

**Regulatory Challenges and Social Opportunities of Financial Inclusion
through FinTech in Developing Countries with Reference to
Bangladesh**

by

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Certification

I, KHANAM, Mosammad Jamia Jannat (Student ID: 51218623) hereby declare that the contents of this Master's Thesis are original and true, and have not been submitted at any other university or educational institution for the award of degree or diploma.

All the information derived from other published or unpublished sources has been cited and acknowledged appropriately.

Khanam, Mosammad Jamia Jannat
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Abstract

Bangladesh observed an upward trend in socio-economic development since 2000. Several researchers argue that financial inclusion by microfinance organizations helps to achieve constant growth. But it was also found that still, one-third of the population remains unbanked and one-fourth of the population remains under the national poverty line and over 40 percent population live under multidimensional poverty. These statistics become puzzled, where financial inclusion increasing over time, but a large number of populations remain unbanked and poor.

In the process of investigating the puzzle, this research developed an analytical framework to identify the barrier of the current financial institute, then we argue that Financial Technology (FinTech) has the potentiality to ease the barrier of the current financial institution and Financial inclusion. To assess the potentiality of Fintech in financial inclusion this research used the Schumpeterian Rent model approach. This research also used Sen's capability approach to see, to what extent financial inclusion helps poor people to get rid of poverty.

Based on the analysis, this research finds that the low level of financial inclusion due to the drawback of both supply (financial institute) and demand (clients) side. By using the Schumpeterian Rent model, this research finds that Fintech has the potentiality to increase financial inclusion in our society. This research also, identified that financial inclusion can reduce poverty but not in direct rather in an indirect way through creating capability.

In relying on the findings of this research, we provide some policy recommendations, which will help to expand financial inclusion.

1 Chapter 1: Introduction

1.1 Background of the Research

Bangladesh starts its journey as an independent country in 1971. It is a small country in Southeast Asia with the three-side (east, west, and north) are locked by India and the south is locked with the Bay of Bengal. But in counting the population, Bangladesh is the eighth-largest country in the world (Barai, 2020). After became independent from Pakistan in 1971, Bangladesh's socio-economic condition became one of the worsts countries in the world in terms of income, poverty, child mortality, and school enrollment rates (Sawada, Mahmud, and Kitano, 2018). Hence, several researchers such as Smith and Keefer (2005) considered as “*Basket Case*” of development and Faaland and Parkinson (1975) called “*Test case of Development*”. Even though a number of researcher categories Bangladesh as a bottomless case or hopeless case, now it enjoys a constraint economic growth more than 6 percent per year for more than last one decade (BBS, 2018).

The socio-economic condition has been improved at a drastic rate since the 1980s. In 1971, the per capita GDP was only US\$131 and by 2017 per capita GDP stood up at US \$1516. The Human Development Index (HDI) also increased at a remarkable rate, the HDI value was 0.386 in 1990 and the value increased to 0.579 by 2015. The life expectancy raised at 72.8 years, literacy rate reached to 72.3 percent, the poverty rate decreased to 21.8 percent and the extreme poverty rate dropped to 11.3 percent. According to Barai (2020), the Bangladesh economy size was US \$300 billion in 2018 and it is expected to be US \$700 billion by 2030. By observing the successful transformation, several researchers such as Asadullah et al., (2014) refers Bangladesh as the “*Development Surprise*”; Hossain (2017) refers Bangladesh improvement as “*Unexpected Success*” or “*Bangladesh Paradox*”; and Sawada et al., (2018) mention as “*Development Miracle*”.

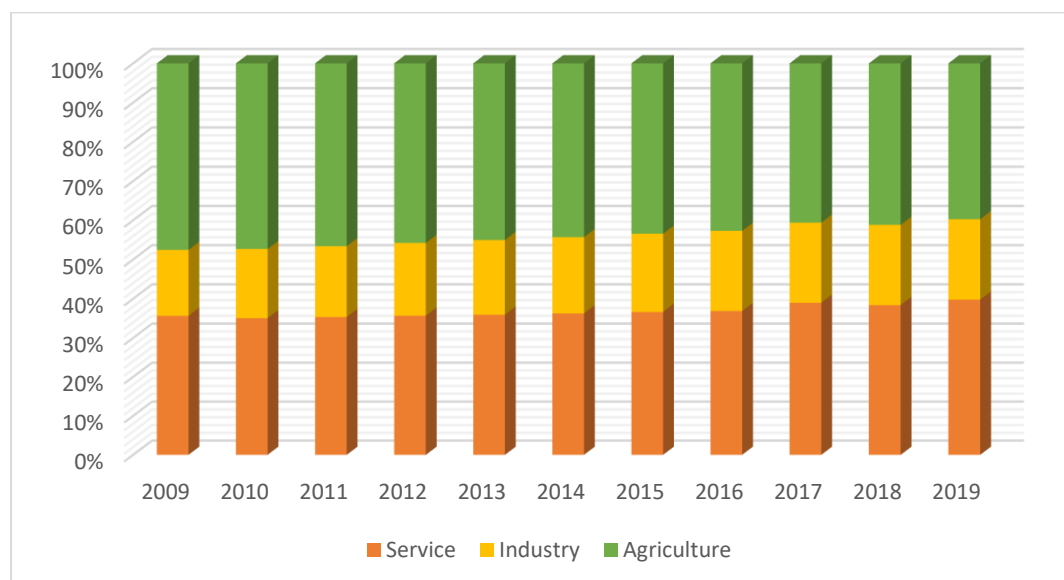
The remarkable success of Bangladesh has been accelerated through different inter-sectoral transformations and structural transformation. The intersectoral transformation consists of transferring resources from low productivity to high productivity sectors and structural transforming consist of changing the focus of one sector to other sectors. Mahmud, et al., (2018) provides some example of inter-sectoral transformation such as reallocation of relatively low-skilled laborers from the agricultural to the non-agricultural sector, and labor from rural to urban areas, and Sawada, Mahmud, and Kitano, (2018) provide an example of structural changes; transformation a farm-based to the non-farm-based economy and the industrial transformation from the domestic informal sector to formal export-oriented manufacturing sectors.

Based on the statistics, in 2009 the GDP contribution of the Agriculture sector was 17.6% where 47.54% population engaged, similarly manufacturing sectors contribute 24.73% and employed 16.81%, and the Service sector contributes 52.95% of total GDP and employed only 35.65% employment. In 2019, the mixture has been changing extraordinarily. In 2019, labor forces shifted from the agriculture sector to manufacturing and service sectors and both sectors contribute more than 85% of total GDP and employed 60% of total labor forces. Still, agriculture sectors considered as a low productivity sector, where almost 40% of labor forces engaged with agriculture and contribute only 13% of total GDP (Figure 1-A and Figure 1-B).

Mahmud, et al., (2018) provide the example of the industrial transformation of Bangladesh domestic informal sectors to formal export-oriented manufacturing sectors. The example they provide is the Bangladesh Ready-Made Garments industry (RMG) that plays a vital role in Bangladesh's socio-economic development. Microfinance organizations is another important player in the economy. It helps poor in two ways, first, providing financial service to the poor that expand the financial inclusion in the society, and in other ways, it helps the

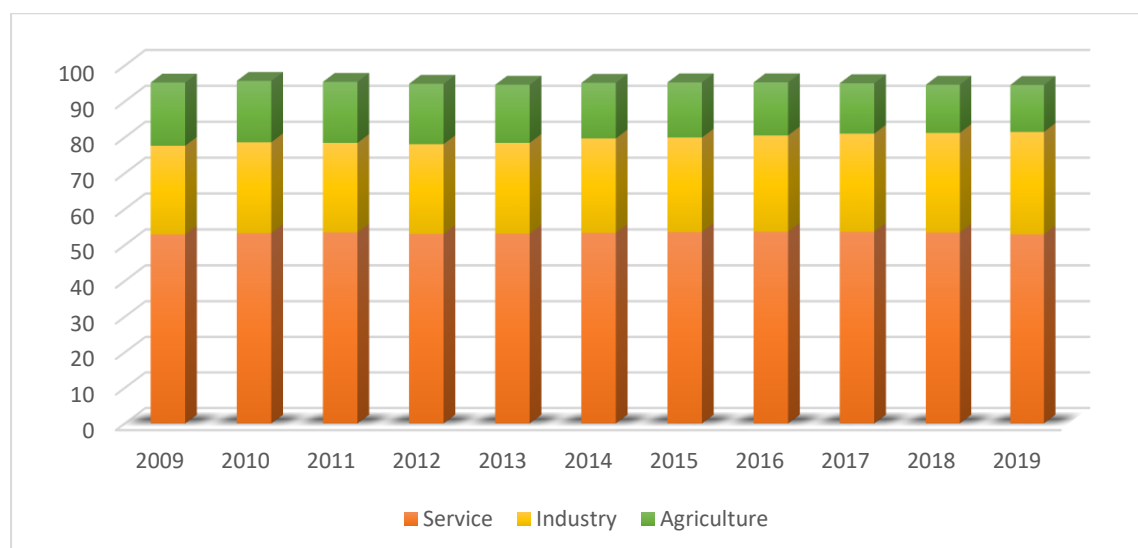
poor women to become empowered. This empowerment also fueled by the garments industry. It was the microfinance industry that empowers the half of the workforces that was unutilized before.

Figure 1-A: Share of Employment by Sectors



Source: BBS, 2019

Figure 1-B: Share of GDP by Sectors



Source: BBS, 2019

1.2 Bangladesh Financial Inclusion Puzzle

Financial sector development plays an active role in economic development. Bangladesh also went under the same experience, where Bangladesh was considered a basket case in the 1980s now it becomes a development ladder. As of December 2017, 34 NBFIs with 225 branches are extending financial services across the country. Of the total 34 NBFIs, 3 are government-owned, 19 privately owned local companies and the remaining 12 are established under a joint venture with foreign participants (Banerjee, Kayum, & Uddin, 2020). Besides the Banking and non-banking financial institute, microfinance and NGO working to cover the disadvantaged people, especially the poor and rural poor.

There is a common saying that, every problem creates some business opportunity. The same explanation is justified to the emergence of microfinance organizations. The formal financial organization such as banks is mainly operated with the depositor's funds and feels less confident to finance the poor people without any physical collateral assets. The poor people also required a small amount and frequent loan where transaction cost is very high. The loan amount is very small that does not cover the legal filing cost if the loan becomes defaults. In that case, microfinance creates an artificial collateral asset (group lending mechanism) that works as collateral of microfinance loans. Which is considered as one of the new innovations in the financial industry that change the role of the game financial industry, in case of financing the poor. The group lending mechanism introduced by Grameen bank founded by Prof. Dr. Mohammad Yunus, who is considered as the father of modern microfinance.

The Grameen bank starts its journey as a Non-Government Organization (NGO) that finance the poor people in a small village named "Jubra", located in the northeast part of Bangladesh, near the University of Chittagong with only \$27 with 42 members. Now the tinny

investment NGO become a billion-dollar financial institute in Bangladesh and provide loan different part of the world and become a role model of all microfinance organizations. In 1982 a Presidential Ordinance transfer Grameen NGO to a state-owned bank as “Grameen Bank”.

The Grameen bank continues its operation almost like a monopoly since its inception and becomes an important part of Bangladesh's financial sectors. There is a huge contribution of microfinance organization in our society. Microfinance creates opportunity to become self-employed (Erhard, 2017; McKernan, 2002).; It helps poor people to rise their income as well as consumption (Zeller 2001); Microfinance empower women that indirectly contribute to improve families health, and education (Nader 2008; Swain and Wallentin, 2009). In simple, microfinance contribute in both individual and economic level. For example, Raihan et al., (2015) mention that microfinance has a positive impact on GDP. In general, it contributes to both micro and macro levels of the economy by creating new employment and empowerment.

In 1990s Bangladesh experienced a huge expansion of microfinance operations which drew the attention of all interested parties such as donors, developing partners, and policymakers all over the world. Observing the success of Microfinance by Multilateral development organization (such as the World Bank, IMF, the United Nations) provide more emphasis on microfinance for development initiatives. Microfinance contributes to socio-economic development and poverty alleviation, and Professor Yunus along with Grameen Bank won the Nobel Peace Prize in 2006.

Apart from the Grameen bank, governmental MFIs, there are three types of microfinance organizations operated in Bangladesh. Those are NGO-Type MFIs, Commercial Bank operated MFIs and Special type of MFIs initiated by the different ministry of Finance. In

Bangladesh different type of NGO provides financial service to the poor people in Bangladesh. As of 2015, 659 NGO-MFIs were operating in Bangladesh. Among the top ten global microfinance, four NGO-type microfinance appeared from Bangladesh, and BRAC is considered as the world's largest microfinance organization. According to Bangladesh Bank, by the end of June 2016, there were 680 licensed MFIs and 191 Provisional licensed MFIs serving over 26.3 million clients. By observing the needs of financial service to the poorer segment some specialized commercial bank starts providing microfinance service to the specific group of people. For example, Bangladesh Krishi Bank (BKB)¹, Rajshahi Krishi Unnayan Bank (RAKUB)². Like, the agricultural bank, Bangladesh's ministry of finance creates some special type of microfinance organization to facilitate financial service to the disadvantaged poor. For example, Rangpur Dinajpur Rural Service (RDRS) created only for Rangpur and Dinajpur areas poor people.

According to Uddin (2019) among all the microfinance organizations together covers 36.19 million members where NGO type MFIs cover 27.58 million, Grameen Bank alone covers 6.96 million, Special typed MFIs covers 0.53 million and commercial banks operated MFIs covers 1.12 million clients (see Table 1-A). Still, almost 24 percent of the population lives under the national poverty line (ADB, 2016) and almost 41.7 percent population lives under multi-dimensional (UNDP, 2019). According to Demircuc-Kunt et al., (2018) almost 51.38 million adults are unbanked which is one-third of the total population and 3 percent of the total world unbanked adult populations. Suzuki and Miah (2016) point out that the microfinance penetration in Bangladesh is extremely low compare to the expectation. They

¹ Bangladesh Krishi Bank means Bangladesh Agricultural Bank is a state-owned specialized bank established to provide loan at a cheaper cost to the poor farmers.

² Rajshahi Krishi Unnayan Bank (RAKUB) is the same meaning as Rajshahi Agricultural Development Bank. It's also a specialized stated owned bank established to provide financial service to the poor farmer in the Rajshahi Division.

also point out that the MFIs low penetration is due to the religious faith. Based on the Bangladesh constitution, Bangladesh is considered as a Muslim country where the official religion is Islam. In Bangladesh around 90% population are Muslim. According to the Islamic textual interest is strictly prohibited, where microfinance operated based on interest.

Table 1-A: Members and loan outstanding by different types of MFIs

Details	Members (in million)	Borrower (in million)	Loans outstanding (in billion)	Savings (in billion)	Loans disbursement (in billion)
NGO-MFIs	27.58	23.11	454.01	170.67	782.67
Grameen Bank	6.96	6.96	109.39	183.86	169.33
Special typed MFIs	0.53	0.53	31.33	7.57	23.43
Bank's operated MFIs	1.12	1.12	24.03	9.90	30.14
Total	36.19	31.72	618.76	372	1005.57

Source: Uddin (2019)

To mitigate this barrier some Islamic microfinance emerged. There are eight Islamic microfinance operated in Bangladesh (Table 1-B). Their outreach is extremely unexpectedly low. The total of eight Islamic microfinance combinedly shares 5 percent of the total microfinance outreach. Among the eight Islamic microfinance only one MFI, Rural Development Scheme (RDS) owned by Islamic Bank Bangladesh Limited (IBBL), share more than 4 percent and rest seven contributes less than 1 percent.

Table 1-B: List of Islamic microfinance organizations in Bangladesh

Name	Establish year
IBBL- Rural Development Scheme (RDS),	1995
SIBL- Family Empowerment Islamic Micro-finance Program (FEIMP)	2015
Al-Arafah Islami Bank Microfinance Program	2016
Muslim Aid Bangladesh	1991
Al Falah A'am Umayan Sangasta (AFAUS)	1989
TMSS Islamic Microfinance (TIMF)	2008
RESCUE	1991
Noble Education and Literary society	N/A

Source: Uddin (2019) (Note: N/A=Not available)

Even we considered the Islamic microfinance with the mainstream microfinance organization the number of coverages still very limited. Where the conclusion can be drowning as; many people are still “not included” in the formal financial system (empower of marginalized people)”. It has become a puzzle, in Bangladesh, the Financial inclusion is increasing, on the other hand, a huge number of populations remain poor and unbanked. Hence, it is necessary to ask “Why?” Existing research partly answers the above question. And few researchers recommended that fintech could be an alternative tool that empowers the marginalized poor.

1.3 Research Objectives

The objective of this research is to explore the reasons behind the Bangladesh Financial inclusion puzzle discussed in the previous section.

1.4 Research questions

To achieve the above research objective, this research raises the following research questions,

1. Why does the existing financial institution failed to empower the poor and marginalized people?
2. To what extend FinTech could be a powerful solution of the existing financial institution that helps to increase financial inclusion?
3. To what extend Financial Inclusion helps to reduce poverty?

1.5 Hypothesis

To answer the above research question, this research comes up with the following three hypotheses.

Hypothesis 1: The current financial system failed to finance the poor and marginalized poor.

It can be hypothesis that current financial institutions are not willing to finance the poor and marginalized poor due to their different constraints.

Hypothesis 2: FinTech has the potentiality to overcome the barrier of current financial institutions.

FinTech has the potential to overcome the barrier of the traditional financial institutions and it has the potential to cover the extreme poor and marginalized poor.

Hypothesis 3: Financial Inclusion helps to reduce poverty but in an indirect way.

Maybe Financial inclusion has not any direct influence on poverty reduction. But it helps poor people to increase their financial literacy and capabilities. That helps to reduce their economic condition over time.

