Adoption of Digital Payment Systems in Microcredit Operations

Challenges & Opportunities in the Context of Bangladesh

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Abstract

This study explores the integration of digital payment systems into microcredit operations within the context of Bangladesh. The primary objective was to find the transformative potential of mobile banking technology and digital payment systems in reshaping microcredit distribution, disbursement, and repayment processes. Employing a qualitative research approach, the study examined the impact of mobile banking technologies and digital payment systems on microcredit operations. For the analysis, data was collected through in-depth interviews with seven participants working in various roles in various organizations within the microcredit sector, including Branch Manager, Branch Manager, Regional Manager, Regional Manager, Assistant Director, Area Manager, and Senior Manager. The selection of participants was based on their expertise and experience in microcredit operations and their involvement in the adoption and implementation of digital payment systems. All the participants agreed to the fact that the integration digital payment systems indeed can be a game changer for microcredit operation in the context of Bangladesh.

Content analysis methods were employed to analyze the interview data, identifying recurring themes and patterns. The findings reveal that the adoption of digital payment systems has a significant impact on microcredit operations, streamlining the distribution of microcredits, eliminating administrative bottlenecks, and ensuring timely disbursements. Additionally, digital payment systems had led to substantial improvements in operational efficiency, particularly in record-keeping and reconciliation, which has enhanced internal operational processes. These findings align with existing scholarly literature, confirming the transformative potential of digital payment systems in revolutionizing microcredit operations as well as provide valuable insights for practitioners and their managers, highlighting the critical role of digital payment systems in enhancing operational efficiency and elevating customer service.

While the study's findings about the impactful possibilities of digital payment systems in microcredit operations within the context of Bangladesh, it is essential to recognize and address the potential limitations regarding their applicability to other contexts. The findings may be restricted to the current timeframe, as technological advancements and evolving microcredit practices may render them less applicable in the future. Additionally, cultural factors such as general behavior, norms and values may have greater influence in the adoption and utilization of digital payment systems in microcredit operations across different cultures. Furthermore, industry-specific characteristics, including the regulatory environment, competitive landscape, and target clientele, may impact the success of digital payment system adoption in industries beyond microcredit. Notwithstanding these contextual limitations, the overall outcome of that particular study offer useful insights into the transformative potential of digital payment systems in microcredit operations, paving the way for further research to explore the broader applicability

of these findings in diverse contexts and over time. Further research endeavors should explore broader applications and evolving technologies within the dynamic realm of microcredit.

Keywords/tags (subjects)

Microcredit, Microfinance, Digital Payment Systems, Bangladesh, Mobile Financial Services

Miscellaneous (Confidential information)

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Chapter 1: Introduction

The global digital payments market encompasses the exchange of money and transactions conducted electronically through digital channels and platforms. It encompasses a range of payment techniques, including mobile payments, online transfers, digital or Electronic Wallets, various digital currencies, and electronic payment systems.The inherent tendency of the global digital payments market refers to the exchange of money and transactions conducted electronically through various digital channels and platforms. Rana, Patil and Dwivedi (2017, pp. 61-69) conducted a comprehensive study on digital and mobile payment adoption and use in developing countries. Their study highlighted the significant capacity of digital payments, mainly enabled through mobile devices, to transform the lives of millions in these areas by granting access to vital financial services. Despite this promise, the broad and effective acceptance of digital payment approaches has faced constraints in emerging nations.

Nezum & Jashim (2019, pp. 2-3) in a study on the trend of microcredit explored that the ultimate aim of individuals is to break free from the cycle of poverty. One way to accomplish this is by taking out a loan. Before, people with less money borrowed from nearby shop owners to do their business. But these loans had very high interest rates. Because of this, the people who borrowed money got stuck in a cycle of being poor. This made their money problems even worse. Furthermore, the complexity of the procedures involved in obtaining a loan from financial institutions discouraged many from seeking financial assistance. The concept of modern microfinance was introduced by Nobel Laureate Professor Dr. Muhammad Yunus, who recognized the failure of conventional economic theories in reducing poverty. Today, many people around the world see microfinance as really important for fighting poverty in developing countries. It helps a lot, especially for rural women, and it's becoming a good way for banks and organizations to support financially. Microfinance lets people who don't have bank accounts borrow money from different places. In Bangladesh, microcredit, which is part of microfinance, is very important for poor people in rural areas who can't offer anything valuable to get loans from big banks. It also helps gather savings from rural areas, which helps the country invest in things. Because of this, many researchers have studied microcredit. They looked at how it works, how loans are given, compared different places that do this, and looked at both the good and bad things that

happened. But not many studies have looked at how well digital payments are being used with microcredit in Bangladesh. This study was done to fill that gap.

1.1 Background and Context

Microcredit, refers to a financial offering extended to individuals or small enterprises who usually lack access to conventional banking facilities (Mike, 2022). It includes giving small loans, typically without needing any security, to people with low incomes, entrepreneurs, or small businesses. The aim is to help their economic endeavors and encourage them to work for themselves.This access to loans serves as a means for generating income and alleviating poverty. It also significantly contributes to accumulating savings from the rural sector, thereby boosting the country's investment capacity (Noor, 2019, pp. 77-89). The difference between microcredit and microfinance is in what they cover and offer. Microfinance includes various financial services such as loans, savings, insurance, and money transfers made for people and families who have little money. On the other hand, microcredit specifically focuses on giving loans to very poor people, especially to help start or grow businesses, particularly to support self-employment and empower women in rural places (Mia, 2016, pp. 21-23).

Bangladesh is an under developing country carrying a huge upside potential of economic prosperity. Since the independence in 1971, Bangladesh has been growing in various sectors with an enlightening performance. But the problems and other downsizing aspects which are affecting the consisting growth of that south Asian nation are many to mention. Over population is one of the key reasons why this small country is having various issues. According to the South Asian Poverty and Equity brief by The World Bank (2023), approximately 18.70%% of the population were living under the national poverty line. Microcredit, a very powerful tool to foster the economic development has been empowering the people at root level, has gained substantial momentum in Bangladesh. Microcredit in Bangladesh has a long history of providing small loans to the poor, especially women, who lack collateral and credit history. Microcredit is commonly acknowledged as a means to reduce poverty, promote social progress, and empower

disadvantaged groups in society (Sakib, 2023). Microcredit has also contributed to the growth of

microenterprises, which generate income and employment opportunities for the poor (Niaz, Bari, & Sadakatul, 2021, p. 21).

