Financial Inclusion in Bangladesh. *Indian Journal of Human Development*. Sage Journals.

Alam, R. (2020). "COVID-19 Impact: Industries Experiencing Growth Due to the Pandemic". *Light castle partner*. Available online: https://www.lightcastlebd.com/insights/2020/06/17/covid-19-impact-industries-experiencing-growth-due-to-the-pandemic

Allen, F., C. Elena, C. Robert, Q. Jun, S. Lemma and V. Patricio. (2014). The African Financial Development and Financial Inclusion Gaps. *Journal of African Economies.*

Amalia, N.R. (2018). Multicollinearity Test in Regression Analysis. *Quality Engineering and Data Analysis Laboratory*. Available at: https://lab_adrk.ub.ac.id/multicollinearity-test-in-regression-analysis/

Ashta, A. (2010). Evolution of Mobile Banking Regulations. Retrieved from: http://www.arraydev.com/commerce/JIBC/0306-04.htm

Baldwin, R., & Mauro, B. W. di. (Ed.). (2020). *Economics in the Time of Covid-19*. London: CEPR Press.

Bangladesh Bureau of Statistics (2020). Bangladesh Gross Savings Rate, *CEIC*. Available online: https://www.ceicdata.com/en/indicator/bangladesh/gross-savings-rate#:~:text=Bangladesh's%20Gross%20Savings%20Rate%20was,an%20average%20rate%20of%2029.2%20%25.

Bangladesh National Portal (2021). Mymensingh district. Available online: http://www.mymensingh.gov.bd/site/page/3012283d-1e86-11e7-8f57-286ed488c766/%E0%A6%8F%E0%A6%95%20%E0%A6%A8%E0%A6%9C%E0%A6%B0%E0%A7%87%20%E0%A6%9C%E0%A7%87%E0%A6%B2%E0%A6%BE

Barnett, V. (1991). *Sample Survey Principals and Methods*. London. Edward Arnold Publishers Ltd.

Batista, C. and Vincente, P. C. (2017). Improving Access to Savings through Mobile Money: Experimental Evidence from Smallholder Farmers in Mozambique. Mimeo, *Universidade Nova de Lisboa*.

Bernheim, B. D., (1991). The Vanishing Nest Egg: Reflection on Saving in America. *New York: Priority Press Publications.*

Bell, J. (2005). Doing Your Research Project, Berkshire. *Open University Press/McGraw-Hill Education Bangladesh National Portal*. Available online: http://www.mymensingh.gov.bd/site/page/3012283d-1e86-11e7-8f57-286ed488c766/%E0%A6%8F%E0%A6%95%20%E0%A6%A8%E0%A6%9C%E0%A6%B0%E0%A7%87%20%E0%A6%9C%E0%A7%87%E0%A6%B2%E0%A6%BE]

Brown, R.B. (2006). Doing Your Dissertation in Business and Management: The Reality of Research and Writing. Sage Publications

Canuto, O. (2020). The Impact of Coronavirus on the Global Economy. *Policy Center for The New South*

Casely, D. and Kumar, K. (1988). The Collection Analysis and Use of Monitoring and Evaluation Data. Baltimore, *The Johns Hopkins University Press*.

Casely, D. and Lury, D.A. (1981). Data Collection in Developing Countries. Oxford Clarendon Press.

Check, J., Schutt, R. K. (2012). Survey research. In: J. Check, R. K. Schutt., editors. *Research methods in Education*. Thousand Oaks, CA:: Sage Publications; pp. 159–185.

C-Kunt, D., Asli, Klapper, L., Singer, D., Ansar, S. and Hess, J. (2018). "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution." Washington, DC: World Bank

Frączek, B. & Matuła, A. (2019). Knowledge and Behaviour in the Field of Saving by Young with Asperger Syndrome. *Challenges for Financial Education. Future Human Image*. 11.22-31. 10.29202/fhi/11/3.