1.6 Significant of the Research

The world is no more as we saw it ten years before and by the next ten years, the world will reach in a position that we couldn't imagine right now. The innovation and adoption of new technology have become an essential part of our daily life. Like this, the financial institution also required to adopt the new technology in its service manual. Otherwise, the organization will fall behind the market. Even though developed country adopts new technology quickly but developing countries still hesitate. Therefore, it is a timely demand to identify the contribution of Fintech on Financial inclusion in developing countries.

1.7 Overview of the Methodology

This research categorized as an exploratory study and use Bangladesh as a case study. To identify the barrier of the current financial institution, in chapter 3, we developed an analytical framework to identify the barrier of financial inclusion. To identify the potentiality of fintech

in chapter 4 we filter different fintech components through different legal regulations such as The Bank Company Act, 1991, The Foreign Exchange Regulation Act, 1947, Money Laundering Prevention Act, 2012, Information and Communication Technology Act, 2006, and Insurance Act 2010. Based on the screening, this research identifies the permitted Fintech components and the impact of that permitted fintech components in financial inclusion by using the Schumpeterian Rent Seeing model. In chapter 5, this research analyzes the impact of financial inclusion on poverty. To examine the contribution of Fintech on financial inclusion, this research use Sen's capability approach.

This research is based on secondary data. The secondary data collected from existing literature, documents review (rules and acts), and banks and microfinance annual reports.

1.8 Thesis Outlook

This thesis composed of six chapters. This chapter (chapter 1) provides an introduction of the thesis and the outline of the chapter given bellow

Chapter 2: Definition and Literature Review

This chapter briefly describes the definition of a few important topics related to this thesis, such as Financial Inclusion, Fintech, Digital Finance, and so on. Then it reviews the existing literature and identified the literature gap.

Chapter 3: Limitations of Current Financial Institution in Financial Inclusion

In this chapter explore, some literature related to the barrier of financial inclusion and developed an analytical framework to identify the barrier of the current financial institute.

Chapter 4: Financial Inclusion through Fintech in Bangladesh; Opportunity and Challenges

This chapter deal with fintech components, it's advantage and contribution of Fintech on financial inclusion.

Chapter 5: Financial Inclusion and Poverty reduction; a Capability Approach

This chapter explores the relationship between financial inclusion and poverty. In identifying the poverty this chapter discussed the capability approach

Chapter 6: Key Findings, Conclusion, Recommendations and Future Research

This is the last chapter of the thesis, this chapter identifies the key finding of this research, conclude the arguments, provide some policy recommendations, the contribution of this research, and future research direction.

2 Chapter 2: Definition and Literature Review

2.1 Definition

2.1.1 Financial Inclusion

Recently the issue of financial inclusion has received renewed attention of researchers as well as of policy makers of both developed and developing countries (Chakravarty, & Pal, 2013). Financial inclusion refers to a system where everyone has access to a range of formal financial services, from simple credit and savings to a more complex types of financial services, for instance, insurance and pensions (Ramji, 2009. p.6).

Several legislative measures have been taken into account in worldwide to make financial inclusion for all. The United States, the Community Reinvestment Act (1997); France, the law on exclusion (1998); The United Kingdom, ‘Financial Inclusion Task Force’; Reserve Bank of India (RBI) has initiated of ‘no-frills’ accounts and “General Credit Cards”; The German Bankers’ Association voluntary code and so on. Still, a large portion of the poor people are out of the financial service.

According to the United Nation “Financial inclusion” means the sustainable provision of affordable financial services that brings the poor into the formal economy (United Nation, 2016). In other world, financial inclusion can be defined as the formal financial servicer for all (Ozil, 2018). Sarma, and Pais, (2011) defined “financial inclusion” refers to a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy. According to Morgan and Yoshino, (2017), financial inclusion broadly refers to the degree of access of households and firms, especially poorer households and small and medium-sized enterprises (SMEs), to financial services. In summary Financial inclusion can be defines as the formal financial services for all, irrespective of economic status such as rich or poor.

According to Hannig and Jansen (2010) financial inclusion aims to cover all sorts of population in the society and provide access to formal financial services, the easiest form of savings, payments, and transfers to a complex service such as credit and insurance. Financial inclusion helps to reduce poverty, as a result Oizli (2018) mentions that financial inclusion contributes in poverty reduction and economic growth and highlight that the greater financial inclusion to the previously excluded have greater contribution in both economic and non-economic development such as education and health. The inclusive financial system has some features that facilitates efficient allocation of productive resources that reduce the cost of capital and reduce informal borrowing which is exploitive in nature, such as money lender (Sarma, & Pais, 2008).

Financial inclusion involves several advantages for economy especially the marginalized poor. According to Ozili (2018) it provides a chance the poor people to saves their surplus income to the formal financial institute that accumulate and mobilize a huge amount of fund to the deficit sectors. Han and Melecky (2013) explain that the saving provides the confidence to the poor to fight in adverse situation such as the future income shocks over unforeseen emergencies like, illness or loss of employment.

Park and Mercado (2015) analysis the financial inclusion and poverty of 176 economies, including 37 of which from developing Asia. They find, financial inclusion helps to reduce poverty and lower the income inequality.

2.1.2 Financial Technology (FinTech)

The past 50 years have been experienced rapid technological change that has fundamentally shifted to the boundaries of human possibility, enabling radical improvements in productivity, new scientific advances, and the advent of both new communities and new divisions within society (Arslanian, & Fischer, 2019, p3). That makes the markets are very

different from what they used to be. Technological advances morphed computers and infrastructure. Changes in regulation allowed dozens of exchanges to coexist side by side. The global nature of business has ushered in round-the-clock deal making (Aldridge & Krawciw, 2017). Like other business model financial business sectors also has been changed dramatically from the previous era with the help of technology. When financial institution includes information technology in their service process, that technology often refers as financial technology. Financial technology, often shortened to “FinTech”, is the technology and innovation that aims to compete with traditional financial methods in the delivery of financial services. According to Arner, (2014) The term ‘Fintech’ origin can be traced back to 1990s by City group, initiated a project named ‘Financial Services Technology Consortium, to facilitate technological cooperation in financial industry.

There are several definitions provided by several authors, Freedman (2006, p.1) define financial technology as being concerned with building systems that model, value, and process financial products such as stocks, bonds, money, and contracts. Schueffel (2016) defined fintech as “a new financial industry that applies technology to improve financial activities”. Dorfleitner et al., (2017) define, the term “Fintech” denotes companies or representatives of companies that combine financial services with modern, innovative technologies. Arner, Barberis, and Buckley (2015, p.1271) defined, “FinTech”, a contraction of 'financial technology, refers to technology enabled financial solutions. Magnuson (2018) provide an extensive definition of Fintech. According to Magnuson (2018) “fintech” to refer to the new breed of companies that specialize in providing financial services primarily through technologically enabled mobile and online platforms (P.1173). Financial institute always used advance technology such as computer and database to serves its customer. Where few authors already address this point. This thesis defines Fintech as “financial institute provide financial services with the help of technology that reduce the time and effort”. Due to the blessing of

Fintech, financial service become available to every corner of the globe without any physical financial institute.

Today's fintech advancement did not come instantly, it required time and effort. Arner, (2014) describe the evaluation of fintech under three phases; The first era (fintech 1.0), second era (fintech 2.0) and the third era (Fintech 3.0/3.5). First era was considered from 1866 to 1987 where financial industry starts to integrate with technology. The second era considered from 1987–2008, where financial institute starts providing their traditional financial services through technology. And the last era considered from 2008 to present where many new entrants (start-ups) and innovative technology companies have started to provide financial services and products directly to several businesses and the public.

Table 2-A: Summary of Fintech Evolution

Date	1866-1987	1987-2008	2009-Present	
Era	Fintech 1.0	Fintech 2.0	Fintech 3.0	Fintech 3.5
Geography	Global/Developed	Global	Developed	Emerging/developing
Key Elements	Infrastructure	Banks	Start-ups/New Entrants/Innovators	
Shift Origin	Analogue linkage	Digitalization	Financial Crisis 2008	Last mover advantage

Source: Arner, (2014)

2.1.2.1 Fintech 1.0: From Analog to Digital (1866 to 1987)

This era is considered as the creation of financialization which means financial globalization was established. During this period, “new technologies such as the telegraph, transatlantic cable, steamships, and railroads built financial interlinkages across the borders, permitting speedy transmission of financial transactions, transfers, and payments around the globe have entered to the world” (Mohammad and Ali, 2018). In 1838, Telegraph was also the outcome of deeper research and development. The first transatlantic cable was established by the event of telegraph in 1866. Diners club first introduced credit card in this era which reduces

the burden of carrying cash in 1950s. In the name of “robot cashier”, the first automated teller machine (ATM) was invented by Barclays bank 1967 which made easy to access on cash around the clock. At the same year, the handheld financial calculator was created first in 1967. The NASDAQ , first digital stock exchange was established in the beginning of 1970. SWIFT was first launched in 1973, to make easy the cross-border payments. E-trade and risk management technology also introduced in 1980. Above all, financial service stepped into digital economy from analog in this era.

2.1.2.2 Fintech 2.0: Digital Financial Services (1987 to 2008)

In this era, Online banking became popular in 1990. Computer based trading and finance system concentrated on that time. Paypal entered in 1998. Digital banking operation started in 2005 in UK. Crowdfunding was developed in 2003 by Bostan musician and computer programmer in USA. Within twenty-first century, financial service of financial institutions, cross border communication fully moved into digitalization process. Many new fintech companies, start-ups and firms added extra value in financial service in this era. Xoom was introduced in 2001. For money transfer, Payoneer, Prosper, Lending club OnDeck started to provide services consecutively in 2005, 2006, 2007. This era is counted upto the Global financial crisis in 2008.

2.1.2.3 Fintech 3.X: Democratizing Financial Services (2008 to present)

The global financial crisis also considered as a turning point for the third era of fintech. After the financial crisis, public perception, regulatory scrutiny, political demand and economic condition fully changed which developed new innovative market players in the financial market. As a result of financial crisis, People had lack of trust on their traditional banking system and skilled financial professional were sacked or less compensated from their work.

This neglected behavior to employees conducted them to find a new industry named Fintech. Fintech started to cut the operation and transaction cost which offer the services at low cost. Smartphone also a useful tool to use fintech platforms through mobile apps. Bitcoin first started its journey as cryptocurrency in 2009 as a cashless form. With legal identity card or smart devices people can run their financial transaction. Google wallet emerged in 2011 followed by Samsung Pay and Apple Pay. Robo- Advisors started to play the role of human advisors. Finally, this era developed sharing economy for all. This era leads to stream of innovation, by encouraging new fintech start-ups and firms. And eventually abled to rebuild trust in people.

2.1.3 Mobile Finance

The components of mobile finance service include, Mobile Financial Services (MFSs), Mobile Money (M-Money) and Mobile Banking. The definition of all components of mobile finance are given below.

2.1.3.1 Mobile Financial Services (MFSs)

According to BB (2018) Mobile Financial Service defines as “MFSs are the products and services that a financial institution provides to its customers through mobile devices. The mobile channel provides an opportunity for financial institutions of all sizes to increase customer access to financial services and decrease costs”.

2.1.3.2 Mobile Money

According to BB (2018) Mobile Financial Service defines as “Mobile Money is a stored value account that is accessed from the user’s mobile phone. It is typically operated by the mobile network operator and managed separately to the user’s phone account. Mobile money is popular in developing nations where most people do not have regular bank accounts (the unbanked population)”.

2.1.3.3 Mobile Banking

According to BB (2018) Mobile Financial Service defines as “Mobile banking is actions on a traditional bank account through mobile devices. These actions include obtaining account information, doing banking transactions and so on through mobile devices. Mobile banking is offered by nearly all the major banks in developed nations and typically uses a smartphone app to securely perform bank transactions”

2.2 Review of Existing Research

Fintech is a new topic in the field of economics, still fintech is in infant stage. But it has become a hot topic due to its driven forces, that incorporate technological development, business innovation expectations (market), cost-saving requirements, and customer demands (Gai, Qiu, & Sun, 2018).

There is not much research found in the literature that focus on fintech. Only few researches concentrate on Fintech till today. Among the researches, the research that focus on Fintech and challenges are Lee and Shin (2018); Zetsche et al., (2017) and Gerlach et al., (2016). Lee and Shin identify the challenges of fintech are, investment management, customer management, regulation, technology integration, security and privacy, and risk management. Zetsche et al., (2017) identify that data management is one of the biggest challenges of Fintech. Even though those researches provide some basic guidelines in theoretically but did not consider any specific country.

Researches that concentrate on FinTech and FinTech Components are Jagtiani and Lemieux (2017); Gabor and Brooks (2017); Hau et al., (2018) and Jenik et al., (2017). Few researches that concentrate on financial inclusion through Fintech are FinTech and Financial Inclusion Ozili (2018); Philippon, (2016)

Ozili (2018) try to explore the impact of digital finance in society. The author identifies a number of issues that has to be address in the digital finance such as regulations, securities and disputes' resolution and finally concludes, there is scope that digital finance helps to increase financial inclusion and in provide the benefits all the parties such as individual, government and businesses.

Philippon, (2016) scientifically proved that the current financial system which author mention the financial system that face a global financial crisis which starts from one specific sectors "the subprime mortgage" is not an efficient financial systems and then the authors explore that whether the current financial development (Fintech) could be an alternatives solution. The author come to a point that Fintech could be a suitable and efficient financial system that reduce the social cost. The author also recommended that to exercise Fintech in our current financial module we need to reform current financial regulations.

Lee, and Shin, (2018) explain that fintech change the paradigm of financial industry. It is a game changing, disruptive innovation capable of shaking up traditional financial markets. But they rarely find any appropriate fintech ecosystem that explain the fintech in a broader way. By taking into consideration, Lee and Shin together developed a new fintech ecosystem with five factors (fintech ecosystem and believed that the new ecosystem contributes to the innovation, stimulate economy, facilitate collaboration and competition in the financial industry, and ultimately benefit consumers in the financial industry.

Buchak et al., (2018) explore the relationship between Fintech and shadow banking in US, they identified that due to regulatory difference between traditional financial system and Fintech industry, Fintech development helps shadow banking to grow at faster rate than traditional banking industry.

Even though there are few researches solely focuses on Fintech and financial inclusion, but no research focuses in any specific country especially developing country and fintech

contribute on financial inclusion. This is considered as a loophole in the current literature. Therefore, this research is an attempt to fill the current literature gap.

3 Chapter 3: Barriers of Current Financial Institution on Financial Inclusion in Bangladesh

Capitalism without capital is just plain -ism - and we can't live off -ism'; similarly, financial sector is sustainable when it provides required services to all in the society and the economy.

----- Jesse Jackson

3.1 Introduction

Financial sector has a direct positive relationship with economic development. The same tune raised by Fry (1988), Ikhida (1993) and Beck et al., (2000). Several researches explained that the economic development in different reasons in the world. For example, Ngongang (2015) and Ahmed and Ansari (1998) analyzed the relationship between financial sector development and economic growth of south Asian countries. All of their research concluded that the South Asian countries economic development are closely related with financial sectors development.

Bangladesh is considered the next Asian tiger after Hong Kong, Singapore, South Korea and Taiwan. The consideration is the result of Bangladesh's socio-economic development over the last two decades. The GDP growth rate was almost constant at a rate of over six percent for a decade which is the world record for a single country at a row. As mentioned earlier, this development or social changes was due to the financial sector development (Barai, 2020).

Bangladesh Financial sectors constitute of Bank, Non-bank financial institute and Capital market (Banerjee, Kayum and Uddin, 2020). Another important player in Bangladesh financial sector is Microfinance industry. In Bangladesh, the capital market covers a tiny share compare to bank and non-bank financial institute. In fiscal year 2018 bank and non-bank financial institute provide term loans around Tk.707.7 billion. Whereas, capital market raises only Tk.0.2 billion through private placements and public offerings in the capital market (BB, 2018). Compare to bank Bangladesh microfinance industry also keep a strong position in providing

loan to the poor people in Bangladesh. Based on the available data, in 2016 microfinance organizations loan outstanding was more than Tk- 640 billions (Table 3-A)

Table 3-A: Members and loan outstanding by different types of MFIs

Details	Members (in million)	Borrower (in million)	Loans outstanding (BDT in billion)	Savings (BDT in billion)	Loans disbursement (BDT in billion)
MRA Licensed MFIs	27.58	23.11	454.01	170.67	782.67
Grameen Bank	6.96	6.96	109.39	183.86	169.33
Govt. MFIs	0.53	0.53	31.33	7.57	23.43
Bank's operated MFIs	1.12	1.12	24.03	9.9	30.14
RDS	0.99	0.99	24.48	7.95	24.77
Total	37.18	32.71	643.24	379.95	1030.34

Source: Uddin (2019)

In terms of loan outstanding balance, it was evident that the size of microfinance industry in Bangladesh is almost the same size of banking industry (together with banking and non-banking financial industry). But in terms of clients or members of the industry, it can be said that microfinance industry is hundred times bigger than traditional banking industry. The rationality behinds, the banking and non-banking financial institute works with big amount with fewer clients, where microfinance institute works with small amount to a large number of customers.

Even though microfinance institute makes a strong position in Bangladesh, in terms of financial inclusion, but still a large number of populations remain unbanked. As mentioned in chapter one. One third of the population not engaged with any formal financial institute. Arene, Barberis and Buckley (2015) raise a point that, current financial system is rather inefficient. In the same line, in the chapter one, it was hypothesis that, current financial institute failed to cover the extreme poor and marginalized poor. Therefore, this chapter is going to identify the barriers of current financial system in Bangladesh.