The country with its dynamic and diverse economic landscape, presents a fruitful and unique atmosphere to conduct microcredit operations. It's important to understand how incorporating digital payment systems into these activities could potentially affect them, given the circumstances. According to Maria (2023), mobile banking in Bangladesh has grown rapidly in the last decade, reaching over 100 million registered accounts and 40 million active accounts by the end of 2021. Mobile banking has allowed millions of individuals, particularly in rural regions, to use formal financial services without needing to go to a physical bank or agent. Additionally, it has lowered the expenses and dangers linked to managing cash, like theft, fraud, and corruption (Khandker & Samad, 2014).

1.2 Research Motivation

As technology progresses, it brings more possibilities for digital payment systems. It's clear that integrating these systems into microcredit operations holds potential advantages. The author of this paper wanted to explore how using digital payment systems could improve situations. In Bangladesh, it's especially important to embrace digital payment systems in microcredit because the country faces particular social and economic challenges, such as overpopulation, poverty, and limited infrastructure, which make it hard for everyone to access financial services. Digital payment systems provide a solution to these issues by allowing people to access financial services without needing physical access.

Saggi (2014) emphasized how digital payment systems have the potential to encourage financial inclusion and empowerment, especially for those encountering difficulties in using regular financial services. Through cutting down transaction expenses and removing the necessity for handling physical money, digital payment systems can enhance the availability and affordability of financial services for people with low incomes. Furthermore, these systems can empower individuals by giving them more authority over their finances and encouraging better understanding of financial matters.

1.3 Research Objectives & Questions

The main goal of this research is to thoroughly explore how digital payment systems are integrated into Bangladesh's microcredit environment. Specifically, the author aims to understand how these technological advancements can streamline the distribution and repayment procedures, ultimately improving the effectiveness and accessibility of microfinance activities. To achieve this, the research objectives and questions were formulated to gather relevant insights that correspond to recent developments and standard practices in microcredit, both domestically and internationally. This study takes a qualitative approach, gathering data through interviews with industry experts and practitioners in Bangladesh's microcredit sector. The insights obtained from these interviews provide a comprehensive understanding of how digital payment systems can impact the overall performance of microcredit operations. The research questions were based on key aspects that encompassed the study's main purpose.

Research Questions (RQs)

RQ1: Contribution to Distribution Streamlining
How does incorporating digital payment systems help make microfinance distribution more efficient in the context of Bangladesh?

RQ2: Internal Operational Benefits
What are the operational benefits derived from the integration of digital payment systems within microcredit operations, particularly in terms of internal processes?

RQ3: Mobile Financing System Roles
How does mobile finance contribute to improving the collection of microfinance loans, and what effect does it have on the overall efficiency of operations?

Through these research questions, we aim to provide empirical insights into the transformative potential of digital payment systems in the microcredit sector of Bangladesh. By addressing these

inquiries, we intend to offer actionable recommendations for practitioners and stakeholders in the microfinance industry.

1.4 Structure of the Thesis

The thesis is organized to offer a thorough and orderly comprehension of how digital payment systems are taken up in microcredit operations within Bangladesh. The succeeding chapters present the development of the research efforts and provide an extensive insight into the topic.

Chapter 1: Introduction

In this opening chapter, the study begins by presenting the background and context, giving a quick outline of microcredit in Bangladesh and the rise of digital payment systems. It explains why this topic is important and why the research is being conducted. Moreover, it sets out the specific goals and inquiries that the study aims to tackle. Lastly, it provides an outline of the thesis structure, giving readers an idea of what to anticipate in the following chapters.

Chapter 2: Literature Review

This chapter presents an extensive review of existing literature surrounding microcredit operations and digital payment systems. It delves into the historical development, key players, and significant trends within the microcredit sector in Bangladesh. Additionally, various forms of digital payment systems, their advantages, and global trends in adoption are examined. This chapter forms the intellectual foundation of the thesis, providing valuable insights from prior research that inform the empirical study. It concludes with a summary of the knowledge base, highlighting the main findings from the literature review chapters, offering a launching pad for the empirical investigation.

Chapter 3: Research Approach & Implementation

This chapter outlines the methodological framework guiding the study. It details the research philosophy and approach adopted, emphasizing the deductive reasoning applied to study the impact of digital payment systems on microcredit operations. Furthermore, the research type is defined as descriptive and qualitative, aimed at exploring the integration of digital payments in microcredit. The data collection methods, including surveys, interviews, and observations, are

thoroughly explained, providing a robust foundation for gathering empirical evidence. The chapter also discusses the data analysis techniques, which encompass descriptive statistics and relevant content analysis. This chapter culminates in a plan for research quality and ethics, addressing validity, reliability, and ethical principles in the study.

Chapter 4: Results

In this pivotal section, the results gathered from the data collection process are showcased. The information is structured into segments aligned with the research questions, offering a methodical and organized approach to establishing a factual foundation for addressing the research questions.

Chapter 6: Discussion

This chapter provides an analytical evaluation of the conducted work and its outcomes. It assesses the quality of the research by considering whether the set objectives were accomplished. Furthermore, it reviews the theoretical significance of the findings by comparing them to existing literature, determining their alignment or divergence. The practical implications for microfinance practitioners and managers are explored, offering valuable insights. Addressing potential limitations encountered during the research process, it also suggests future research directions in this field.

Chapter 5: Conclusions

The final chapter provides a wider view of the findings discussed in Chapter 4. It is structured to correspond with the previously outlined research questions, with each segment providing a comprehensive response to a particular research query using the empirical evidence presented in Chapter 4. This chapter signifies the apex of the empirical investigation, delivering exact and concise answers to the research questions.

Appendices :

This portion includes extra and complementary materials, such as interview inquiries, supplementary data, tables, and other relevant contextual elements of the study, offering a comprehensive and detailed perspective of the study.

References:

The references section adheres to the APA format and comprises a compilation of all the sources referenced within the thesis, serving as a thorough record of the academic literature that influenced the research.