Fraczek, B. (2011). *The factors affecting the level of household savings and their influence on economy development*, 8th International scientific conference financial management of firms and financial institutions, Ostrava VŠB-TU Ostrava, Faculty of economics, finance department 6th – 7th September 2011.

Horioka, Ch. & Terada-Hagiwara, A. (2012). *The determinants and long-term projections of saving rates in Developing Asia, Japan and the World Economy*, 24 (2), pp-128-137.

Ismaila, S., Kamisa, R., Hashima, N., Harunb, H., Khairuddin, N.S. (2013). An Empirical Investigation on Determinants of Attitude towards Saving Behavior. *International Conference on Economics and Business Research (ICEBR)*; Elsvier

Islam, S.T. & Divadkar, Y.N. (2020). How Bangladesh's leaders should respond to the economic threats of COVID-19. *World Economic Forum COVID Action Platform*. Available online: https://www.weforum.org/agenda/2020/04/covid-19-coronavirus-bangladesh/

Islam, R. (2021). Coronaghatay Orthoniti O Shromobazar (Corona blow to the economy and labour market). Batighar

Islam, M.S., Hussain, S. (2021). The impact of COVID-19 on Global FDI and Bangladesh Economy. *The Daily Star*. Available at: https://www.thedailystar.net/law-our-rights/news/the-impact-covid-19-global-fdi-and-bangladesh-economy-2102717

Islam, M.Z. (2020). Payout of safety net funds through MFS to enhance transparency. *The Daily Star*. Available online: https://www.thedailystar.net/business/news/payout-safety-net-funds-through-mfs-enhance-transparency-1903234

Jones, L., Palumbo, D. & Brown, D. (2021). Coronavirus: How the pandemic has changed the world economy. BBC News. Available at: https://www.bbc.com/news/business-51706225

Josh H. (2021). Tracking Coronavirus Vaccinations Around the World. *The New York Times*. available at: https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html

Janssen M, Chang B.P.I., Hristov H., Pravst I., Profeta A. and Millard J. (2021); Changes in Food Consumption During the COVID-19 Pandemic: Analysis of Consumer Survey Data From the First Lockdown Period in Denmark, Germany, and Slovenia. *Frontiers in Nutrition*; 8:635859. Available at: https://doi.org/10.3389/fnut.2021.635859

Jackson, S.L. (2011). Research Methods and Statistics: A Critical Approach. 4th edition, Cengage Learning, p.17

Keynes, J.M (1936). The general theory of employment interest and money. London: Macmillan.

Karpel, C. S.(1995). The Retirement Myth. New York: Harper Collins.

Kinnear, J. and Taylor, J. (1987). Marketing Research: An Applied Approach. Singapore, McGraw- Hill Book Co.

Katona, G. (1975). *Psychological economics*. Elseveir Scientific Publishing Company: New York.

Laforet, S., & Li, X. (2005). Consumers' Attitudes toward Online and Mobile Banking in China. *International Journal of Bank Marketing*. 23.5., pp.362-380.

Lee, Jean N., Jonathan Morduch, Saravana Ravindran, Abu Shonchoy, and Hassan Zaman. (2021). Poverty and Migration in the Digital Age: Experimental Evidence on Mobile Banking in Bangladesh. *American Economic Journal*: Applied Economics, 13 (1): 38-71.

Martin and Lusardi A., (1996). Household Saving: Micro Theories and Micro facts. Journal of Economic Literature, Vol. 34, pp. 1797-1855.

Mahmood, M. (2020). Covid-19: Economic challenges facing Bangladesh. *The Financial Express.*

Messele, G. (2015). Assessment of Factors affecting Saving Practices of Members of Rural Saving and Credit Cooperatives. The case of Gamo Gofa zone, SNNPRS.

Modigliani, F. and Brumbergh, R. (1954). Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data. In Brunswick, N.J: Rutgers University Press.