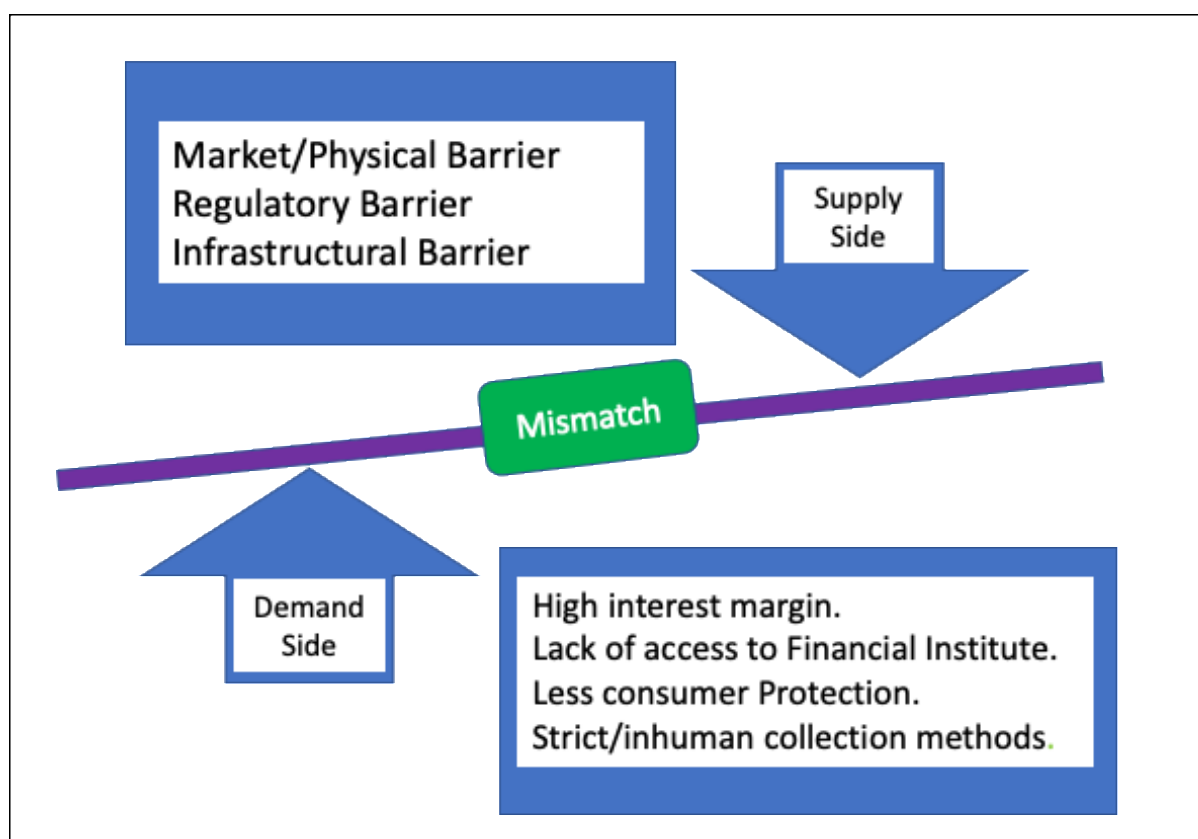
3.2 Barrier of Current microfinance institute in Financial Inclusion

The existing literature has identified several obstacles of financial inclusion through MFIs. For example, Gupte and Gupta (2012) analysis the barrier of financial inclusion through microfinance in India. The identified, key challenges or barriers faced in implementing financial inclusion are Human barrier, Institutional barrier and Infrastructure barrier. Shankar (2013) also analysis the barrier of financial inclusion or microfinance organizations and identify that physical barriers, lack of suitable products, documentation barriers, Psychological, Cultural, and Lack of financial literacy. Back et al., (2016) identify that the barriers of financial inclusion are Physical, Affordability of the clients and cost to assess the eligibility of members of the financial institute. Uddin (2019) explores that microfinance organizations are not willing to offer services to the marginalized poor due to high credit risk involvement. Only few poor customers are included in the customer segment of microfinance institutions. Another barrier identify by Uddin (2019) are high interest margin, the interest rate margin ranges from 70 percent to 96 percent. Yoshino and Morgan (2016) explain the current barrier of financial inclusion are Market Driver, Regulatory factors, Infrastructure, Low Customer Protection

Literature also identify that all the barriers fall under one of the two, supply side barrier and demand side barrier. Supply side barrier is called as the involuntary exclusion and demand side barrier is called as voluntary exclusion. According to World Bank (2014), voluntary exclusion as a condition where the segment of the population or firms choose are not willing to participate with any financial institute either because they have no need for them or due to cultural or religious reasons. In contrast, involuntary exclusion arises from insufficient income and high-risk profile or due to discrimination and market failures and imperfections.

Based on the literature this research developed an analytical framework, presented at figure 3-A.

Figure 3-A: Analytical framework to identify the Barrier of MFIs



Source: Author Creation

3.2.1 Supply Side Limitation

Market driven or physical barriers, this factors include aspects such as the cost associated with operational costs, the second factors includes, high transaction costs such as monitoring cost, cost of fund associated with providing financial services in small towns in rural areas.

Regulatory factors include supervisory rules and regulations, that helps both microfinance institution as well as borrower. Sometimes it restrict the growth of financial institution due to the strict regulations.

Infrastructure-related barriers include lack of access to secure and reliable payments and settlement systems, the limited availability of convenient transport to bank branches or ATMs. Lack of physical Communications facilities and Lack of access to electricity.

3.2.2 Demand Side Limitations

Demand-side barriers include High interest margin, the interest rate charged by microfinance organizations is very high. Hence, clients feel doubt whether to engage with MFIs or not. Another demand side is Lack of access to financial institute. Most of the microfinance are operating in urban area and semi-urban area. Hence, poor people get less access to Financial institute and Financial institute have some policy that restrict the access of marginalized clients. Even though, the economic status of the marginalized poor very poor, but they have some respect in the society. Sometimes, it was found that financial organizations such as MFIs provide less consumer protection and they strict/inhuman collection methods, that will diminish the social status in marginalized poor. Hence, they fare to engage with financial institute.

3.3 Bangladesh Microfinance industry

3.3.1 Beginning of Microcredit in Bangladesh

Micro-credit was practiced before than Grameen Bank. In 1720, a charitable organization, the Irish loan fund was first started micro-credit loan with a view to serve the poor. Donation was the main source of their fund. Their objective was to provide loan to the vulnerable group without taking any interest. And in 1747 The Dublin Musical Society started its operation and began its legal corporation in 1756 by giving loan to its members. After that, the first charitable organization was acknowledged in London by The Wilson Charity in 1766. Their aim was to encourage SME by facilitating young group. For helping German farmers, Herman Schulze-

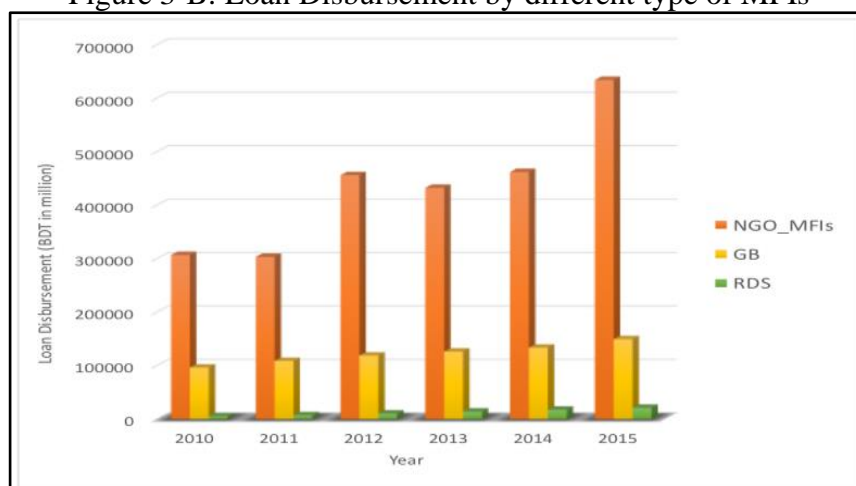
Delitzsch first initiated loan to poor. Though there are long discussion about microfinance in Asia, but modern microfinance institutionalized by Dr. Muhammad Yunus as Grameen bank in 1976 in Bangladesh.

3.3.2 Microfinance coverage in Bangladesh

Bangladesh became independent in 1971. Started its journey with a view to build a new nation with its small group of people and lots of expectation. As a war affected country, overall the economic condition of Bangladesh was disastrous. Though government received foreign assistance, but government had to face difficulties and challenges for the smooth running of the development of the economy. Lack of proper financial support government failed to overcome the difficulties and challenges. In that time lower income people become more marginalized. From that times some NGO's expanded their helping hand to the poor people to overcome their vulnerable situation.

There are different types of MFIs. Such as – NGO-type MFIs, State Owned MFIs, Commercial Bank operated MFIs and special of MFIs. Among those, NGO type micro finance is very famous and common in Bangladesh. There are 659 NGO-MFIs existing in Bangladesh, among them top ten microfinance covers 76 percent of the clients and rest covers rest 24 percent.

Figure 3-B: Loan Disbursement by different type of MFIs



Source: Uddin (2019)

One of the largest NGOs in Bangladesh is- Bangladesh Rural Advancement Committee (BRAC). BRAC established in 1972. The main agenda of the BRAC was to serve war affected and sufferings people. Before introducing the Grameen Bank, BRAC started its operation in 1974 and 64 districts was under the coverage area of BRAC. DABI' and PROGOTI were two popular service programs of BRAC. Later in 1977, BRAC focused on community development programme by expanding their loan to vulnerable village people.

Another largest Microfinance organization is ASA. ASA began its operation in 1978 and has become one of the largest NGO with its huge number of members and branch network. ASA established with a view to empowering rural village people by microcredit lending. Besides this, ASA work for various social development programme by creating awareness in health, sanitation, nutrition and education to rural villagers. For concentrating more on purpose, ASA stopped donor dependency and became fully self-financing organization. ASA segmented vulnerable people into six categories for providing loan, as for small loan to poor women, poor farmers, hard -core people through SEL, unemployed people through SBL, natural disaster affected people, and lastly to Hardcore Poor loan.

Among the state-owned Microfinance institute, Grameen Bank is one of them. Here borrower owned 95 percent and government owned 5 percent. GB established for community development through microcredit. GB aims to provide loan to the marginalized people without taking collateral against loan. GB target group are the poorest of the poor. GB is well known for its solidarity lending technique. GB offers to its member to form a group within the range of 5 people for repayment responsibility. Here if a person failed to repay the loan on time, the group will take responsibility to repay the loan amount on behalf of the defaulter. So that the defaulter gets the chance to repay the fund later. But if a group failed to repay the loan on time, GB does not provide credit that group in next time. GB also spreads a set of values to its client

as their promising words named as the sixteen decisions. GB also arises social awareness by developing these sixteen decisions to their client. Here they specially focus on education, sanitary, houses, safe drinking etc.

Rural Development Scheme (RDS) is the first commercial bank-oriented microfinance organization. Islami Bank Bangladesh Ltd institutionalized RDS in 1995 as form of microfinance. RDS was launched to create a balance environment in between the rural and urban markets. Where RDS can create job opportunity by providing loan in agricultural and rural sector so that the poor people can meet their financial demand. RDS generate its fund from its clients by forced deposits and its fund collection. RDS also follow the group lending process as like as Grameen Bank. To comply with the Shariah rule here, RDS sell the goods to its clients instead of offering loan directly. RDS also involves social development work by increasing environmental awareness. RDS also arranges skill development training, entrepreneurship development training for making best use of the funds.

Table 3-B: Top Ten Microfinance in Bangladesh

Organizations	Percentage of loan disbursement contribution by MFI	Members received loans during 2016 - 2017	Loan disbursed during 2016 - 2017 (in BDT million)	Loan disbursed during 2016 - 2017 (in USD million)
Grameen Bank (GB)	17%	8,308,379	207,890	2,475
BRAC	22%	5,220,302	266,629	3,174
ASA	22%	7,538,641	269,586	3,209
BURO Bangladesh	5%	1,028,821	54,393	648
TMSS	3%	876,849	33,057	394
SSS (Society for Social Services)	2%	576,609	27,625	329
Jagorani Charka Foundation	1%	397,644	15,402	183
Uddipan	1%	337,291	13,589	162
PMUK (Padakhep Manobik Unnayan Kendra)	1%	327,288	14,440	172
SAJIDA Foundation	1%	153,840	12,415	148
The remaining MFIs together	24%	8,601,893	292,511	3,482
Total	100%	33,367,557	1,207,538	14,375

Source: MRA (2018)

3.3.3 Microcredit Regulatory Framework

In Bangladesh, microfinance industry composed of NGO-MFIs, Grameen bank, private commercial banks operated microfinance and specialized microfinance programs under ministries of Finance. Grameen Bank are monitor and supervised by Bangladesh Bank, commercial bank owned MFIs indirectly monitor and supervised by Bangladesh bank. Specialized microfinance monitor and supervised by ministry of Finance. But to monitor and supervised NGO-Type microfinance, no specific body are nominated. By observing the necessity to monitor and supervised NGO-Type MFIs, Microcredit Regulatory Authority Act 2006 passed by parliament and an independent monitoring body created under the name of Microfinance Regulatory Authority (MRA).

MRA responsibilities and activities are as follows:

- a. Issue certificates for running microcredit organization to alleviate poverty of the country's poor people and their overall welfare. Cancellation of certificate.
- b. Preserve, examine and analyze the data on establishment of microcredit organization and their field level supervision.
- c. Image of the microcredit organization.
- d. Take necessary steps for auditing of the accounts of the micro credit organization at the request of the financing agency.
- e. Send information as sought by the financing agency
- f. Formulate policy.
- g. Take any step to perform the responsibilities as mentioned above.

3.4 Barriers of Microfinance Institutions

The contribution of microfinance industry in development of Bangladesh cannot be ignore at any means. But still microfinance organizations remain far behind from their objectives. This is due to both supply and demand side problem. Following are some critical factors identified that restricted financial inclusion in Bangladesh.

3.4.1 Supply Side barrier

3.4.1.1 Market Barrier

Among the supply side, market or physical barrier is one of them. There are several components that includes in market barrier. Basically, market barrier discusses about the barrier in the market, such as cost. This cost includes, transaction cost, cost of monitoring and cost of operations in office and administrative works. One of the main barrier banks faces to cover the poor people was collateral status. Theoretically, poor people do not possess any

collateral assets. Hence, bank face a credit risk in financing the poor. In that case, microfinance come ahead to coverup the unbanked populations, and provide loan to the poor without collateral. Naturally, the loan without collateral seems to be failure case. But microfinance proved without collateral institution can finance. In this case microfinance or more specifically Grameen Bank introduce Group Lending mechanism, a peer review system by the fellow members. This works as a collateral or artificial social asset for microfinance organizations. This shows a high recovery in the microfinance organizations which traditional banking industry cannot even imagine. The loan recovery rate of Grameen bank reached to 99 percent (Ghatak, 1999).

In the initial stage of microfinance operations, group members were selected by the microfinance official that arose the adverse selection problem. Later, this responsibility is shifted to the clients and they can select their own fellow members. By these two mechanisms, microfinance minimize the member selection and monitoring cost (Hermes et al., 2005; Ibtissem & Bouri, 2013). But it increases the cost of group formation which is one of the transaction costs bears by microfinance organizations. On the other hand, microfinance clients are very poor. They are not willing to go to the near branch to deposit their loan amount. Hence, microfinance official collects clients loan repayment as well as weekly deposit from client's locality. Which incurred huge transaction cost.

There are a good number of research work on the microfinance cost of fund and interest charged to their customer. But few researches concentrated on microfinance cost including administrative cost. This administrative cost includes all cost incurred, for example transaction cost that includes, cost of group formation, cost of service performs by field officer and all other related expenses but in this part this cost excluded the cost of fund or cost of capital.

According to Islam, Porporato, and Waweru, (2014) the operational or administrative cost of microfinance on an average is 18.64 percent and the cost of fund near to 4.24 percent of total outstanding loan. Another research conducted by Khalily, Khaleque, and Badruddoza (2014) the operating cost of Bangladesh Microfinance industry vary from 16 to 26 percent of their outstanding loan.

3.4.1.2 Regulatory Barrier

There are four types of microfinance organizations operates in Bangladesh. State owned microfinance bank, Commercial bank operated microfinance organizations, NGO type microfinance organizations and specialized microfinance organizations. Based on the types of microfinance organizations, different monitoring body supervised that types of microfinance. For example, state owned microfinance organizations such as Grameen bank directly monitored and supervised by Bangladesh Bank³, Commercial bank operated microfinance organization such as RDS directly monitored and supervised by particular bank and indirectly supervised and monitored by Bangladesh Bank. The NGO type microfinance covers the lion share of Bangladesh microfinance industry (see graph 5-B). To monitor NGO-Type microfinance organizations, Bangladesh introduce Bangladesh Microfinance regulatory Authority (MRA) by the Microcredit Regulatory Authority Act 2006. The other special types of microfinance organizations operated and monitored by the ministry of Finance. For example, RDRS a special type of microfinance introduced to finance a special group of people. As different regulatory body monitored and supervised different types of microfinance in the same socio-economic conditions. Therefore, some microfinance receives some extra benefit, and some are suffering. Few regulatory barriers are highlighted below.

³ Bangladesh Bank is the Central Bank of Bangladesh.

Barrier to access of low-cost Fund

Among the microfinance organization or in general banking industry, deposit become a cheap cost fund for financial industry. In Bangladesh some microfinance organizations such as Grameen bank have the authority to receive deposit from non-members whereas, other NGO type microfinance restricted to receive deposit from non-members (Rahman and Luo, 2012; Suzuki, Uddin and Miah, 2018). Hence, NGO type microfinance sometimes faces shortages of loanable fund. Which may restrict the further financial inclusions.