Chapter 2: Literature Review

Chapter 2, the Literature Review, initiates by exploring the fundamental elements of the research, highlighting the gaps and constraints that characterize the current state of that particular field. It also acknowledges the distinctive socio-economic setting of Bangladesh when discussing the challenges and opportunities associated with implementing digital payment systems in microcredit operations. This chapter underscores the critical necessity for a thorough investigation into the relationship between digital payment systems and microcredit operations, an area where existing literature has offered only limited insights. The review of literature reveals that consumers' inclination to use mobile payments is chiefly influenced by their perceptions of performance expectancy and perceived usefulness. Additionally, perceived ease of use (PEOU) emerges as another significant factor. On the contrary, perceived risk is recognized as a substantial hindrance to the adoption of mobile payments. Furthermore, the majority of studies in this field have relied on the Technology Acceptance Model (TAM) and its derivatives as a framework for comprehending consumer adoption of mobile payments. The Unified Theory of Acceptance and Use of Technology (UTAUT) closely follows as another frequently used model in this area of research (Chan, Cheung, Wan, Brown, & Luk, 2015) .

A study condcted by (Khando, Islam, & Gao, 2023) highlighted the complex interconnection between finance and technology, triggered by the internet's arrival, resulting in the rise of digital payment technologies. This technological transformation in the payment sector serves as the foundation for promoting financial inclusion. However, despite continuous progress and the opportunity to shift the payment landscape towards digitalization, there is a critical need to address specific significant challenges to facilitate a more effortless, comprehensive, and enduring cashless society.Another study conducted by Olena & Anna (2015) outlined the risks and various difficulties associated with the utilization of digital and e-payment systems. Assessing these digital

systems enables the exploration and utilization of opportunities to incorporate them into financial operations. Consequently, operational costs decrease, and overall efficiency improves. This study undertakes an extensive review of literature, illuminating the burgeoning landscape of digital payment technologies and the obstacles linked with them. Through a systematic examination of existing empirical studies, this research introduces an innovative categorization of digital payment technologies, organizing them into four distinct groups: card payments, e-payments, mobile payments, and cryptocurrencies. Moreover, this paper identifies the primary challenges associated with digital payment technologies, sorting them into overarching themes that encompass social, economic, technical, awareness, and legal dimensions. This meticulous classification of payment technologies and their related challenges provides valuable insights for researchers and practitioners alike, offering them the understanding and groundwork necessary for devising a comprehensive digital payment strategy.

2.1 Digital Payment Systems in Microcredit Operations

An essential aspect of incorporating digital payment systems into microcredit operations involves comprehending the developmental paths and market fluctuations of digital financial services within Bangladesh. Alam (2012) identified microcredit as the provision of very modest financial services, including savings and loans—productive or non-productive—without requiring collateral, often employing joint-liability setups for enforcing repayment. This approach is acknowledged as a tool for alleviating poverty, notably illustrated by Prof. M. Yunus' Grameen Bank program in Bangladesh, which empowered the impoverished by enabling self-employment and income generation. Despite charging high interest rates, it provided access to credit for establishing economic endeavors based on existing skills. Bangladesh presents significant prospects for the expansion of digital financial services and payments, involving a diverse range of entities such as Banks, Non-Bank Financial Institutions (NBFIs), Mobile Financial Services (MFS), Micro-Finance Institutions (MFIs), and Fintech firms, collectively accounting for over 170 million accounts. The number of MFS users has seen a remarkable 159 percent surge between 2018 and 2021. Notably, there has been substantial growth in digital payments, evidenced by increases in MFS, payment card (debit/credit), and e-banking transactions from FY 2020 to FY 2021. For instance, MFS transactions rose by over 46 percent, internet banking transaction values surged by 59 percent, credit card payments grew by 53 percent, and debit card transactions soared by an impressive 175

percent. Nonetheless, a significant portion of the population, around 30 million, remains unbanked, resulting in uneven impacts among lower-income groups. Digital payment services, especially through MFI, MFS, and agent banking, can help bridge this gap, with MFI and MFS initiatives contributing to a 30 percent increase in financial inclusion for the underbanked in FY 2021 (Joyeeta, 2022).

2.2 Trust & Security Issues in Digital Payment Systems

According to an online article published in The Daily Star, Mahfuz (2020) appealed that the trust factor is crucial in cashless transactions, as many in the country still lack confidence in digital money transfers. Establishing trust requires a robust infrastructure capable of handling high transaction volumes and providing a sturdy backbone for the overall financial system. The legal framework also plays a pivotal role in addressing security concerns surrounding digital transfers. In cases of monetary losses, customers should be well-informed about their legal rights, and all parties involved, including senders, receivers, and relevant financial institutions, should be aware of their individual rights in case of transaction mishaps. A study conducted by (Kim, Tao, Shin, & Kim, 2010) revealed that the overall positive perception in electronic and digital payment system increase the usage of those systems in various financial transactions. Compared to traditional payment methods, e-payment techniques offer numerous advantageous characteristics such as security, reliability, scalability, anonymity, acceptability, privacy, efficiency, and convenience. These features have been acknowledged in several research works, and EPS have gained global recognition and deployment. Nations like France, the US, and the UK possess well-established systems, while regions like the Asia-Pacific rim contribute significantly to industry growth. Another important aspect of integrating digital payment systems into microcredit operations is addressing trust and security issues that may affect the acceptance and usage of cashless transactions among microcredit borrowers and providers.

The trust factor is crucial in cashless transactions, as many in the country still lack confidence in digital money transfers. According to a web article titled as “0vercoming Challenges in Digital Payments (2021)” showed that establishing trust requires a robust infrastructure capable of handling high transaction volumes and providing a sturdy backbone for the overall financial system. The legal framework also plays a pivotal role in addressing security concerns surrounding

digital transfers. In cases of monetary losses, customers should be well-informed about their legal rights, and all parties involved, including senders, receivers, and relevant financial institutions, should be aware of their individual rights in case of transaction mishaps.