Mujeri, K.M. & Chowdhury, T.T.. (2013). Savings and Investment Estimates in Bangladesh: Some Issues and Perspectives in the Context of an Open Economy. Bangladesh Institute of Development Studies.

Mani A. Nandhi. (2012). Effects of Mobile Banking on the Savings Practices of Low-Income Users - The Indian Experience. IMTFI Working Paper 2012-7

Mannan, S.A. (2001). An analysis of agro-economic potentials of jute production in Bangladesh. Ph. D. thesis, Bangladesh Agricultural University. Mymensingh.

Nabi, M. T., Saha, M., Sutradhar, P., Rama, Ayesha ‐ E ‐ Fahmida, Chen, C. & Banerjee, S. (2012). Mobile Financial Services in Bangladesh: An Overview of Market Development. Policy Paper. Bangladesh Bank.

Our World in Data, (2021). Coronavirus (COVID-19) Vaccinations. Statistics and Research; GCDL; available at: https://ourworldindata.org/covid-vaccinations

Parvez, J., Islam, A. & Woodard, J. (2015). *Mobile Financial Services in Bangladesh: A Survey of Current Services, Regulations, and Usage in Select USAID Projects.* Market Links, USAID.

Rahman, M.M. & Uddin, M.T. (2012). Saving Mobilization and Its Impact on Economic Growth: A Case Study on Bangladesh. *International Journal of Business and Management Studies*. CD-ROM. ISSN: 2158-1479::*1(3):239–253*

Rahman, M.M. & Uddin, M.T. (2012). Saving Mobilization and Its Impact on Economic Growth: A Case Study on Bangladesh. *International Journal of Business and Management Studies*. CD-ROM. ISSN: 2158-1479::*1(3):239–253*

Rahman, M.Z. (2000). Effect of spacing on the growth, yield and storability of some garlic

Germplasm. M.S. in Horticulture thesis, Bangladesh Agricultural University, Mymensingh.

Rahman, M.S., Karamehic, M. A., Amrin, M., Chowdhury, A.H., Mondol, M.S., Haque, U., Ali, P. (2020). COVID-19 Epidemicin Bangladesh among Rural and Urban Residents: An Online Cross-Sectional Survey of Knowledge, Attitudes, and Practices. *Epidemiologia* 2021, 2, 1–13.

Rahman, M. R., S, Emran, H. C., Ishtiak, M., Anik B., Rahul B., Hasan A., (2021). Present scenario of COVID-19 in Bangladesh and government preparedness for facing challenges. *Journal of Advanced Biotechnology and Experimental Therapeutics*. 4(2): 187-199 eISSN: 2616-4760, available at: https://doi.org/10.5455/jabet.2021.d119

Rezoyana, K.R., Rakibur, R., Anwarul, A. S. M. H., and Gazi, M. A. J., 2019. Productivity and resource use efficiency of tiger shrimp farming in some selected areas of Bagerhat district in Bangladesh. *Asia-Pacific Journal of Rural Development*, vol 29, no. 1, pp. 7-19.

Sarker, M.M.R. and Fagun, A.N. (2021). COVID-19, Food Security, Food Prices and Urban-rural Interrelationship for Sustainable Food and Nutritional Security: A Study on Dhaka City. *International Journal of Agricultural Economics*. Vol. 6, No. 1, 2021, pp. 47-58. doi: 10.11648/j.ijae.20210601.16

Siddiquee, M.S.H., Faruk, A. (2020). COVID-19's Impact on Bangladesh Economy. Brac Institute of Governance and Development

Siddiquie, M.R. (2014). Scopes and threats of Mobile Financial services in Bangladesh. IOSR *Journal of Economics and Finance* (IOSR-JEF) e-ISSN: 2321-5933, p-ISSN: 2321-5925.*Volume 4, Issue 4. (Jul-Aug. 2014), PP 36-39*

Scheaffer, R. (1979). *Elementary Survey Sampling*. Massachusetts, USA, Duxbury Press.