Restriction of fund mobility

According to one rule issued by MRA (rule 20, 2010) “Every MFI will create a reserve fund using its 10 percent of total income surplus” and on the other hand, based on, MRA rule 34, 2010, “Every MFI must maintain 15 percent liquidity fund of its entire savings fund (cash or/and deposit) in a scheduled bank. The size of micro-enterprise loans cannot be greater than half the size of the total loan portfolio at any given time (MRA, 2010). These two rules restrict or locked a huge amount of loanable fund in liquid. That huge amount liquid remains idle for the whole period and incurred cost (cost of fund). Which is considered a shortage of fund in financial inclusions.

Documentation problem when offering new product

Based on the MRA (2010) microfinance organizations must operate their service in the same area as they prescribed in registration or license application form. If they wish to extend their branch or service area microfinance must notify the MRA and receive an approval before starting their operations. Even though it was mentioned that MRA will response within seven

days. But practically, it takes more time than prescribe, sometimes, it is necessary to provide some financial benefits to the MRA officials.

3.4.1.3 Infrastructural Barrier

Infrastructure is the basic or fundamental feature of a system or organization that facilitates smooth operation. Every industry requires its basic infrastructure to grow. Different industries require different type of infrastructure (Suzuki, Uddin and Miah, 2018). As such, the microfinance industry requires some basic infrastructure for its smooth operation. Microfinance as a financial organization, it requires two type of basic infrastructure. One financial infrastructure and physical infrastructure.

Financial Infrastructural Barrier

Many microfinance organizations specially the big microfinance organizations are trying to cover the marginalized poor but due to the lack of financial infrastructure such as ATM and other banking facilities. As microfinance prohibited to issue any cheque or cash card to faster the financial operations. As a result, microfinance find this as a barrier to include a large number of populations.

Physical Infrastructure Barrier

Physical barrier includes the main communications facilities, such as road, and bridges. In Bangladesh most of the poor people live in remote area. Sometimes it become very difficult and time consuming to communicate to that area. As a result, it's very costly to provide service to that remote area. As a most of the microfinance organization are not willing to cover such that area.

3.4.2 Demand Side Barrier

High interest margin

Microfinance organizations introduce to finance the poor where traditional bank can't reach. Bank hypothesis, the required loan size is too small, and cost of finance is very high. It is believed, poor are incapable to pay their loan and interest. Microfinance challenges to finance the poor at minimum cost (interest). According to the GB (2016), Grameen bank charge flat rate at 10% of its loan. The example given by professor Yunus as, if a borrower borrows a loan of \$1000, payable at 50 installments. Borrower pay \$20 per week as a repayment of and \$2 as interest. In one year, the total repayment will be \$1100 (\$20*50=\$1000 loan repayment and \$2*50=100 as interest). That indicates, in simple explanation as 10% interest.

But besides this \$20 and \$2, microfinance clients must deposit \$20 as a forced deposit and deduct 10% as fixed forced deposit. If we calculate effective interest rate of this loan amount the interest rate become 60 percent to 100 percent. Even though MRA announced to allow maximum 27 percent declining methods. But microfinance do not care about the MRA rules. Uddin (2019) calculate interest rate of 8 microfinance organizations operate in Bangladesh. He found that, the microfinance charges excessive interest to their customer, the interest rate ranges from 65 percent to 97 percent (Table 3-B).

Table 3-C: Effective interest charge by different MFIs⁴

Measure	ASA (in percent)	BRAC (in percent)	BURO-BD (in percent)	GB (in percent)	Others (in percent)
Maximum	96.96 (56.92)	96.96 (56.92)	96.96 (56.92)	92.23 (53.31)	96.96 (56.92)
Mean	81.43 (46.06)	80.58 (44.36)	77.21 (43.08)	79.02 (44.62)	71.13 (45.30)
Median	80.79 (44.52)	80.79 (44.52)	74.11 (41.30)	74.11 (41.30)	80.79 (44.52)

Source: Uddin (2019)

⁴ Fixed deposit rate used for BRAC is 4% and rest is at 10%. Inside the parenthesis show effective interest rate without any fixed deposit.

Lack of access to Financial Institute

Group lending method is unique invention by Grameen bank. This method reduces moral hazard as well as transaction cost. But this group lending methods restricted financial inclusion. According to Huppi and Feder (1990) group lending method made to make a homogenous self-selected group where every member shares the same risk. Group created in a way that every member in a group remain the same economic status. No group wants to accept a poor member then members economic condition because credit risk of the poor people is higher than an economic well off. Hence, poor people remain out of microfinance umbrella.

On the other hand, Uddin (2019) measure the percentage of poor people in microfinance clients. Based on the PPI score card, he finds that only 6 to 25 percent of microfinance clients are poor and rest are non-poor (See table 3-C).

Table 3-D: MFIs poor clients share under different poverty line

Types of Poverty Line	MFIs
National Lower	6.36%
National Upper @ 100%	15.97%
USAID Extreme	5.84%
International Standard US \$ 1.25 (at 2005 PPP)	25.01%

Source: Uddin (2019)

Less Customer Protection

Consumer protection issues in microfinance are being discussed around the world, driven by public concern over high interest rates, coercive collection practices, and irresponsible behavior of loan officer (Kline and Sadhu 2011). As a result, poor people are not willing to join with microfinance organizations that we already point out as voluntary exclusion. The main reasons of voluntary exclusion are; Fear of future loan default and inhuman method of loan collection.

The fear of future loan default arises when microfinance client's income is not stable. In that case client may failed to pay their loan on time. There are lots of incident found in the literature that failure to pay loan repayment sometimes caused committed suicide (Financial Express, 2014). Because, if any borrower failed to pay their loan, the peer pressure, sometimes verbal attacks by other group members created unwanted extreme mental stress (Islam, et al., 2018). The bullying by the peer group makes it very difficult to live the normal life in the society. Hence, in extreme case borrower go for committed suicide.

On the other case, if borrower failed to pay their loan on time, peer group member remains liable to pay the default amount. Sometimes loan officer and peer group make auction of the basic utensil to repay the loan. A research conducted by Islam et al., (2018) by covering top three microfinance (Grameen Bank, BRAC, and ASA) in Bangladesh. They identified that, on the day of loan repayment due to the intensity of repayment pressure, some said, they eat less to save money to repay the loan (p.707).

In the case of default or late repayment, payment related tensions further escalate when the loan officers and group members decide to auction the belongings of the defaulters. Solli et al., (2015) also said that, when microcredit borrower failed to repay their loan on time, the loan office and peer group member chase all necessity property including Plate, Pan, and all other utensils sell it to the group member or in local market to repay the loan on time.

4 Chapter 4: Financial Inclusion thorough Fintech in Bangladesh; Opportunity and Challenges

“Small steps change the game, we will be banking, without bank”

4.1 Introduction

If we asked, what is money? We may imagine a bill of \$100 or any other paper currency. Hence, we can say, money is bill that helps us to exchange goods and services, or other words, money is the store of value that used to exchanges commodities. Even though we can define differently. But still the academic world failed to exactly define what is money. Whatever the definition, we simply define, anything that able to exchange goods and service is called money. In different era, society exchanges their goods and money changes its form. It changes from barter system to cryptocurrency. Digitalization changes our life and financial world play a key role in our daily life. Different digital financial services/product such as online banking, digital currency makes the world closer to exchanges goods and service globally. In the same line Bangladesh financial industry also change it dynamics with the help of digitalization or Fintech. Now, several commercial financial institutes offer several digital financial products or FinTech products, such as online banking and mobile banking. As a developing country, Fintech can change the whole paradigm of Bangladesh financial industry.

4.2 Current penetration of Fintech in Bangladesh

The era of digitalization, fintech changes the landscape of the financial industry. Many countries allowed all the components of Fintech to their nation and some are not. Because every country is unique in its nature and they have separated regulatory frameworks based on the country need. In the case of Bangladesh, few fintech elements are partially permitted and few

are not, few are fully applicable worldwide, but few are in domestic (detailed are given to table 4-A).

Table 4-A: Status of Fintech operations in Bangladesh

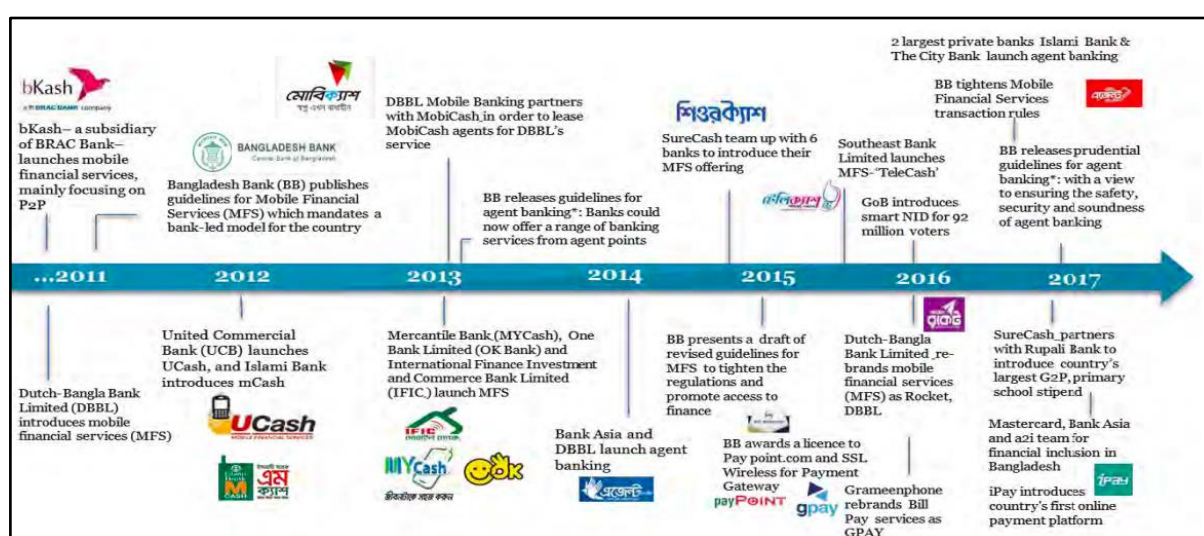
Fintech components	Status	Remarks
Crowd lending/crowdfunding/ fundraising	Inflow-Permitted Outflow-Restricted	In crowd landing, Crowd Funding/ Fundraising all inflow are permitted by law. But any kinds of cross boarder outflow are strictly restricted by The Foreign Exchange Regulation Act, 1947 and Money Laundering Prevention Act, 2012.
Blockchain/ Bitcoin/ Cryptocurrency	Restricted	Bitcoin and Cryptocurrency are strictly restricted by the following legal law <ol style="list-style-type: none"> 1. The Foreign Exchange Regulation Act, 1947 2. Money Laundering Prevention Act, 2012 3. Information and Communication Technology Act, 2006 As bitcoin and cryptocurrency are restricted by law, there is no room for Blockchain. (Detailed provided in Appendix)
Mobile Banking/ Neo-Banking / Digital Currency	Mobile Banking-Permitted with some restriction Neo-Banking-Restricted Digital Currency-Permitted.	Bangladesh Bank permits Mobile Banking (MB) for Cash in, Cash out, Person to Person (P2P), Person to Business (P2B), Business to Person (B2P), Person to Government (P2G) and Government to Person (G2P) payment services domestically. No cross-border money transfer is allowed under this service. However, local disbursement of inward foreign remittance comes through banking channel is permitted In Neo-banking operation banks can operated without any physical branch. But in Bangladesh, without physical branch no banks are permitted to operate. Therefore, neo-banking is strictly restricted. Digital Currency such as Debit card and credit card and some mobile wallet are permitted.
InsurTech	Restricted	Under the section 23 of Bangladesh Insurance Act 2010 – Digital application or currency are not allowed to file an insurance.

Source: Author analysis

Mobile banking is widely recognized in Bangladesh. The first full fledged mobile banking operations starts in Bangladesh on 31 March 2011, an initiative by Dutch Bangla Bank Ltd (DBBL) with the brand name “*ROCKET*”. Rocket is the second largest mobile banking platform in Bangladesh. After the initiative of DBBL, BRAC introduced bKash on July 2011 a joint venture of BRAC bank Ltd and US based Money in Motion LLC. Now bKash become the top largest mobile banking organization in Bangladesh. The other top mobile banking operators are *mCash* by Islamic Bank Bangladesh Ltd, *UCash* by United Commercial Bank Ltd, on 2012. In 2014 IFIC bank introduce *MyCash* and *OkBanking* by One Bank Ltd in the

same year. In 2014 Bank Asia and DBBL introduced agent banking, a partnership with rural agent to provide mobile banking service in rural area. In the beginning of 2015 Sure Cash starts its operation by a mobile financial platform of Progoti Systems Ltd. 5 commercial bank such as Jumana Bank, First Security Islami Bank, Bangladesh Commerce Bank, Rupani Bank, NCC Bank join in 2015 and a specialized bank Grameen Bank⁵ joint with SureCash in 2016 (full list presented in Appendix-A).

Figure 4-A: Digital financial services development over time

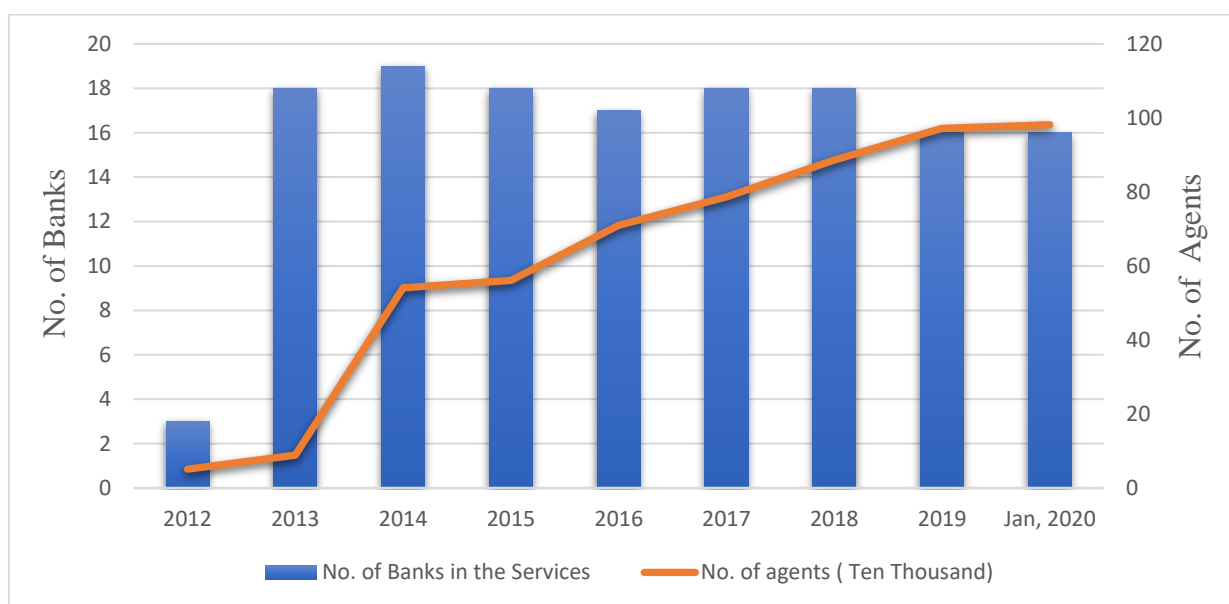


Source: UNCDF (2018)

Based on the BB (2020), the mobile banking operation starts with only 9 commercial banks. By 2019, the total number of mobile banking operators reached to 18 and in January 2020 NCC bank limited stop their mobile banking operations. In case of mobile banking agents, the number of bank agents increased to 11000 but by the year 2020 the agent banking branches reduced to 1000 (Figure 6-B). The same way we can read the total number of registered clients, actives clients (Figure 6-C) and total transaction through mobile banking (Figure 6-D).

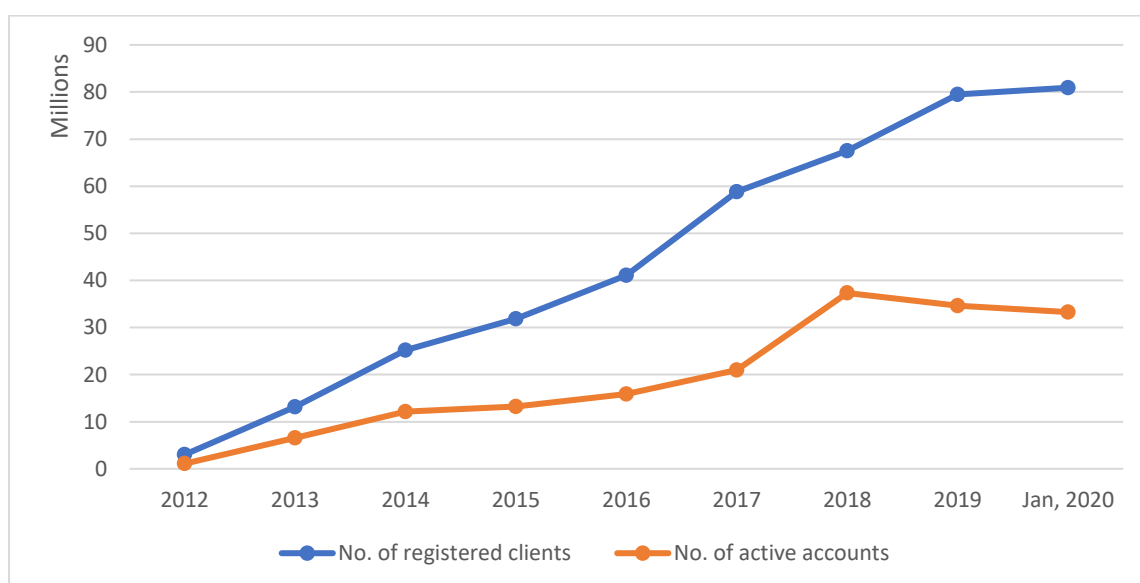
⁵ Grameen Bank join SureCash on 2016 on a pilot basis. Grameen Bank suspended its mobile banking operation on 2018.