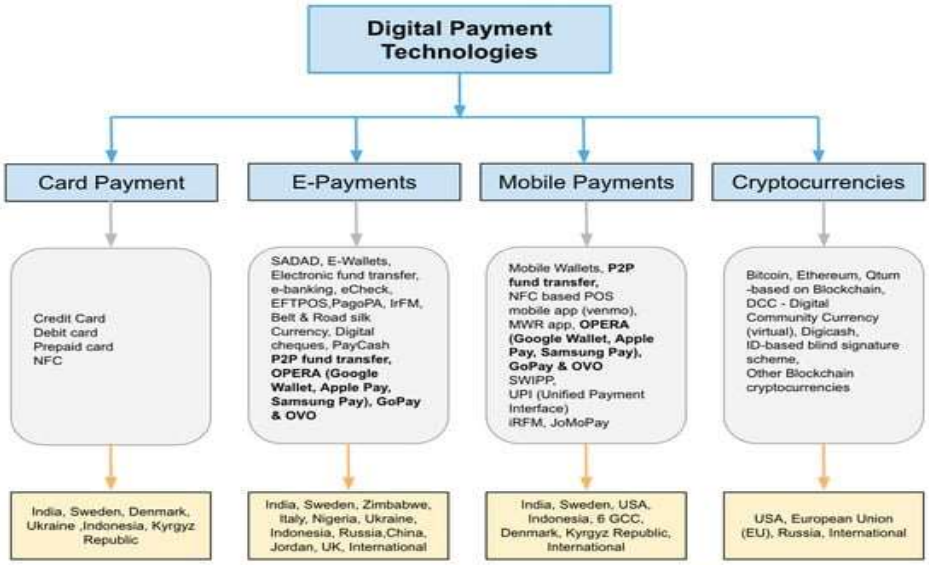

Figure 1: Various Digital Payment Systems

However, some studies have argued that trust and security issues are not the main barriers to the adoption of digital payment systems in microcredit operations. Rather, they suggest that factors such as customer preferences, behavioral patterns, social norms, and cultural values play a more significant role in influencing the acceptance and usage of cashless transactions among microcredit borrowers and providers (Corporate Finance Institute, 2021). These studies contend that many microcredit customers prefer cash over digital money because it gives them more control, flexibility, and convenience in managing their finances. Moreover, they claim that cash transactions have a symbolic and emotional value that digital transactions cannot replicate, such as expressing gratitude, solidarity, or loyalty. In response to these arguments, a study by Klapper & Singer (2017) argued that trust and security issues are still essential factors that need to be addressed in order to facilitate the integration of digital payment systems into microcredit operations. While customer preferences, behavioral patterns, social norms, and cultural values are undoubtedly important influences on cashless transactions, they are not immutable or fixed. Rather, they can be shaped and changed by various interventions, such as education, awareness,

incentives, and feedback mechanisms. Furthermore, this paper contends that digital payment systems can offer many benefits that cash transactions cannot provide, such as lower costs, higher efficiency, greater transparency, and improved customer satisfaction.

2.3 Regulatory Framework for Microfinance & Digital Financial Services in Bangladesh

The establishment of the Microcredit Regulatory Authority (MRA) in 2006 marked a significant shift in regulating Bangladesh's microfinance sector. This move followed global recognition of microcredit's success, notably the United Nations' declaration of the International Year of Microcredit in 2005 and Professor Muhammad Yunus and Grameen Bank receiving the Nobel Peace Prize in 2006. The MRA was initiated after a series of events starting with a study commissioned by Bangladesh Bank in 1997, leading to the formation of a committee in 2000 to oversee microfinance activities. The Microcredit Regulatory Authority Act 2006 aimed to create a robust regulatory framework for the microcredit sector, fostering a favorable environment and providing guidelines to enhance governance practices, promote competition, and ensure long-term sustainability. Before the MRA's establishment, different acts regulated various types of MFIs, such as the Bank Company Act'1991 for commercial and state-owned banks, the Cooperatives Societies Act 2001 for cooperatives, and the Grameen Bank Ordinance 1983 specifically for Grameen Bank, the first MFI in Bangladesh.

Table 1: Laws Related to Microfinance Sector

Institutions	Laws and Regulations
Co-operatives	• Cooperative Societies Act' 2001(Amendment in 2002 & 2013)
State owned commercial and Agricultural Banks	• Bank Company Act' 1991 (Amendment in 2013)
Private Commercial Banks	• Bank Company Act' 1991 (Amendment in 2013)
Grameen Bank	• Grameen Bank Ordinance' 1983.

NGO & MFIs	• The Societies Registration Act'1860. • The Trust Act'1882. • The Company Act'1994 • Charitable and Religious Trust Act'1920. • The Voluntary Social Welfare Agencies Ordinance' 1961. • Foreign Donations Regulation Ordinance' 1978. The Cooperatives Societies Act'2001. • The Microcredit Regulatory Authority Act'2006

An article by Haque (2021) found that to sustain the operational progress, Bangladesh has developed a comprehensive payment ecosystem. Financial regulations and policies must be forward-thinking, leveraging and shaping these developments to enhance both the breadth and quality of financial inclusion. The national payment system is designed to address the practical needs of the economy, resolving everyday challenges and providing accessible, affordable, and secure systems for end-users. At the national level, fostering better coordination and communication among intermediaries, regulatory bodies, agents, and customers is crucial to avoid myopic approaches. Regulations are crafted to strike a delicate balance between innovation and risk management, especially in the realm of digital finance, which pushes the boundaries of both. The National Payment Switch Bangladesh (NPSB) stands as a cornerstone of the digital financial ecosystem, facilitating seamless interconnectivity between various payment service providers. Governed by the Bangladesh Bank, NPSB plays a critical role in enabling interoperability among banks, financial institutions, and mobile financial service providers (2021). This interoperability is instrumental in broadening the reach and accessibility of digital financial services, particularly in a market as diverse and dynamic as Bangladesh.

However, despite the progress made in developing a conducive regulatory framework for digital financial services in Bangladesh, there are still some challenges and gaps that need to be addressed. For instance, some of the existing regulations are outdated or inconsistent with the current market realities and consumer needs. For example, the Mobile Financial Services Regulations 2018 impose strict limits on transaction amounts and frequencies for MFS users (Bangladesh Bank Mobile Financial Services Regulations, 2018). These limits may hinder the potential use cases of MFS for microcredit borrowers and providers who may need larger or more frequent transactions to support their livelihoods or businesses. Moreover, some of the regulations are unclear or ambiguous regarding the roles and responsibilities of different

stakeholders involved in digital financial services. For example, there is a lack of clarity on the liability and dispute resolution mechanisms for MFS transactions involving multiple parties such as banks, MFS providers, agents, merchants, and customers. These challenges may create confusion or uncertainty among the users of digital financial services and affect their trust and confidence in these systems.