Serge Ky, S., Rugemintwari, C. & Sauviat, A. (2017). Does Mobile Money Affect Saving Behavior? Evidence from a Developing Country. *ffhal-01360028v2f*

Sharma, P. and Singh, P., (2009). Users' Perception About Mobile Banking- With Special Reference to Dhaka and Around. *Review of business and Technology Research*, Vol.2, 1, pp. 1-5

Suoranta, M. (2003). Adoption of Mobile Banking in Finland. *Jyvaskyla Studies in Business and Economics*, 28.

Tabassam, R. (2020). Fintech Mobile Financial Service: Mobile Wallet for Easy Money Transfer, Payment & Savings in Bangladesh. *United News of Bangladesh (UNB).* Available online: https://unb.com.bd/category/Business/fintech-Mobile Financial Service-mobile-wallet-for- easy-money-transfer-payment-savings-in-bangladesh/43453

Tiwari, A. & Islam, J. (2020). The DFS ecosystem in Bangladesh. *The financial express.*

Time for Mobile Financial Service providers to shine. (2020). Taming coronavirus rampage. *The Daily Star*. Available online: https://Www.Thedailystar.Net/Business/News/Time-Mobile Financial Service-Providers-Shine-1896877

The World's Fourth-Largest Economy Is Going Cashless. (2019). *Fortune*. Available online: https://fortune.com/2019/12/04/southeast-asia-mobile-payments-cashless-ksher/

The Balance. (2016). Seven reason for saving. [Online] Available: https://www.thebalance.com/learn-the-most-important-reasons-to-save-money-2386123, [Accessed: December 10, 2016]

Thomas, F. (2010). Do Believe the Hype. *New York Times*; The Central Intelligence Agency. CIA. .2013. CIA World Fact book, Economic and Social Statistics of Bangladesh; Online. Retrieved from: https://www.cia.gov/index.html

Top 10 Things You Didn't Know About Money. (2020). *Time*. Available online: http://content.time.com/time/specials/packages/article/0,28804,1914560_1914558_1914544,00.html

Unnithan, C.R. and Swatman, P. (2001). Online Banking Adoption and Dot. Com Viability: A Comparison of Australian and Indian Experiences in the Banking Sector. *School of Management Information Systems*, Deakin University, No. 14.

Webster, A. (2013). Autocorrelation. *In Introductory Regression Analysis*. pp. 278-310. Routledge.

Wooldridge, J. M. (2013). Introductory econometrics: A modern approach. 6th ed. Cengage learning, United States of America.

World Health Organization. (2020). *Coronavirus disease (COVID-19) Q&A*. Available online: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers- hub/q-a-detail/q-a-coronaviruses

World Health Organization. (2020). COVID-19 strategy update. *Who.int. 2020*. Available from: https://www.who.int/publications/i/item/covid-19-strategy-update—14-april-2020

Worldometer. (2020). *Covid-19 coronavirus pandemic.* Available online: https://www.worldometers.info/coronavirus/?utm_campaign=homeAdvegas1?

World Bank. (2020). World Bank Group COVID-19 Crisis Response. Infographic; WB; IBRB-IDA.

World Bank, (2020). The Global Economic Outlook During the COVID-19 Pandemic: A Changed World; Available at: https://www.worldbank.org/en/news/feature/2020/06/08/the-global-economic-outlook-during-the-covid-19-pandemic-a-changed-world

World Bank. (2021). The World Bank in Bangladesh; available at: https://www.worldbank.org/en/country/bangladesh/overview#1

Wu, S. (2020). Multicollinearity in Regression; Why it is a problem? How to check and fix it. *Towards Data Science (TDS).* Available at: https://towardsdatascience.com/multi-collinearity-in-regression-fe7a2c1467ea

Yang, N. Y. (1965). Methods of Farm Management Investigation for Improving Farm Productivity. FAO, Rome, Italy.