Figure 4-B: No of Bank and Agent in Mobile Banking



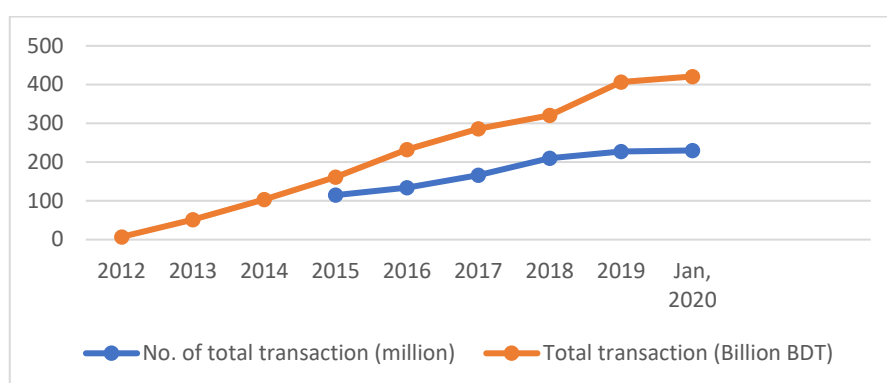
Source: Author Calculated based on BB

Figure 4-C: Number of Registered and Active MFS Clients



Source: Author Calculated based on BB

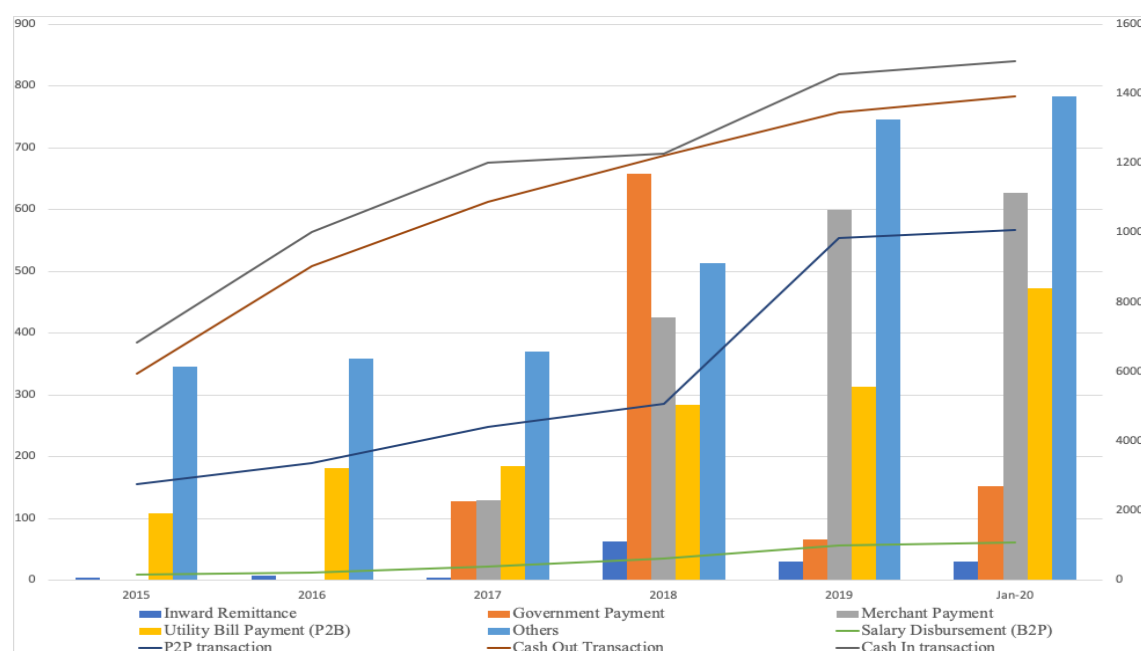
Figure 4-D: Transaction through Mobile Banking



Source: Author Calculated based on BB

In Bangladesh, mobile banking operation not only limited to cash in (Deposit) and cash out (Withdraw) but it also includes a variety of services, such as Inward remittance from abroad, payment settlements, settlements of P2P, P2B, B2P and B2B transaction in the form of payment of goods and services, payment of salary, bonus etc. Mobile banking also facility to transfer fund from private to public such as tax paid to government. Through mobile banking, one can pay their utility bill and so on. The detail transaction over time are provide in Figure-4-E.

Figure 4-E: Mobile Banking Transaction from 2015-2020



Source: Author Calculated based on BB

The market share of mobile banking is covered 80% by bKash (BRAC Bank) followed by Rocket (DBBL) around 17% of the total market-share. Those two leading mobile banking providers (bKash and Rocket) are dominating 97% of the country's total MFS market share and rest three percent covered by other 16 banking organization (Tabassam, 2020).

4.3 Mobile Banking in Bangladesh Microfinance Industry

It can be said that, mobile banking can change the game of traditional financial institute. The traditional commercial banking industry refuse to finance the poor due to high transaction cost and collateral. But mobile banking reduces the cost of finance. By observing the benefits of mobile banking, microfinance organizations also introduce mobile banking in their service operations. For example, SMEP DTM Limited, a Kenyan microfinance institute, did an agreements M-PESA to its all customer for loan disbursement, repayment, and savings. Several Bangladeshi microfinance organizations are trying to install mobile banking in their service menu. The detailed are discussed below.

4.3.1 BRAC mobile banking

BRAC is one of the old microfinances starts its journey as an NGO after the independent war 1971. The main objectives were to help the poor who are affected by independent war. Now BRAC provide various financial services to its customer. BRAC began a pilot mobile payment service in Bangladesh on December 2012 among 12 branches through bKash as a way to make deposits into their BRAC savings account (Hanouch & Rotman, 2013). After witnessing the success of pilot project, BRAC implemented mobile financial service almost all of its branched (UNCDF, 2018). Now most of the BRAC clients can receive their loan, repayment and savings through mobile banking. Mobile banking enhances the efficiency of microfinance organization and it reduces the transaction cost. Based on the literature, BRAC

pilot project reduce cost around BDT-1.5 million (US \$179,000) in a year just on Paper and printing.

Digitalization of BRAC

“We initiated the Smart Collection module, an application that enables field staff to instantly record client payment information and view transaction histories via handheld Android devices. Clients no longer need to visit branches to collect statements regarding repaid loan balances, outstanding loan amounts and savings balances and may request general information as well as a mini statement from their credit officer.”

--BRAC Annual Report 2016

4.3.2 OPTIX of Sajida Foundation

In terms of digitalization, Sajida Foundation is one of the pioneer microfinance organizations in Bangladesh. The field officer of Sajida faces a barrier of time due to it high manual works. To reduce manual and paper works, Sajida Foundation introduces an online based mobile application database called Optimum Performance Through Increase Cross Sell (OPTIX) for its field officers. Through that app, field officer can check all necessary information regarding members under a particular field officer such as, Outstanding balance, savings and related information. The field officer can update client's information such as repayment, savings on live basis. Sajida Foundation introduces OPTIX for its customer in July 2017 with the vision of paperless and cashless microfinance organizations. Now all of Sajida's clients receive loan, repayment and deposit their saving through mobile apps.

4.3.3 Shakti Foundation through bKash and Rocket

Shakti Foundation another advance microfinance organization that has introduced advance mobile technology to provide faster service to its clients. Shakti Foundation introduces mobile banking on December 2015 as part of a financial inclusion with bKash and Rocket. This mobile banking facilitates its clients more flexibility. Now financial transaction such as

savings, deposit, payment and transfer services are made of mobile banking instead of cash. This reduces the transaction cost as well as saves the time both clients and field officers.

4.3.4 AMMS Online of ASA

ASA starts its real time online operation from 2015 and by 2018 ASA went on paperless using Android Tabs to all branches came under real time central online database system. ASA introduces its own online database system named “ASA Microfinance Management System Online (AMMS Online)” (ASA, 2018) and it’s launched on June 2019. Even though ASA introduces mobile banking service in Ghana in 2018, but ASA yet not declared any plan regarding mobile banking in Bangladesh.

4.3.5 Grameen Bank Digitalization

Grameen bank, one of the largest state-owned microfinance bank in Bangladesh. On May 2016, Grameen bank joint with SureCash a leading mobile banking platform to its customer. Through SureCash Grameen customer can receive loan, make repayment and saving. The General Manager of Grameen bank said, “Grameen Bank always welcomes new technology. By introducing mobile banking service, Grameen Bank and SureCash will bring a new dimension in microfinance movement globally. On August 2018, Grameen Bank suspend mobile banking operation with SureCash. GB is planning to come up with their own mobile banking service.

4.4 Benefits of Mobile Banking in MFIs

Digital or automatics banking system is not new, even though financial industry go for digitalization few decade ago. The automatic teller machine changes the global financial industry. Paul Volcker, Former Chairman of the Federal Reserve said “The most important financial innovation that I have seen the past 20 years is the automatic teller machine, that

really helps people and prevents visits to the bank and it is a real convenience”. The debit card and credit card advance the financial industry to use money when they need what we can call plastic money. The latest, development in the financial world is mobile money, or mobile wallet. That reduces the hassle of carrying cash or card and make it convenient for all user.

Mobile money or mobile banking is a new concept in the financial industry. Mobile banking still in their infant stage. But within this short period, it proved, its disruption innovation changes the game of traditional banking industry. It helps financial institute to cover unbanked population due to lack of access, location and transaction. By observing the feature of mobile banking, US Federal Reserve (2012, p.3) reports “Mobile banking and mobile payments have the potential to expand financial services to the unbanked and underbanked by reducing transaction costs and increasing the accessibility of financial products and services”. Alam et al., (2013) observed, mobile banking is convenient, affordable, and secure than the traditional bank.

In terms of microfinance outreach in Bangladesh, it shows that microfinance outreach is increasing over time, but clients remains unchanged. This is due to the limitation of microfinance organizations such as difficulties to extend operation in new areas and lack of physical and financial infrastructure. Thanks to the mobile banking in Bangladesh. Now financial inclusion can happen without any new branch and/or physical and financial infrastructure. In Bangladesh, there are four mobile operators with 157.54 million active subscription (Table 4-B). Which means it covers almost 90 percent of the populations (even though there are multiple subscriptions).

Table 4-B: Total Mobile Subscription on January 2019

Operator	Subscription (in Million)
Grameen Phone Ltd. (GP)	73.068
Robi Axiata Limited (Robi)	46.900
Banglalink Digital Communications Limited	33.690
Teletalk Bangladesh Ltd. (Teletalk)	3.885
Total	157.544

Source: BTRC, 2020

There are lots of benefits identify in the literature regarding using mobile banking. It benefited both supply and demand side. According to UNCDF (2019), it empowers clients and increases efficiency of microfinance organizations. implementation of mobile banking has important influence on reducing costs (Laukkanen and Lauronen, 2005). Cruz et al., (2010) and Dasgupta et al. (2011) recommended that mobile banking has great potential to provide reliable services to people living in remote areas where internet facility is limited. It is arguable that mobile banking has the opportunity to reduce the barrier of microfinance. The potential benefits of mobile banking explored below.

4.4.1 Empowerment

Mobile banking empowers the customer to use and access of their related information. It provides the customer the empowerment regarding use of their money when required. It breaks the traditional banking hours to 24 hours in day and 7 days a week. Because, to withdraw money a mobile banking user not required to make a que in the banking branch to withdraw money. They can cash their balance at any time at any point. It saves customer times dramatically. A field research conducted by Hanouch and Rotman (2013) of BRAC MFIs clients. They find that on an average the branch office of BRAC or agent banking on an average of 1.7 kilometers far away. This required time and money to go and come back. If microfinance clients use mobile banking it saves their times as well as transportation cost.

4.4.2 Less loan loss

It was estimated that microfinance loan losses are from 2 to 5 percent. When the field officer received the loan applications, it becomes difficult for field officer to get access the previous loan history. To make an appropriate decision, field officer and branch manager requested to the head office for client's previous loan history. Now, thanks to the mobile banking and digital MIS. With the help of digital communication, field officer and branch manager can access the client's information instantly and can make appropriate decision whether to extend loan or not. This reduce the loan losses.

4.4.3 Efficiency

Mobile banking proved that it increases the efficiency of microfinance institute. One research found that, on an average loan collection required 2.5 hours. On the other hand, if microfinance clients use mobile banking, it required 10 to 30 minutes. This increased the microfinance efficiency by 5 times, in the same way, it reduces the time of cash management by 1.4 times and loan disbursement time reduce about 6 times (Hanouch and Rotman, 2013). After introduction of mobile banking, microfinance officer now has more slack time to invest in other business. That helps microfinance to extend their operation in unexplored region.

4.4.4 Cost savings

Transaction cost is one of the main barriers for bank to finance the poor where microfinance overcome a little bit. Still a big pie is uncovered by microfinance due to its cost both transaction and operational cost. Mobile banking substantially reduces the cost. An example given by Hanouch and Rotman (2013), mobile banking reduce the operational costs

and it helps microfinance institute access to low cost fund such as clients deposits. It also finds that, BRAC's pilot projects reduce around Tk-1.5 billion only for paper and printing.

4.4.5 Accessibility

Mobile banking opens up the opportunity for microfinance industry to go wherever they go. According to the mobile banking guideline issued by Bangladesh Bank, individuals are restricted to expend their mobile banking operation in the designated area but in case of NGO-MFIs licensed from MRA are free to operate their business in any geographical area within Bangladesh. This gives the authority to MFIs to open their service without opening any physical branch in remote area. This argument also supported by Gomber, Koch, and Siering, M. (2017) where they argued, "financial sector demand intelligent, however easy-to-use financial services independent of location and time".

4.5 Microfinance Profits matters

There is a long debate whether microfinance helps the poor or not. Even sometimes it was said that microfinance exploit the poor by charging high interest rate (Uddin, 2019). Microfinance came to help the poor by providing small loan. Hence, microfinance business is to help poor to get out of poverty. But high interest may drift the objectives of microfinance organizations. It a dilemma for microfinance whether to focus on helping the poor or remain sustainable. Helping poor people means to charge interest as low as possible. In the same line, Muhammad Yunus, the father of microfinance said,

"I was always [. . .] vocal on that issue, saying that microcredit should be done as a social business, meaning that it is not an area where investor or promoter would like to get a big amount of money [or] profits. So that way the [. . .] interest rate can go as low as possible,

because making money is not their goal. It's reaching people and helping them get out of poverty [that] is the goal" (Sandberg, 2012 p.171).

Charging low interest rate is good for poor but it raises a question regarding microfinance sustainability. Where high interest rate ensures microfinance sustainability. Is charging high interest by MFIs compared to market interest fair? When market interest rate is 8-10 percent, the microfinance charge 20 percent -120 percent interest on their loan. Sandberg (2012) said, charging high interest by microfinance organization is not wrong anyway. Because, microfinance charge high interest rate to cover its costs such as operating, cost of fund and transaction cost. It was argued that, microfinance failed to minimize their operating and transaction cost, but they have some scope to reduce their cost of fund if they have access to cheap costs funds such as grants and/or donations. Literature identified that cost of fund is around 2 to 4 percent of total outstanding loan and operating and transaction cost is nearly 20 per cents of total outstanding loan (Khalily, Khaleque, and Badruddoza, 2014). Hence, it is worth to find a way that reduces the operating cost of microfinance.

Thanks to digitalization of microfinance world that substantially reduce the operating cost as well as transaction cost of microfinance industry. It was evident that mobile banking helps the microfinance to reduce their cost to a minimum level. Digitalization makes the microfinance industry a paperless office, that reduce the operational cost directly. By using mobile banking, the employee efficiency increases by 1.5 to 6 times (Hanouch and Rotman, 2013), that indicates now microfinance increase their operation by 1.5 to 6 times or cover 1.5 to 6 time more area by their existing labor forces.

Even though, mobile banking reduces the operating cost of microfinance in Bangladesh. This reduction does not reach to the poor people. BRAC is operating mobile banking in Bangladesh since 2015. The interest rate remains the same for loan since 2010 at 27 percent (declining balance methods). In the same way, Sajida Foundation also operating their own

mobile banking OPTIX since 2017, but their interest rate remains same at 25 to 27 percent since the beginning. This behavior of microfinance is same as other business operation. All the way business operations need profit that matters for their existing. The same way, Julio B. Gomez the CEO of Banco Wal-Mart (a microloan provider in Mexico) stated that “We are not saints...We've come into this business for volume and profitability similar to our other businesses, or else we wouldn't invest”

4.6 Financial Inclusion through FinTech; Schumpeterian approach

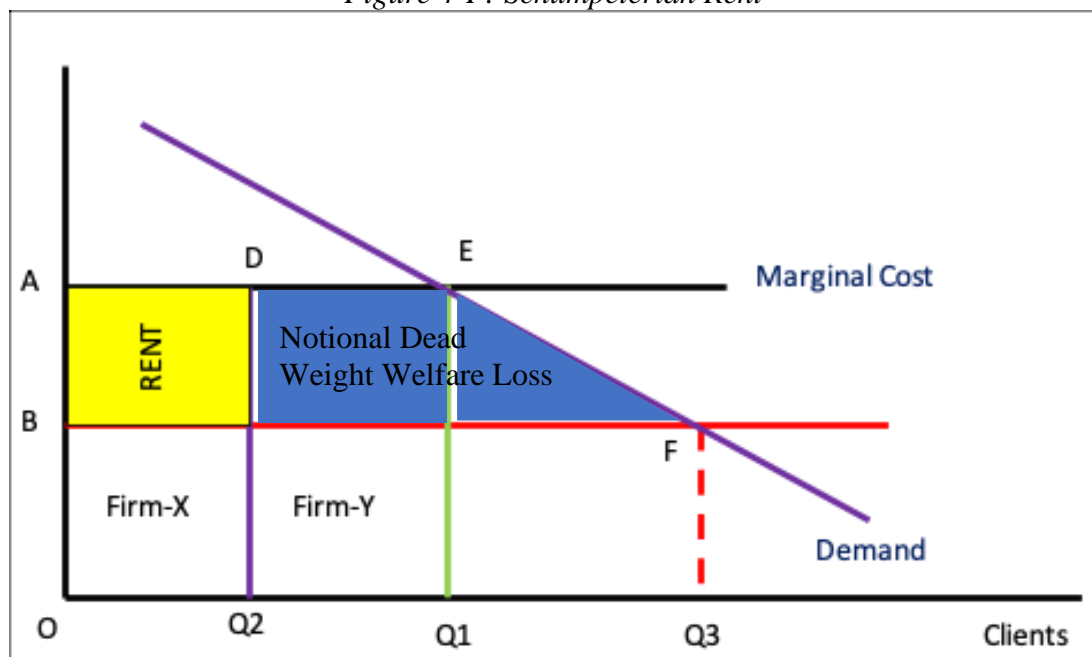
Different economic condition creates different type of rent in the economy. In economics rents means the excess income which is impossible in efficient market or where market mechanism works. According to Khan (2000) “a person gets a rent if he or she earns an income higher than the minimum that person would have accepted, the minimum being usually defined as the income in his or her next-best opportunity”. In different situation rents comes in different forms like income from politically organized transfers such as subsidies, or the extra income which comes from owning scarce resources, whether natural resources or specialized knowledge.