Therefore, this paper recommends that the regulatory framework for digital financial services in Bangladesh should be revised and updated to reflect the changing needs and expectations of the market participants. The regulations should be flexible enough to accommodate innovation and experimentation while ensuring adequate consumer protection and financial stability. The regulations should also be clear and transparent enough to provide guidance and certainty to all stakeholders involved in digital financial services. Furthermore, the regulations should be harmonized and coordinated across different sectors and jurisdictions to avoid duplication or contradiction

2.4 Microfinance Institutions in Bangladesh

Microfinance Institutions (MFIs) constitute a cornerstone of Bangladesh's financial landscape, providing critical financial services to segments of the population that traditionally lack access to formal banking systems. Microcredit Regulatory Authority (2021) reports that approximately 800 licensed MFIs operate in Bangladesh, collectively serving an estimated 35 million borrowers, with a predominant focus on women empowerment. The variety within the MFI sector is evident in the array of products and services available. MFIs in Bangladesh have diversified their portfolios to include savings, insurance, remittances, pensions, healthcare, education, and agricultural support, among others. This diversification underscores the sector's adaptability and responsiveness to the evolving needs of its clientele (Corporate Finane Institute, 2021). (Ahmed, 2009) Provided an overview of MFIs, analyzing their borrower coverage and funded activities. The study also assessed the efficiency of microfinance delivery mechanisms and examined the obstacles faced by the microfinance movement in Bangladesh. As microfinance schemes continue to expand, particularly in Bangladesh, the coverage has reached approximately 13 million households. The paper demonstrated that about 40 percent of MFI funds are allocated to income-generating activities like small-scale businesses and self-employment, with the remainder used for other purposes. The poverty levels of microcredit recipients are gradually diminishing. Finally, the paper

highlighted challenges such as the need for new products and donors, controversies surrounding service fees, and ensuring borrower sustainability.

Microfinance institutions can be categorized in various types based on their distinctive nature and organizational structure. Mia (2016, pp. 26-26) proposed that Bangladesh's microfinance sector encompasses NGO-type MFIs like BRAC and ASA, which focus on community service and have reduced reliance on foreign funds. Credit unions, member-owned and profit-oriented, serve both urban depositors and rural poor. Financial cooperatives, following cooperative principles, provide services under local management and regulatory supervision. State-owned/commercial banks historically supported rural credit but faced challenges due to NGO-MFIs' increased involvement. Specialized private banks expanded gradually. Overall, Bangladesh's microfinance landscape involves diverse entities contributing to rural credit provision, each facing unique challenges.

2.5 Mobile Financial Services in Bangladesh

Mobile financial services (MFS) represent a digital payment method enabling individuals to utilize financial services using their mobile devices. These services encompass a range of transactions like money transfers, bill settlements, merchant payments, government disbursements, and microcredit. Particularly in Bangladesh, MFS has gained significant traction, proving popular and convenient, especially among those who are not well-integrated or partially integrated into the traditional banking system. The Global Findex Database (2020)highlights Bangladesh's substantial progress in financial inclusion, indicating a 57% increase between 2013 and 2018, primarily due to the expansion of MFS.

BKash emerged as the pioneer MFS provider in the country, commencing operations in 2011 as a subsidiary of BRAC Bank Limited. It is regarded as the dominant force in Bangladesh's MFS landscape, boasting more than 50 million registered users and a network of 240,000 agents as of 2021. BKash offers a diverse array of services, including cash deposits, withdrawals, fund transfers, mobile top-ups, bill payments, transactions, and fund solicitation. The founder and CEO of Bkash Kamal Quadir quoted,

“We started our journey a little over 12 years ago with a dream to empower the unbanked. Democratization of digital payments and the synergy between MFS and banks will significantly increase financial inclusion and facilitate a sustainable digital financial ecosystem”.

After witnessing bKash's success, several other mobile financial services (MFS) providers have entered the Bangladeshi market, including Nagad, Rocket, Upay, SureCash, mCash, and MYCash.

Nagad, established in 2019 as a digital financial service under the Bangladesh Post Office, stands as the country's second-largest MFS provider. According to a website article published by Business Inspection BD (2022) it boasts over 40 million registered users and a network of 200,000 agents as of 2021. Nagad's service portfolio closely resembles bKash's offerings, with added features like savings, insurance, and pension services.

Rocket, another prominent MFS provider, was introduced in 2011 as a subsidiary of Dutch-Bangla Bank Limited. It currently serves over 30 million registered users through a network of 200,000 agents and provides various services including deposits, withdrawals, fund transfers, mobile top-ups, bill payments, transactions, ATM withdrawals, and bank transfers (CNN, 2020). According to an article web based article published by Future Startup (2022) the growth of the mobile financial services (MFS) sector in Bangladesh has spurred the advancement of various digital payment systems, including internet banking, payment cards, and e-commerce platforms. Collaborating with banks, merchants, and online platforms, MFS providers have expanded options for their customers, ensuring smooth and secure payment experiences. For instance, bKash has partnered with Visa, MasterCard, and American Express, enabling its users to conduct both online and offline transactions using their bKash accounts. Additionally, bKash has joined forces with over 50,000 merchants, such as Daraz, Pathao, Shohoz, and Foodpanda, facilitating e-commerce transactions for its users. Similarly, Nagad has established partnerships with more than 20,000 merchants, including Evaly, HungryNaki, and Chaldal, allowing its users to make payments online and offline through their Nagad accounts. Nagad has also integrated with over 30 banks, enabling users to link their bank accounts with Nagad accounts and facilitating money transfers between them.