Schumpeterian rents are strictly connected to information. Schumpeterian rents as rents which arise due to innovation and accumulate of information or new knowledge and every information incurred some shorts of cost, none of them are free or costless. In using or materializing new knowledge involves with risk. As a result, innovation or the firm who took the risk, received some extra profit to tackle its risk, that extra incentives are called Schumpeterian rents. Schumpeterian rents play a significant role to ensure efficiency and sustainable growth.

The Schumpeterian rent can be explained with the help of following Figure 4-F. Let's assume in the neo-classical economics, in the market there are two firms “Firm X” and “Firm

Y” produce the same types of product and their marginal cost of production is “OA” for the simplex case. The demand curve downward sloping that intersect the marginal cost curve at point “E”, which is the equilibrium point of the market. In this case the equilibrium quantity is “OQ1”. Suppose in the “Firm X” applied a new knowledge in their production process. This reduce their marginal cost from “OA” to “OB”. As the capacity of “Firm X” is limited, let’s assume “Firm X” can produce up to OQ2 unit. Now the new marginal cost curves become BCDE. AS we can assume that the market price is same for all the firms, hence, “Firm X” earns same extra profit ABCD. Which is considered as the Schumpeterian rent for applying new knowledge or Technology. If both firms applied the same knowledge and/or technology the marginal cost of all firms will be same and the new marginal cost curve intersect the demand curve at point “F”, that is considered as new equilibrium point and the new equilibrium production increased from Q1 to Q3. But as all firms did not applied the same knowledge and/or technology, until then, society will loss the opportunity “CDEF” area, which is considered as “Notional Dead Weight Welfare Loss”.

Figure 4-F: Schumpeterian Rent



Source: Khan (2000)

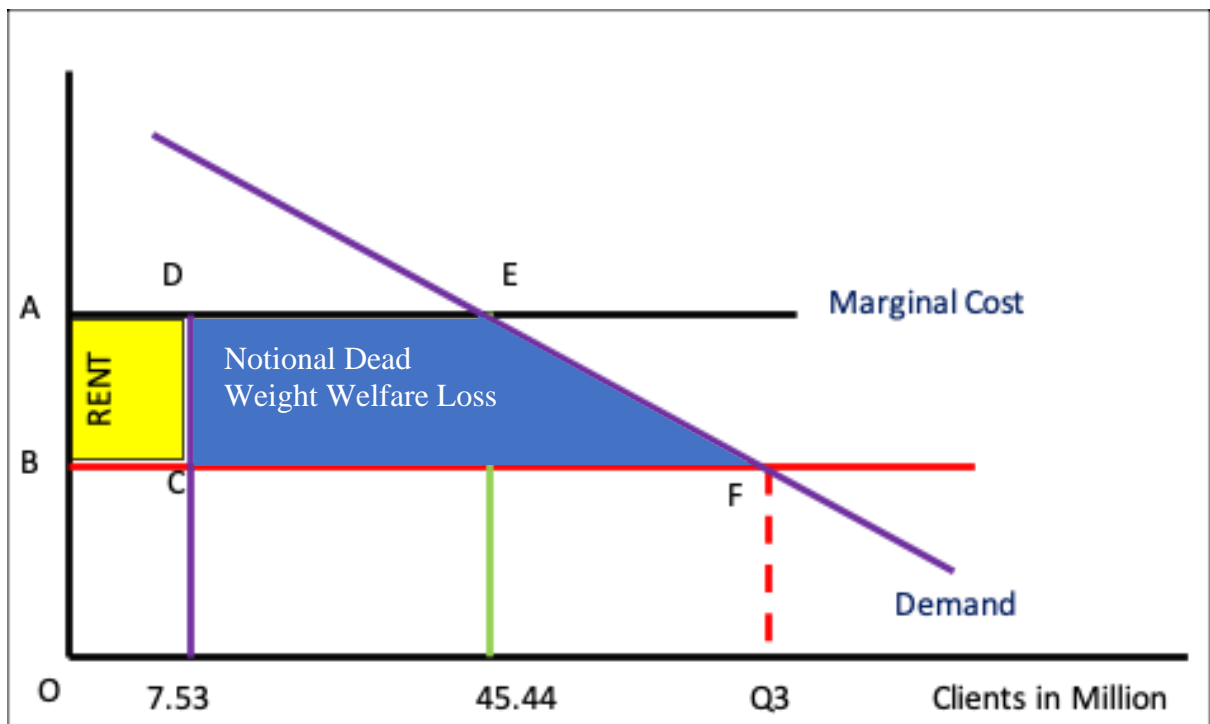
In Bangladesh, there are over 800 microfinance organizations works to finance the poor and marginalized poor. As this thesis already outlined that high transaction and operational cost microfinance is one of the main barriers, on the other hand, high interest margin considered as the barrier as a result potential borrower are not willing to join microfinance organization. The high interest margin charges by microfinance due to the high operational and funding cost. Hence, if microfinance can reduce their cost it may helped microfinance to charges a lower rate than previous. Or if it charges the same interest rate it may acquire some short of rent that helps microfinance to expand their operation to the other disadvantage population.

Let's examine the mobile banking through Schumpeterian Rent. Let's assume, all microfinance average cost is "OA" that intersect the demand curve at "E" is the equilibrium of the microfinance market where all MFIs together serves 45.44 million clients. In the recent year, some microfinance organizations such as BRAC, Sajida Foundation introduced mobile banking in their service operations. As already highlight in previous sections, mobile banking substantially reduces the operational cost of microfinance and increase efficiency from 1.4 to 6 times.

The introduction of mobile banking reduces the operational cost BRAC and Sajida Foundation from "OA" to "OB". As the capacity of both microfinances is limited, hence, it was founding that together two BRAC and Sajida foundation serves 7.53 million clients. Therefore, we can assume that the average cost these 7.53 million clients is lower than rest of the clients. It was revealed in previous section, the interest rate of BRAC and Sajida Foundation same as microfinance industry. As a result, these two microfinances earn some extra profits, which is categories as Schumpeterian rent. It is obvious, if all microfinance introduces mobile banking than the new average cost curve intersects the demand curve at

point “F”, the new market equilibrium. At point “F”, we can say, at new equilibrium point the new equilibrium quantity Q_3 , which is greater than Q_2 . Hence, from the discussion, we can say that if all microfinance institutes introduce mobile banking service, it will help MFIs to expand or extend the microfinance service to a larger portion of the clients compare to previous, otherwise, society will experience some “notional dead weight welfare loss” which highlighted by CDEF.

Figure 4-G: Schumpeterian rent through mobile banking

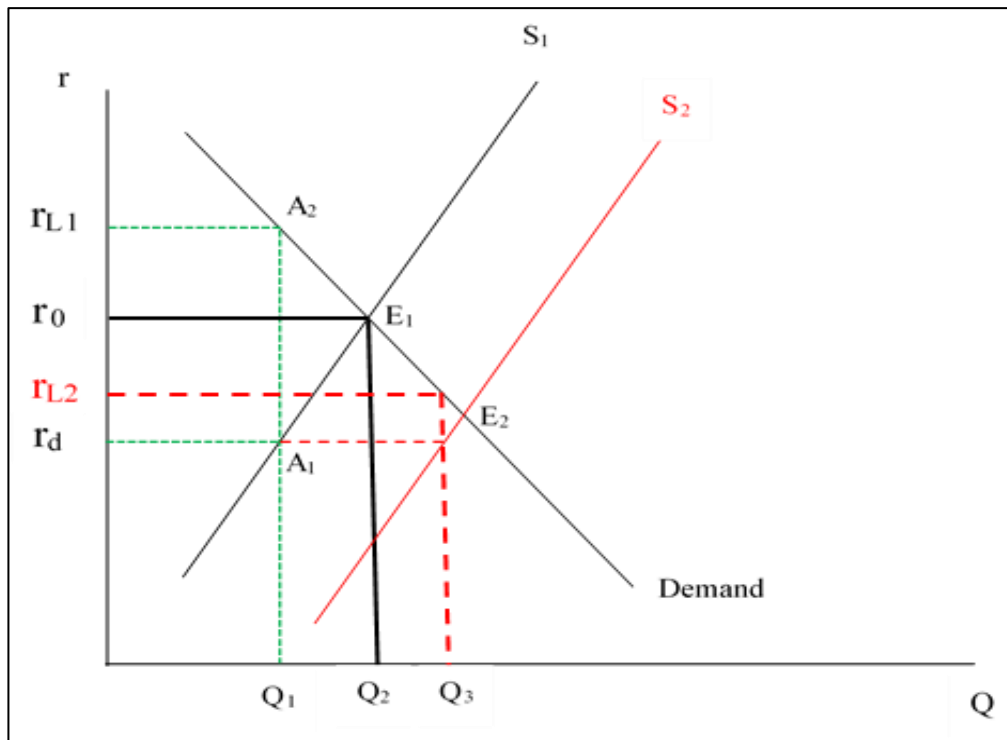


Source: Authors creation with the help of Khan (2000)

Figure 4-G shows that microfinance that introduce mobile banking they already in a position to earn rent. Now the question, how rent can affect financial inclusion. Based on Hellman et al., (1997), rent in financial sector can increase both deposit and loan. To analysis the rent effect on financial inclusion this research going to use Financial Restraint Policy.

Let's assume in neoclassical economy, the demand for loan “D” and Supply of loan “ S_1 ” intersect at E_1 where equilibrium interest rate is “ r_0 ” and the equilibrium quantity is “ Q_2 ”.

Figure 4-H: Rent effect of financial restraint



Source: Chin and Sundram (2000)⁶

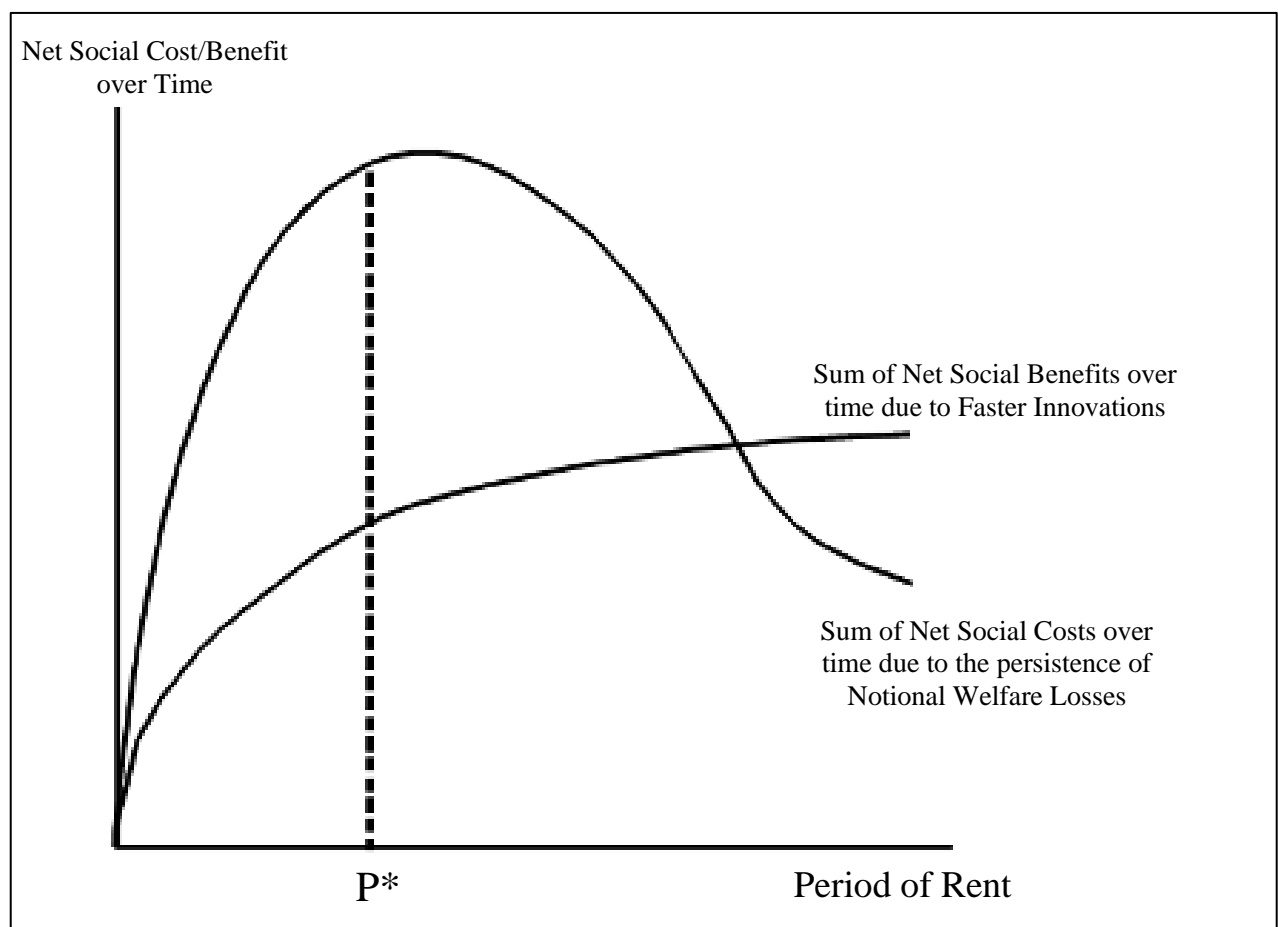
To reduce the adverse selection and moral hazard, government and/or banks decide or celling the deposit interest rate. Let's assume, banks celling the deposit rate at " r_d ", the corresponding lending rate is " r_{L1} " and total loanable fund is " Q_1 ". Thus, bank can earn economic rent " $A_1A_2r_{L1}r_d$ ". According to Chin and Sundram (2000), financial sector rent can increase savings by inducing greater security and improving deposit infrastructure. That shift the supply curve rightward from " S_1 " to " S_2 " by opening new branches in previously unserved rural areas or by making other investments to attract new depositors into the formal financial system. Now at the same deposit rate " r_D " financial institution can collect up to Q_3 deposit which is greater than previously collected Q_1 . From the above discussion we can say that rent

⁶ Chin, K. F., KS, J., & Sundram, J. K. (2000). Financial sector rents in Malaysia. In Khan, M. H., & Jomo, K. S. (Eds.). (2000). Rents, rent-seeking and economic development: Theory and evidence in Asia. Cambridge University Press

that earned by introducing mobile banking (FinTech) has the potentiality to increase financial inclusion.

Now the policy question is, how long the Schumpeterian rent will exist or in other word, how long the MFIs, who introduced mobile banking should receive Schumpeterian rent. Based on the Khan (2000) the rent should not exist for a too long or too short. If the period became too long, it will become monopoly rent and if it's too short the innovator firm lose the motivation to innovate. Hence, it must consider an appropriate time frame based on cost benefits analysis. There is no precise way to determine the optimal balance period which will ensure the optimal growth rate. However, Figure 4-I help us to analysis the appropriate time length.

Figure 4-I: Dynamic Net Social Benefits with Schumpeterian Rents



Source: Khan (2000)

Figure 4-I represent the net social benefits and net social cost over time. The net social benefits consist with total benefits received by the society for the adoption or innovation on the other hand, net social cost consists due to the persistence of Notional Welfare Losses. The net social benefit is upward sloping and the benefit of innovation or adoption decline after at a certain period due to net present value of adaptation or innovations. According to Khan (2000) the optimal period is P^* where the net social benefits if higher. The optimal period P^* varies based on region, industry and the types of products.

Success Story of Mobile Banking of SAJIDA

Shoma and her husband had little to nothing when they got married at the age of 18 and they had to work in household jobs and as daily Labor to make ends meet. Shoma loved to cook and one day she decided to open a small catering service for people living around her. With a loan from Sajida Foundation, she expanded this catering service to a small restaurant that serves breakfast and lunch. She built this restaurant from the ground in about a decade, and now this restaurant runs all day.

She uses Mobile Money and finds that this has helped her run her business smoothly. She sits in at the shop from 8 am till 12am and comes back home and starts another round of cooking. On top of that she has multiple children and the youngest is less than 7 years old, so she has to look after her family while running a business. She finds herself with very little time to pay back the loan to a physical location. "The biggest help for me was to not have to leave the restaurant and attend the group meetings or make the frequent physical visits to the centers and branches. Mobile money has definitely made things easier, and I can pay back at the click of a button."

Shoma has a dream of expanding her restaurant to a business area, catering to more people. One says that if she were to continue this form of payment, it would help her in the future. She believes Sajida Foundation's continued financial support and Mobile Money helps her be more efficient and allow her to live a hassle-free life.

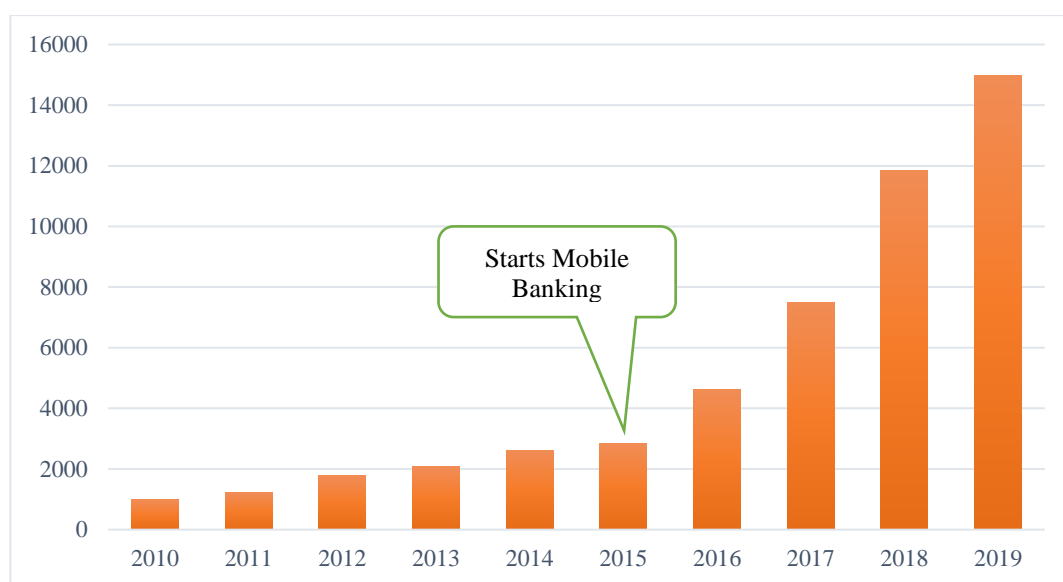
--Sajida Foundation, Annual Report 2018, p.25

4.7 Mobile banking on Financial Inclusion: Evidence from Sajida Foundation

Microfinance those who introduce their own mobile banking operation, Sajida Foundation is one of the pointier. They introduce their own mobile banking operation ‘OPTIX’ to all their clients since 2015. They provide loan and collect loan repayment and deposit through mobile banking.

The figure 4-J provide the information regarding loan outstanding over time. Form the figure we see that, before introducing mobile banking by Sajida Foundation, their loan outstanding quite low. But after 2015 we see that the outstanding loan increases faster than previous. This fast growth may be result of either the average loan amount increases for the previous with same client’s segment or it increases it customer segment through mobile banking.

Figure 4-J: Loan outstanding of Sajida Foundation

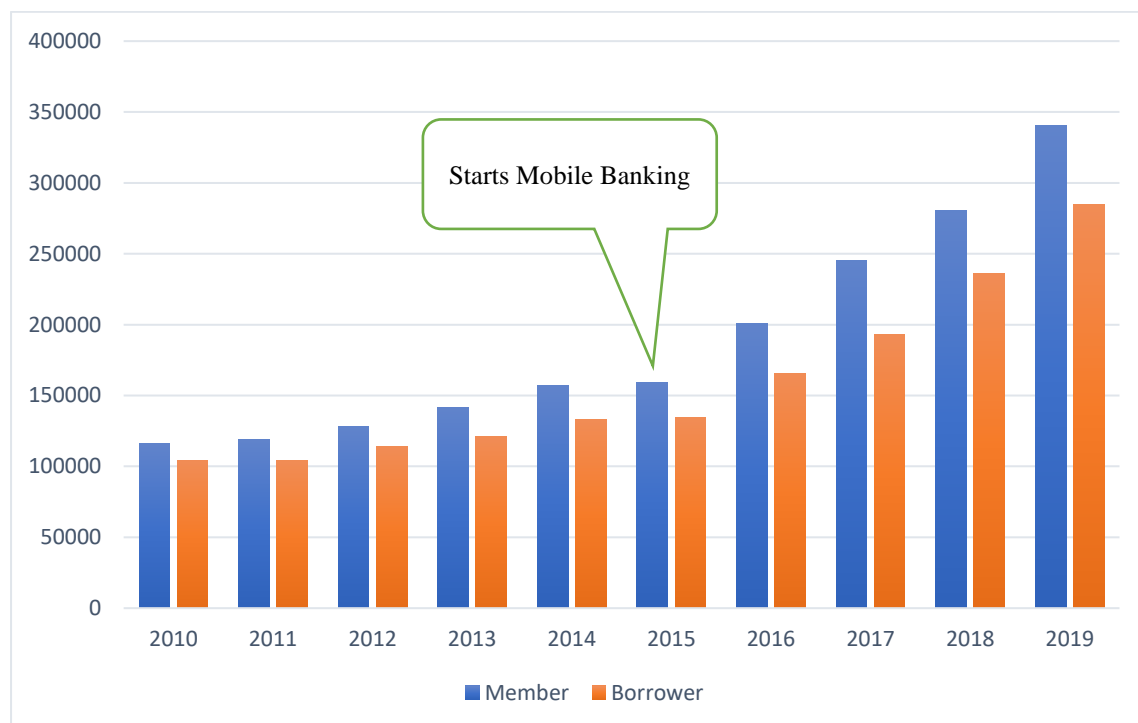


Source: Author’s creation

Figure 4-J helps us to get a concrete idea regarding fast growth of outstanding loan of Sajida Foundation. Figure 4-K represent the members and borrowers of Sajida Foundation before and after introduction of mobile banking. From the figure we see the same patterns as Figure 4-J.

Before adoption of mobile banking the member and borrower did not grow that much. Almost same as previous year. But after 2015 we see both member and borrower grow faster than previous period. therefore, we can say the faster growth of outstanding loan is due to the increased number of borrowers not for average loan. Hence, we can assume, introduction of mobile banking helps Sajida foundation to increase its outstanding loan as well as member and borrower.

Figure 4-K: Clients and member of Sajida Foundation



Source: Author's Creation

5 Chapter 5: Financial Inclusion and Poverty reduction: An analysis based on Capability Approach

“The real wealth of a nation is its people. And the purpose of development is to create an enabling environment for people to enjoy long, healthy, and creative lives. This simple but powerful truth is too often forgotten in the pursuit of material and financial wealth.”

---- Report of United Nations Development Program, 1990

5.1 Introduction

Financial inclusion refers to the access of financial services by all segments of people. Now a day's financial inclusion and microfinance aligned in same line and both used as a synonym. Fundamentally, microfinance catch the eyes of world development organizations such as World Bank, IMF that microfinance is one of the important tools to provide the financial service to the large number of the population. Fortunately, microfinance in financial inclusion played an important role, that cannot be ignored at any ways. Hence, United Nation celebrate the year 2005 as the “Year of Microfinance”. By observing the contribution of microfinance in financial inclusion, development organization are not only promoted microfinance organization but also funding them through grant, donation or soft loan. Several research evident that microfinance organizations reduce the poverty by increasing income or expenditure. But that is naïve to accept the contribution. As microfinance provides the loan to the poor. Hence, it automatically increases the income of poor and in same way it increases the expenditure for the short time. This does not prove; the economic condition of poor has been changed in a sustainable way. Based on the Sen's arguments, to improve the poverty status of the poor, it is necessary to increase capabilities not the income or expenditure. This chapter discuss, the impact of financial inclusion on capability with reference to Bangladesh.

5.2 Defining and measuring poverty

There is a long debate in defining poverty. It cannot be defined in a single theme. As It was argued by Sachs (2005) poverty has a distinct characteristic that changes based on time and region. Till 1970s, poverty defined as, “the lack of sufficient material means to ensure biological subsistence as determined by the research of nutritionists”. Day by day the definition of poverty has been changing. In 1976, International Labor Organization (ILO) come up with an idea of poverty with two folds, where, previously it was considered only nutrition or biological substances. According ILO (1976) poverty as “the minimum conditions of private consumption for a family, such as food, housing, some items of furniture and equipment, and clothing; and the essential services furnished by and for the community, such as drinking water, sanitation, public transport, health care, education and cultural facilities and centers”.

According to Diop, Hilfenkamp, and MichelServet (2007), in measuring poverty two methods are widely used; the poverty line methods and unsatisfied basic needs methods. The poverty line method consists “in comparing the income or spending of a household or person with a threshold (the poverty line) that corresponds to the monetary cost of a number of goods and services”. The threshold measure given by world bank is \$2 per day per persons. In comparing with international poverty line, every country measures their own nation poverty line by calculation the price of basic food bundle on their country. On the other hand, unsatisfied basic needs methods, observed, to what extent or the amount of income or expenditure meet the basic needs that make one satisfaction. In theory, it is easy to explain the unsatisfied basic needs poverty but it’s very difficult to measure. Because, same product has different satisfaction based on time and place.

According to Robeyns (2003) also explained, the measuring technique of poverty. The author mentions, there are two methods of measuring poverty; single dimension poverty and multi-dimension poverty. The single dimension poverty is same as Diop, Hilfenkamp, and

Michel Servet (2007) poverty line methods, where income or expenditure compare with some predetermined line basis. The later, one multidimensional poverty consists with different basic elements, such as income, expenditure, consumptions, health, shelter, education, gender equality and so on. As the concept of poverty expand over time, it was observed that over time, multi-dimensional poverty become popularly accepted over single measure poverty. The multidimensional poverty is also considered as the product of Sen's capability approach.

5.3 Sen Capability approach

The Sen 'Capability approach' or sometimes known as 'capabilities approach' or some philosopher refers as 'Capabilitarianism' (Robeyns 2016) is a theoretical framework developed by Amartya Sen over time. Based on the literature, it was argued that capability approach is the refines and transforms form of the 'concept of entitlements' (Tseng, 2011). According to Sen (1993) "the right focus for assessing people's well-being and standard of living in society is neither commodities, nor characteristics, nor utility, but their 'capacity to achieve valuable functioning'" (p.31). Based on the Sen (1993) functionings is a number of 'being' and 'doing' that a person wants to achieve at a time or over a period of time.

A functioning is an achievement of a person: what he or she manages to do or to be. It reflects, as it were, a part of the 'state' of that person. It has to be distinguished from the commodities which are used to achieve those functionings... It has to be distinguished also from the happiness generated by functioning... A functioning is thus different both from (1) having goods (and the corresponding characteristics), to which it is posterior and (2) having utility (in the form of happiness resulting from that functioning), to which it is, in an important way, prior (Sen 1987:7).

Sen mentioned, functionings is the status of various states of human beings and activities that range from simple functioning such as nutrition, life expectancy to a more complex functionings like as, self-respect and/or social recognition. Functionings is the

basis of assessment of an individual's well-being. Capabilities are the freedom that a person is actually 'to do' and 'to be' or as a wide range of capacities and opportunities required to achieve human well-being. In simple, capabilities are the freedom to choose different functionings.

"Closely related to the notion of functionings is that of the capability to function. It represents the various combinations of functionings (beings and doings) that the person can achieve. Capability is, thus, a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another" Sen (1992, p.40).

Walker (2005) states that capability refers to our freedom to promote or achieve valuable functionings. The author also argues, capabilities approach concern about well-being and quality of life, it not only focuses of income or expenditure rather focuses on resources creations opportunities. While developing considered in the economic terms but Sen argues that the development link with quality of life and freedom. Indeed, the widely prevalent concentration on the expansion of real income and on economic growth as the characteristics of successful development can be precisely an aspect of the mistake (Sen, 1990, p. 41). Sen see the development as a combination of distinct process rather than as the expansion of real income or utilities. Thus, he states, the development should consider as human development which is a combination of social and economic processes.

5.4 Financial inclusion and its contributing to basic capabilities

In the literature, several research and policy maker agree that Sen's capability approach includes well-being of the individuals, poverty and development. However, current literature argues that Sen capability approach helps us to understand development through functionings and capabilities but its almost impossible to measure empirically (Tseng, 2011, p. 5). In the

assessment of the contribution of financial inclusion on Sen's capability theory will particularly focus on education, health, and the empowerment.

5.4.1 Financial inclusion and Education

There is no doubt that education play an active role in human and economic development. There has been ample research found in the literature provided that schooling has positive relation with GDP growth (Barro 1991; Bils & Klenow 2000). The world bank also highlights positive impact of education

“Education is the foundation of all societies and globally competitive economies. It is the basis for reducing poverty and inequality, improving health, enabling the use of new technologies, and creating and spreading knowledge. In an increasingly complex, knowledge-dependent world, primary education, as the gateway to higher levels of education, must be the first priority”.

Sen (1990) also argues that education has a direct impact on capability improvement. Let's focus what is the impact of financial inclusion on education. There is no direct relation found in the literature regarding financial inclusion and education. In this sense, first we identify what are the barrier of education especially the children education. Based on Quaegebeur and Marthi (2005, p.9) the fundamental barriers of education are Income, Child labor, Risk management, Gender Barrier and parent's education.

It can be argued that financial inclusion has the potentiality that reduce the fundamental barrier of education of the poor families. In case of income barrier, financial inclusion directly increases or try to increase the income of the poor family. On the other hand, financial inclusion through microfinance, who basically focused women to empower. It was found that women are more concern regarding children education then men (Lundberg et al., 1997). When

financial inclusion helps the poor family with a stable income it helps to reduce the child labor as a result child may continue their school. In the income shocks, Jacoby's study (1994) in Peru identified that poor household withdraw their children from school because poor people don't have access to any financial institute. Similarly, Ersado (2002) conducted a research in Nepal focusing the microfinance credit loan and children education. Ersado finds that availability of loan, helps to improve children educational rate

Financial inclusion not only increase the general education but also increase financial literacy. For example, low level financial literacy tends to poor financial decision (Lusardi and Mitchell, 2007); on the other hand, high financial literacy tends to make an appropriate financial decision regarding savings and loan (Stango and Zinman, 2006). European Commission (2007) states:

Financial education enables individuals to improve their understanding of financial products and concepts and develop the skills necessary to improve their financial literacy, i.e. to be aware of financial risks and opportunities and to make informed decisions in the choice of financial services.

5.4.2 Financial Inclusion and Health

According to WHO, every year around 25 million household are forced into poverty due to illness and struggle to pay healthcare fees. Moreover, 2 million children die each year with the illness of preventable illnesses because they are too poor to survive. There is two different explanations found in the literature, in one side, it was found that financial inclusion or microfinance programs had a positive impact on household total Calorie intake in Bangladesh China and Madagascar (Zeller & Sharma, 1998). Similarly, Pitt and Khandker (1996) found that microfinance programs increase households' food consumption. On the opposite side, Diagne and Zeller (2001) identified microfinance organization of the financial inclusion programs failed to provide securities of their clients. The same conclusion drowns by

Schrieder (1996) for Cameroon where he did not find any strong relation exist between financial inclusion and food available for the whole year.

Even though microfinance has a mixed contribution on calorie intake, but it proved a significant contribution on public health. BRAC's always involved into socio-economic development in Bangladesh. To make a powerful contribution on public health, BRAC partnered with the national government, and launch several nationwide projects that includes, Water, Sanitation and Hygiene (WASH), Tuberculosis Control, Malaria Control, and HIV/AIDS Prevention, in Bangladesh. BRAC's Tuberculosis Control program covers 40 out of 64 districts (BRAC, 2015). Several microfinances introduced health insurance for their members to improve the health condition better off. For example, in Bangladesh Grameen Bank and BRAC MFIs introduced health insurance for the registrar members and their family.

5.4.3 Financial Inclusion and Empowerment

Financial Inclusion through microfinance has challenged to empower the poor women in Bangladesh. Most of the microfinance target women for their financial inclusions. There are two positive impact of financial inclusion on women empowerment; first, it increases and/or helps to increase the income and the second, after joining the microfinance organizations, women now come up with the voice in their family regarding decision making. Same argument provided by (Malhotra et al. 2002: p.6); Women should be able to define self-interest and choice, and consider themselves as not only able, but entitled to make choices, that is the true meaning of Sen's women capabilities approach of developments.

6 Chapter 6: Key Findings, Conclusion, Recommendations and Future Research

6.1 Key Findings

6.1.1 Barrier of Microfinance institution

Based on the above discussion this research finds that, financial institution especially the microfinance organization face some critical barrier in financial inclusion when it comes to poor and marginalized poor. Barrier of microfinance organization arise from both supply and demand side. In case of supply side, the critical barriers are, market barrier such as high transaction cost, funding cost and operational cost. The microfinance financing cost or cost of fund is around 4-6 percent of the total outstanding loan and operational cost very from 18-26 percent of their total outstanding loan. The second, most critical barrier faced by microfinance industry is regulatory barrier. This barrier mostly come from the formal rules a regulation. The deposit is considered as one of the low-cost funds from microfinance organization after grant and soft loan. But microfinance especially the NGO-type microfinance is restricted to collect or accepts deposit from non-clients. Another barrier of microfinance is, a huge amount of resource kept idle due to the regulatory barrier. The reserve ratio of microfinance is 15%, that is every microfinance must deposit 15% to any schedule bank, where reserve ratio of schedule bank is only 4 percent. Besides, the high reserve ratio, every microfinance must reserve 10 percent of their profit to create a reserve funds. These two restrictions looked a huge amount of fund that incurred cost. The last barrier faced by microfinance is infrastructural barriers such as physical and financial infrastructure barrier. Physical infrastructure barrier includes; communications facilities, such as road, and bridges and financial infrastructure includes;

failed to issue any financial documents such as Cheque, establishment or access to branch and ATM.

The barrier that faced by demand sider are; high interest margin, access to financial institution by poor, and less customer protection. It was found that microfinance charges excessive rate of interest. On the other hand, poor has less chance to engage with microfinance. One study found that only 6-25 percent microfinance clients are poor, but rest are non-poor. The loan collection procedure is rude when it comes to default clients. In some cases, microfinance field officer and group member seize and sell basic necessity items such as food, cloth and other utensils, even in some cases the houses to recover the loan.