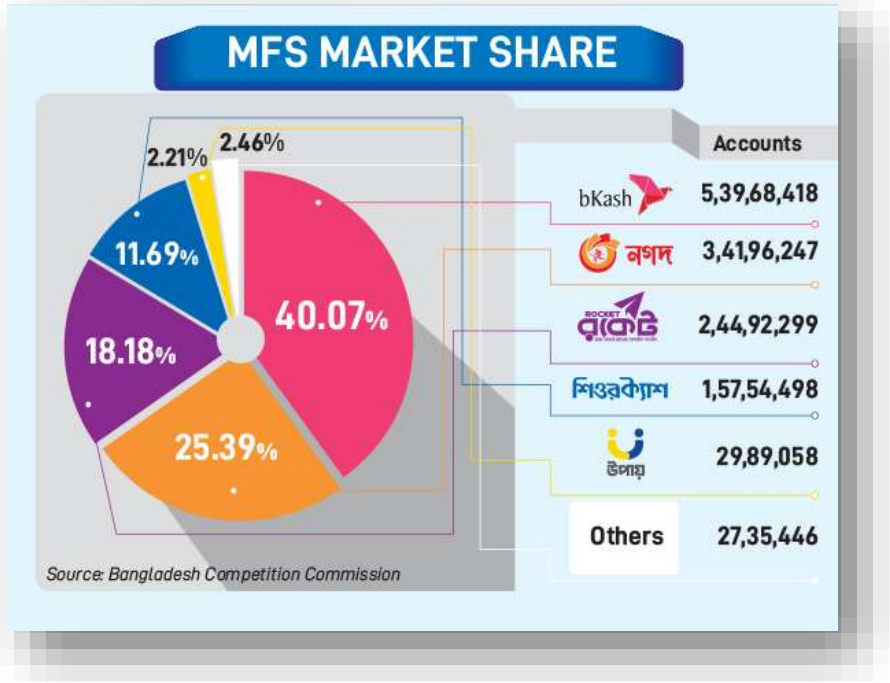

Figure 2: Mobile Financial Services in Bangladesh

2.6 Challenges & Opportunities

The integration of digital payment systems into microcredit operations poses both challenges and opportunities for the stakeholders involved, such as microcredit borrowers, providers, regulators, and technology developers. Various research studies have explored the hurdles and potentials associated with incorporating Digital Payment Systems (DPS) within microcredit activities, considering diverse viewpoints and situations. One such study by Khiaonarong, Leinonen, & Rizaldy (2021, pp. 4-13) explored a comparative assessment across countries, focusing on the operational robustness of DPS. They emphasized the necessity to bolster reliability goals, redundancies, and evaluation of vital service providers, securing endpoints, and establishing backup plans. Additionally, the study recommended that regulatory bodies adopt a comprehensive and unified strategy to supervise and govern DPS effectively, advocating for international collaboration and standardization. Khando, Islam, & Gao (2023) undertook a methodical analysis of existing literature concerning the evolving technologies within Digital Payment Systems (DPS) and the obstacles they bring. Their study categorized DPS into four groups: card payment, e-payment, mobile payment, and cryptocurrencies. Furthermore, they pinpointed major challenges surrounding DPS across social, economic, technical, awareness, and

legal domains. The researchers put forward a comprehensive strategy for digital payments, aiming to foster a more unified, inclusive, and environmentally sustainable cashless society.

Reshma & Ramesh (2023, pp. 42-43) examined how Digital Payment Systems (DPS) impact the performance of microfinance institutions (MFIs). Their findings revealed a notable and beneficial correlation between DPS and the profitability, productivity, and outreach of MFIs. They noted that this relationship is more pronounced among MFIs that have higher levels of digitalization and diversification. Additionally, their research highlighted a positive and significant influence of DPS on the repayment habits and satisfaction of microcredit borrowers, especially among borrowers with enhanced financial literacy and trust levels. The study recommended that MFIs strategically embrace DPS to bolster their competitiveness and sustainability. Moreover, it advocated for government intervention to facilitate a conducive regulatory and infrastructural environment fostering the development of DPS.

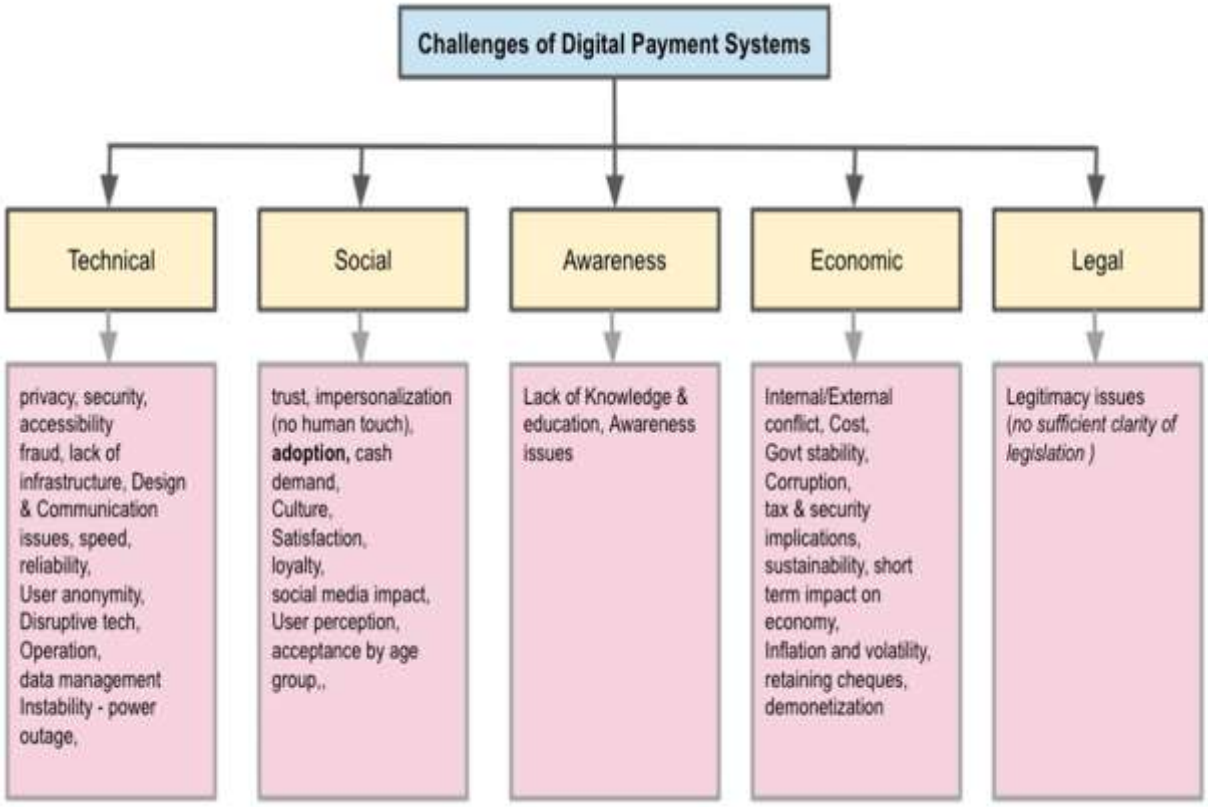

Figure 3: Various Challenges and Opportunities of Digital Payment Systems

2.7 Theoretical Frameworks and Models

Several theoretical frameworks and models have been proposed in the literature to explain or predict the adoption and usage of digital payment systems in general or in specific contexts. Some of these frameworks and models are briefly discussed below.

- **The Technology Acceptance Model (TAM)** is a widely employed framework for examining how individuals adopt and utilize information technology. According to TAM, there are two crucial factors that influence a person's inclination to use a technology: their perception of its usefulness and their perception of how easy it is to use. "Perceived usefulness" refers to how much an individual believes that using the technology will improve their performance or outcomes. "Perceived ease of use" pertains to the extent to which the individual thinks that using the technology will be straightforward and trouble-free. TAM also posits that external elements, like social influence, characteristics of the system, or individual user traits, can impact a person's perceptions of usefulness and ease of use, thereby influencing their intention to adopt the technology (Shaari, et al., 2017).
- **The Theory of Reasoned Action (TRA)** is a broad framework explaining how individuals develop and act upon their intentions. TRA posits that a person's intention to engage in a behavior is influenced by two key factors: their attitude towards the behavior and the subjective norm they perceive. "Attitude" refers to whether the individual views the behavior positively or negatively. "Subjective norm" pertains to the individual's perception of social pressure or expectation regarding the performance or non-performance of the behavior. TRA also suggests that a person's attitude and subjective norm are shaped by their beliefs about the behavior and its outcomes, as well as their motivation to conform to social norms (Empidi & Emang, 2021).
- **The Unified Theory of Acceptance and Use of Technology (UTAUT)** is a comprehensive model that combines and expands upon various existing theories of technology acceptance, including TAM and TRA. UTAUT proposes that four main factors impact an individual's intention to use a technology and their actual usage behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions. "Performance

expectancy" refers to how much the individual anticipates that using the technology will lead to improved performance or outcomes. "Effort expectancy" relates to the individual's expectation of how easy and straightforward using the technology will be. "Social influence" pertains to the extent to which the individual believes that important individuals in their life think they should use the technology. "Facilitating conditions" refer to the extent to which the individual believes that there is organizational and technical support for their use of the technology. UTAUT also suggests that these factors are influenced by four variables: gender, age, experience, and whether the use of the technology is voluntary or mandatory (Keenan & Lionarons, 2018).

These frameworks and models can provide useful insights and guidance for studying or designing digital payment systems in microcredit operations. However, they may also have some limitations or challenges, such as:

- They may not capture all the relevant factors or variables that affect the adoption and usage of digital payment systems in microcredit operations, such as trust, security, risk, cost, convenience, culture, regulation, or innovation.
- They may not account for the dynamic and complex nature of digital payment systems in microcredit operations, such as the interactions among different stakeholders, platforms, or contexts, or the changes over time or across stages.
- They may not reflect the specific characteristics or needs of microcredit borrowers or providers, such as their financial literacy, awareness, preferences, constraints, goals, or behaviors.
- Therefore, there is a need for more comprehensive and contextualized frameworks and models that can address these limitations or challenges and better explain or predict the adoption and usage of digital payment systems in microcredit operations.

2.8 Empirical Evidence & Findings

Goela & Nath (2020) found that perceived reputation, security, and structural assurance with digital payment systems positively impact trust and continuance intention. The definition of money has evolved with digitalization. Transitioning from metal and paper money to the remonetized and digitalized era, it is now the age of electronic or plastic money. This medium of exchange has adapted in tandem with technological and commercial advancements. This progression has played a crucial role in stimulating economic and technological growth worldwide. Over the past half-century, the rapid proliferation of digital payments has revolutionized how buyers pay for their purchases and how merchants manage their day-to-day transactions. Digital payments offer customers convenient and secure access to their funds, while reducing the need for cash handling by traders. Significantly, Digital Payment Systems also promote greater financial inclusion, introducing formal financial services to those who lack access to traditional banking systems. This, in turn, generates a virtuous economic cycle, where increased consumption transforms into more production, more jobs, and better incomes. In today's era, clients can make digital payments with various types of prepaid and postpaid cards, as well as a range of devices, from wristwatches to cellular phones. This signifies a significant journey from a cash-based economy to a cashless one. According to a classification proposed by Thomas, Jain & Angus (2013), this transition occurs in four stages: Inception, Transitioning, Tipping Point, and Nearly Cashless. The Inception stage pertains to countries where over 90 percent of transactions are conducted using cash. India falls into this category with 96 percent of all payments being cash-based. Economies where cash transactions range between 70 to 90 percent are in the Transitioning stage, as seen in countries like Brazil, China, Malaysia, Spain, and Poland. The Tipping Point stage applies to developed economies where the use of cash has been reduced to 50 to 70 percent of total consumer payments. Finally, countries like Sweden, Canada, France, and Belgium, where less than 50 percent of consumer transactions involve cash, are categorized as cashless economies.

This research significantly contributes to the existing body of knowledge on Digital payment systems. The study empirically assesses the impact of factors influencing consumer trust and intention to continue using digital payment systems. User continuance intention regarding Digital payment systems holds great importance for manufacturing practitioners, regulatory bodies, academics, and researchers. A thorough examination of digital payment systems and their

continuity in emerging markets is imperative. This research can also serve as guidance for banks, urging them to exercise caution when implementing digital payment technology. Policy makers and banks keen on fostering a digital payment environment should develop innovative strategies, focusing on enhancing perceived Reputation, Security, and Structural Assurance as driving factor

Savki, Gayani & Ray (2010) investigated the critical factors for consumer adoption of e-payment systems, identifying security, trust, perceived advantage, assurance seals, perceived risk, and usability as important factors. This research employs a deductive approach, combining secondary sources and primary data. Initial scrutiny of the literature identified six pivotal considerations for e-payment. A self-administered survey based on the research model was distributed to respondents anonymously via email. After coding, 155 questionnaires were subjected to analysis using SPSS to test the hypotheses. The study confirmed that the perceived significance of critical factors, including security, trust, perceived benefit, assurance seals, perceived risk, and usability, showed correlation. The results revealed that three factors (security, benefit, web assurance seals) were indispensable, while three others (perceived risk, trust, and usability) were relatively adequate in influencing customer intentions towards adopting an e-payment system. These findings are anticipated to make a valuable contribution to the wider adoption of e-payment facilities and the design of comprehensive e-commerce systems.