6.1.2 Financial Inclusion through Fintech in Bangladesh; opportunity and Challenges

The concept of Fintech is quite new in Bangladesh. Several Fintech components that helps to increase the financial inclusion such as, Crowd lending, crowdfunding, Cryptocurrency, Mobile Banking, Digital Currency and InsurTech. But based on Bangladesh legal regulation few are permitted to operate in Bangladesh. Among all the permitted fintech components, Mobile banking acquire the lion share or in other word, mobile banking is the most common fintech component that used in Bangladesh. Now there are 18 banks and several online platform and Bangladesh postal service providing mobile banking service to over 80 million clients.

In the same tradition, several microfinance organizations also introduce their mobile service in their service manual, through introducing their own mobile banking platform or by merge with other fintech firms. In this race, BRAC and Sajida Foundation are ahead or become the market leader in mobile banking by microfinance organizations.

There are several advantages of mobile banking over traditional banking facility. It empowers clients by providing a platform to use their money at any time when it required

without any formal banking hours. It helps microfinance organization to increase their efficiency. It found that mobile banking or digitalization of microfinance increase efficiency from 1.4 times to 6 times compare their current efficiency. Hence, it reduces a huge amount of transaction and operational cost of microfinance organizations. Mobile banking also provides the unlimited access within the national boundary. To provide microfinance service through mobile banking, microfinance institute reached some water locked and hilly area. Where it was difficult to cover by opening a physical branch office.

Throughout this research we examine to what extent, fintech especially, mobile banking helps microfinance to reduces their barriers. It was proved that mobile baking has the opportunity to reduce most of the barrier raised in chapter 3. It was also examined whether mobile banking has the potential to increase financial inclusion by using Schumpeterian Rent mode. Theoretically (assuming that everything remains same), this research proved that mobile has the potential to increase financial inclusion.

6.1.3 Financial Inclusion and Poverty reduction; a Capability Approach

It was established that fintech has the potential to increase financial inclusion. But to what extent this financial inclusion helps to reduce poverty in Bangladesh. It's clear from the literature, researches emphasized on capability building rather increase in income. Poverty reduction through income shows unsustainable, as a result, scholars gives importance on increase capability. In this research we try to analysis the impact of financial inclusion on capability. Based on the Sen capability approach; education, health and empowerment play an important role in reducing poverty. Hence, we see, to what extend financial inclusion contribute education, public health and empowerment especially women empowerment. This research discovers that financial inclusion has a positive impact on education, public health and women empowerment.

6.2 Conclusion and Policy Recommendations

The objective of this research is to explore the financial inclusion puzzle raised in chapter 1, which is, in Bangladesh financial inclusion increasing over time but at the same time poverty, unbanked and multi-dimension poverty remain at an unexpectedly high level. In exploring the above puzzle, this research tried to answer the following research questions

1. Why does the existing financial institution failed to empower the poor and marginalized people?
2. To what extend FinTech could be a powerful solution of existing financial institution that helps to increase financial inclusion?
3. To what extend Financial Inclusion helps to reduce poverty?

To answer the research question, we hypothesis;

H1: Current financial system failed to finance the poor and marginalized poor.

H2: FinTech has the potentiality to overcome the barrier of current financial institutions.

H3: Financial Inclusion helps to reduce poverty but in an indirect way.

To answer the first question this research developed an analytical framework to identify the barrier of financial inclusion. To answer second question, this research used ‘Schumpeterian Rent’ and ‘Financial Restraint model’ to see the potentiality of Fintech in financial inclusion. To answer third question, this research analysis the impact of financial inclusion on poverty under Sen’s capability approach.

Based on the analysis, this research finds, there are several barriers faced by microfinance institute, hence current financial institution failed to empower poor and marginalized poor. The barriers are not only coming from microfinance institute but also from the clients. This evident to accept our first hypothesis.

This research identified several barriers that faced by current financial institute (MFIs). Those barriers hamper the growth of financial inclusion in Bangladesh. In chapter 4 we identified, the common barrier of MFIs are Market barrier, Regulatory Barrier and Infrastructure barrier, High interest margin and limited access to MFIs. In the same chapter we explore the benefits of Fintech (mobile banking) over current financial institute in Bangladesh. Based on the benefits that has been identified, we see most of the barrier that faced by current microfinance institute can be remove through Fintech.

It was explained in chapter 4, that several fintech component helps to increase financial inclusion. But based on the legal regulations, few Fintech components are permitted in Bangladesh. Among all the fintech component ‘mobile banking’ is the prominent one.

Based on the Schumpeterian Rent model, this research identified that mobile banking provides an opportunity to MFIs for rent seeking. It was also found that, it is necessary for all microfinance institute to adopt mobile banking, otherwise, society will be incurred ‘Notional Dead Weight Welfare Loss’. By using monitoring rent, theoretically it proved that fintech has the potential to increase financial inclusion and based on the benefits of Fintech, we observed Fintech capable to remove most of the barrier faced by current financial institute. Hence, we can accept our second hypothesis; FinTech has the potentiality to overcome the barrier of current financial institutions.

Regarding the impact of financial inclusion on poverty under capability approach, we find that financial inclusion helps to increase capability of the poor and marginalized poor through education, improving health and empowerment. Hence, we can say financial inclusion helps poverty reduction not any direct but an indirect way. That helps us to accept our third hypothesis; Financial Inclusion helps to reduce poverty but, perhaps, in an indirect way.

Based on the research finding, this research offers the following policy recommendations

1. Fintech has the potential to increase financial inclusion, where most of the fintech component such as cryptocurrency, digital currency and so on are restricted by different legal regulations. Therefore, it's right time for the government to rethink again whether to open up other FinTech components for social and economic development.
2. As we discussed in earlier, Schumpeterian rent should not be too long and too short, either. Because, government should take care the incentives of innovating firm as well as, government must take care to minimize the welfare loss. In this situation, MRA must monitor and supervise the performance of those MFIs who are offering mobile banking and revoke the license of the low performing microfinance to minimize the welfare loss.
3. Legal policy introduces to help domestic industry, but in case of microfinance, several restrictions such as reserve ratio and surplus reserve ratio restrict the use of financial resources. The above two fund remain idle and incurred some cost. Hence, government may relax reserve and surplus reserve ratio of microfinance organizations. This idle fund may help MFIs to expand its operation to marginalized poor.

6.3 Contribution and Limitations

A research can contribute in the current literature in different ways; for example, a research can contribute by introducing a new research method, provide evidence by using existing theories, or develop a new theory. According to Glatthorn and Joyner (2005, p.19) research can contribute in the following ways: testing a theory, contributing to the development of theory, extending existing knowledge, changing prevailing beliefs, suggesting relationships between phenomena, extending a research methodology or instrument, and providing greater depth of knowledge about previously studied phenomena.

This research developed analytical framework; this is theoretical contribution of the current literature. This research gathers new evidence in the field of Fintech that contribute in financial inclusion and poverty reduction.

This research failed to explain the cost of introducing mobile banking by different MFIs in Bangladesh. This is one of the limitations of this research. This research only considered Bangladesh as developing country. The result of this research applicable only that countries with same socio-economic conditions. This limitation maybe covered in future research.

7 Appendix

Appendix-7-A: List of Banks offering Mobile Banking⁷

Bank Name	Mobile Banking Platform	Lunch
Duch-Bangla Bank Limited.	Rocket	March 2011
BRAC Bank Limited.	bKash	July 2011
Prime Bank Limited.	EasyCash	N/A
Islami Bank Bangladesh Limited.	mCash	N/A
Trust Bank	T-Cash	N/A
NCC Bank Limited	SureCash	2015
Bank Asia Limited.	Mobile Banking	N/A
Dhaka Bank	SMS Banking	N/A
Mercantile Bank	My Cash	February 2012
AB Bank	SMS Banking	N/A
South East Bank	SMS Banking	N/A
First Security Islami Bank	SureCash	2015
Bangladesh Commerce Bank	SureCash	2015
Standard Bank	SPOT CASH	N/A
United Commerce Bank	UCash	November 2013
One Bank Ltd	Ok Mobile Bank	October 2013
Bangladesh Postal Service	Nagad	N/A
Rupali Bank	SureCash	2015
Jumuna Bank	SureCash	2015

Source: Authors Collection

⁷ N/A=Not available

8 Reference

- Ahmed, S. M., & Ansari, M. I. (1998). Financial sector development and economic growth: The South-Asian experience. *Journal of Asian Economics*, 9(3), 503-517.
- Aldridge, I., & Krawciw, S. (2017). Real-time risk: What investors should know about FinTech, high-frequency trading, and flash crashes. John Wiley & Sons.
- Arner, D. (2014). FinTech and RegTech: Opportunities and Challenges. Asian Institute of International Financial Law University of Hong Kong.
- Arner, D. W., Barberis, J., & Buckley, R. P. (2015). The evolution of Fintech: A new post-crisis paradigm. *Geo. J. Int'l L.*, 47, 1271.
- Arner, D. W.; Barberis, J.; Buckey, R. P. (2017). Fintech, regtech, and the reconceptualization of financial regulation. *Northwestern Journal of International Law & Business*, 37(3), 371-414.
- Arslanian, H., & Fischer, F. (2019). *The Future of Finance: The Impact of FinTech, AI, and Crypto on Financial Services*. Springer.
- Banerjee, P. K., Kayum, M. A., & Uddin, H. (2020). Financial Sector Development and Its Contribution to Economic Development of Bangladesh. In *Bangladesh's Economic and Social Progress* (pp. 147-178). Palgrave Macmillan, Singapore.
- Barai, M. K. (2020). Bangladesh's Economic and Social Progress: From a Basket Case to a Development Model. Springer Nature.
- Barai, M. K. (2020). Bangladesh's Economic and Social Progress: From a Basket Case to a Development Model. Springer Nature.
- Buchak, G., Matvos, G., Piskorski, T., & Seru, A. (2018). Fintech, regulatory arbitrage, and the rise of shadow banks. *Journal of Financial Economics*, 130(3), 453-483.
- Chakravarty, S. R., & Pal, R. (2013). Financial inclusion in India: An axiomatic approach. *Journal of Policy modeling*, 35(5), 813-837.
- Chin, K. F., KS, J., & Sundram, J. K. (2000). Financial sector rents in Malaysia. In Khan, M. H., & Jomo, K. S. (Eds.). (2000). Rents, rent-seeking and economic development: Theory and evidence in Asia. Cambridge University Press.
- Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution*. The World Bank
- Diop, A., Hilfenkamp, I and MichelServet, J., (2007) Poverty versus Inequality in Balkenhol, B. (Ed.). (2007). Microfinance and public policy: Outreach, performance and efficiency. Springer.

- Dorfleitner, G., Hornuf, L., Schmitt, M., & Weber, M. (2017). Definition of FinTech and description of the FinTech industry. In *FinTech in Germany* (pp. 5-10). Springer, Cham.
- European Commission. (2007) Communication on Financial Education. Retrieve from <
<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0808:FIN:EN:PDF>>. Accessed on May 2, 2020.
- Freedman, R. S. (2006). Introduction to Financial Technology. Academic Press.
- Gabor, D., & Brooks, S. (2017). The digital revolution in financial inclusion: international development in the fintech era. *New Political Economy*, 22(4), 423-436.
- Gai, K., Qiu, M., & Sun, X. (2018). A survey on FinTech. *Journal of Network and Computer Applications*, 103, 262-273.
- Gerlach, C. A., Simmons, R., & Lam, S. (2016). US Regulation of FinTech-Recent Developments and Challenges. *Journal of Financial Transformation*, 44, 87-96.
- Gomber, P., Koch, J. A., & Siering, M. (2017). Digital Finance and FinTech: current research and future research directions. *Journal of Business Economics*, 87(5), 537-580.
- Hannig, A., & Jansen, S. (2010). Financial inclusion and financial stability: Current policy issues.
- Hanouch, M., & Rotman, S. (2013). Microfinance and mobile banking: Blurring the lines. Focus Note, 88. CGAP.
- Hau, H., Huang, Y., Shan, H., & Sheng, Z. (2018). Fintech credit, financial inclusion and entrepreneurial growth. documento de trabajo.
- Islam, R., Karim, M. A., Ahmad, R., & Nittoli, A. (2018). Loan Repayment Pressure in the Practice of Microfinance in Bangladesh: An Empirical Study on Grameen Bank, BRAC and ASA. *Journal of Rural Development*, 37(4), 697-718.
- Jagtiani, J., & Lemieux, C. (2017). Fintech lending: Financial inclusion, risk pricing, and alternative information.
- Jenik, I., Lyman, T., & Nava, A. (2017). Crowdfunding and financial inclusion. CGAP (Consultative Group to Assist the Poor) Working Paper.
- Khalily, M. B., Khaleque, M. A., & Badruddoza, S. (2014). Impact of regulation on the cost efficiency of microfinance institutions in Bangladesh. In *Microfinance Institutions* (pp. 139-161). Palgrave Macmillan, London.
- Khan, M. H., & Jomo, K. S. (Eds.). (2000). Rents, rent-seeking and economic development: Theory and evidence in Asia. Cambridge University Press.
- Kline, K., & Sadhu, S. (2011). Consumer Protection Regulation: Microfinance Needs and Initiatives in India. *The microFINANCE*, 1.

- Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, 61(1), 35-46.
- Magnuson, W. (2018). Regulating fintech. *Vand. L. Rev.*, 71, 1167.
- Mahmud, M., Otsuka, K., Sawada, Y., & Yamada, E. (2018). Development Transformation in Bangladesh: An Overview. In *Economic and Social Development of Bangladesh* (pp. 3-26). Palgrave Macmillan, Cham.
- Morgan, P. J., & Yoshino, N. (2017). Overview of Financial Inclusion, Regulation, and Education. *FINANCIAL INCLUSION, REGULATION, AND EDUCATION*, 1.
- Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329-340.
- Park, C. Y., & Mercado, R. (2015). Financial inclusion, poverty, and income inequality in developing Asia. *Asian Development Bank Economics Working Paper Series*, (426).
- Paul, V., (2009). "The only thing useful banks have invented in 20 years is the ATM." *New York Post*, Dec 13, 2009. Retrieve from <<https://nypost.com/2009/12/13/the-only-thing-useful-banks-have-invented-in-20-years-is-the-atm/>>. Accessed on April 20, 2020.
- Philippon, T. (2016). The fintech opportunity (No. w22476). National Bureau of Economic Research.
- Rahman, M. W., & Luo, J. (2012). Regulation of microfinance service provider in China and Bangladesh: An approach to strengthening the regulatory environment. *African Journal of Business Management*, 6(3), 1019-1033.
- Sachs, J. (2005). *The end of poverty: How we can make it happen in our lifetime*. Penguin UK.
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of international development*, 23(5), 613-628.
- Schueffel, P. (2016). Taming the Beast: A Scientific Definition of FinTech. *Journal of Innovation Management*, 4(4), 32-54.
- Sen, A. (1987). *On Ethics and Economics*, New Delhi: Oxford University Press
- Sen, A. (1990). Development as capability expansion. *The community development reader*, 41-58.
- Sen, A. (1992). *Inequality reexamined*. Oxford, England: Oxford University Press.
- Sen, A. (1993). Capability and Well-being' in *The Quality of Life*, eds. Martha Nussbaum and Amartya Sen, Oxford: Oxford University Press, 30-53.
- Sen, A. (1999). *Development as Freedom*. Oxford, UK: Oxford University Press.

- Shankar, S. (2013). Financial inclusion in India: Do microfinance institutions address access barriers. *ACRN Journal of Entrepreneurship Perspectives*, 2(1), 60-74.
- Tabassam, R. (2020). Fintech MFS: Mobile Wallet for Easy Money Transfer, Payment & Savings in Bangladesh. *UNB NEWS*, MARCH 01, 2020. Retrieve from <https://unb.com.bd/category/Business/fintech-mfs-mobile-wallet-for-easy-money-transfer-payment-savings-in-bangladesh/43453>. Access Date May 29, 2020.
- Tseng, C. C. (2011). Microfinance and Amartya Sen's capability approach (Doctoral dissertation, University of Birmingham).
- UN (2016). Digital financial inclusion. international telecommunication union (itu), issue brief series, inter-agency task force on financing for development, July. United Nations. Available at: http://www.un.org/esa/ffd/wp-content/uploads/2016/01/Digital-Financial-Inclusion_ITU_IATF-Issue-Brief.pdf, Accessed June 25, 2019.
- UNDP (2019). Global Multidimensional Poverty Index 2019. United Nations Development Programme and Oxford Poverty and Human Development Initiative.
- UNEI (2017). United Nation Environment Inquiry Fintech, Green Finance and Developing countries. Available at http://unepinquiry.org/wp-content/uploads/2017/06/Fintech_Green_Finance_and_Developing_Countries-input-paper.pdf. Accessed June 25, 2019.
- United Nations. (2016). Digital financial inclusion. international telecommunication union (itu), issue brief series, inter-agency task force on financing for development, July. United Nations. Retrieve from <http://www.un.org/esa/ffd/wp-content/uploads/2016/01/Digital-Financial-Inclusion_ITU_IATFIssue-Brief.pdf> (Accessed 10 March 2020).
- Walker, M. (2005). Amartya Sen's capability approach and education. *Educational action research*, 13(1), 103-110.
- Yesmin, S., Paul, T. A., & Uddin, M. M. (2019). bKash: Revolutionizing mobile financial services in Bangladesh? In *Business and Management Practices in South Asia* (pp. 125-148). Palgrave Macmillan, Singapore.
- Zetsche, D. A., Buckley, R. P., Arner, D. W., & Barberis, J. N. (2017). From FinTech to TechFin: the regulatory challenges of data-driven finance. *NYUJL & Bus.*, 14, 393.