2.9 Best Practices & Recommendations

Forbes Panel Experts (2022) highlighted several strategies to advance digital payment methods. They emphasized embracing new technologies like block chain-backed cryptocurrencies for global economic growth. Encouraging usage through tangible benefits for consumers and incentivizing merchants/platforms was emphasized. Accessibility for people with disabilities in the checkout process emerged as a crucial inclusivity factor. Strengthening security measures via robust encryption and identity management was deemed essential. Integrating payment services into popular social platforms could revolutionize consumer behavior. Streamlining digital payments through vertical integration of stakeholders and advocating for global standardization of protocols were suggested for efficiency and smoother cross-border transactions. Additional security layers, decentralized payment systems, and biometric authentication were also recommended to

enhance privacy, flexibility, and transaction security. The literature review revealed that the integration of digital payment systems in microcredit operations can provide a leverage and streamline the operational process. As the context of that study is based on the socio economic perspective of Bangladesh, the adoption of digital payments systems will significantly increase the microfinance sectors thus the microcredit operations. To do so, various microcredit institutions should take the initiatives and imply them promptly in order to achieve the benefits that may be received through the implications of digital payment systems. Though the overall process would take time, for a long-term success Government along with the private bodies working in microcredit sector should work together in this regard.

2.10 Summary of the Knowledge Base

The literature review has unearthed critical insights into the convergence of digital payment systems and microcredit operations, an area that has been relatively underexplored. It has established the transformative potential of microcredit in empowering marginalized individuals, exemplified by initiatives like the Grameen Bank. However, the integration of digital payment systems into microcredit remains an uncharted territory within academic discourse.

The examination of digital payment systems within Bangladesh reveals a dynamic landscape. The country exhibits substantial growth in digital financial services, with various entities accounting for over 170 million accounts. Nevertheless, approximately 30 million individuals remain unbanked, indicating a need for inclusive solutions. Addressing trust and security issues is paramount in the adoption of digital payment systems, especially within microcredit operations. While some argue that customer preferences and cultural values play a more substantial role, this paper contends that trust and security must be addressed to facilitate integration. The regulatory framework in Bangladesh has made strides in fostering a conducive environment for digital financial services. However, challenges persist, including outdated regulations and unclear stakeholder roles. Recommendations include revising and updating regulations to align with market realities and ensure clarity. Microfinance Institutions (MFIs) play a crucial role in Bangladesh's financial landscape, serving approximately 35 million borrowers. The diversification of services, ranging

from savings to agricultural support, highlights their adaptability to evolving client needs. The integration of digital payment systems presents both challenges and opportunities. Challenges include limited digital literacy, high costs, and regulatory uncertainties. Opportunities encompass enhanced financial inclusion and empowerment, as well as increased efficiency and innovation for microcredit providers. Theoretical frameworks such as TAM, TRA, and UTAUT offer valuable insights for understanding the adoption and usage of digital payment systems. However, they may need further contextualization to address specific factors influencing microcredit operations. Empirical evidence highlights the impact of factors like perceived reputation, security, and structural assurance on trust and continuance intention in digital payment systems. Understanding these factors is crucial for practitioners, regulators, and researchers.

In summary, the literature underscores the transformative potential of integrating digital payment systems into microcredit operations. It provides a foundation for the subsequent empirical study, offering valuable insights to interpret findings and draw meaningful conclusions.

Chapter 3: Research Approach & Implementation

In this chapter, the author described the empirical research methodology, detailing the methods, tools, and ethical considerations that guided the study into digital payment systems within the realm of microcredit. According to Viphanphong, Kraiwanit, & Limna (2023), four key steps can be followed in order to conduct a qualitative research: Designing the research, collection of the data, analysis of the collected data and lastly preparing a report based on the data. The key aim of qualitative research is to gain an understanding of the circumstances in which individuals and groups make their decisions and choices and in many cases their preferences. Another aspect of qualitative research is to observe and find how a particular phenomenon unfolds any specific undertakings. On the other stream, in depth interviews provide detailed insights on a particular subject as well as yield precise information which coordinate with the goals and objectives of the research (Siripipatthanakul, et al., 2022).Principally this particular chapter is concerned with the key sections: Research Philosophy & Approach (3.1) and data collection (3.2) . After these sections the author examined data analysis, validity and quality of the data and coherent aspects of the analysis that might be essential to get the full essence of the study.

3.1 Research Philosophy & Approach

The research philosophy and approach employed are founded on specific assumptions and guiding principles. To define the inductive reasoning approach, (Bhandari, 2022) said that it's a methodical approach by using which someone can drive from specific perspective to generalized perspective by drawing conclusions. The author here adopts an inductive reasoning approach for this specific study, commencing from specific observations and data to derive general conclusions. The research is characterized by its exploratory nature, seeking to discover fresh insights and understanding about the phenomenon of digital payment systems and their integration in microcredit activities and operations, rather than validating existing hypotheses or theories.

Furthermore, the research is qualitatively oriented, utilizing words, texts, images, and other non-numerical data to vividly describe and interpret the meanings and experiences of the participants. These choices were made based on the suitability of these approaches for exploring a complex and relatively uncharted phenomenon, such as digital payment systems in microcredit. They enable the author to capture the diversity of participants' views and contexts, as well as the challenges and opportunities they face. The main considerations regarding the research philosophy was to collect data, analyze the data based on the collected data and finally show the result by following the research objective properly. Some key aspects were to followed to align the research objectives and the research methodology approaches in microcredit operation: distribution efficiency, internal operational benefits and role of mobile finance systems.

3.2 Data Collection

The data collection method revolves around semi-structured interviews conducted with resource personnel from various sectors of the banking and microcredit landscape in Bangladesh. This approach was chosen to obtain in-depth and detailed information from the participants regarding their perspectives, experiences, challenges, and opportunities pertaining to digital payment systems in microcredit. It also allows for the exploration of emergent issues through follow-up questions during the interviews.

The interview questionnaire was designed based on the research questions, literature review and the overall study. It encompassed open-ended questions(shown in the Appendices Chapter) covering crucial topics including the participants' background and work context in banking or microcredit sectors, the current status and trends of digital payment systems, perceived benefits and challenges, factors influencing adoption, and forward-looking recommendations.
In qualitative research technique, purposive sampling technique is a widely used one in which researchers use their understandings to select the most useful sample. The primary goal of that particular sampling technique is to know the necessary details about a specific phenomenon (Limna, Kraiwanit, & S., 2023). The author adopted purposive sampling, selecting participants who possess relevant knowledge and expertise in the research domain, rather than opting for random selection from a broader population. This ensured that insights were gleaned from those deeply entrenched in the subject matter and carry more practical understandings in the microcredit operational sectors and current status. The author conducted interviews with six participants representing diverse sectors within the banking and microcredit landscape in Bangladesh. Rather than conducting a public survey the author tries to seek insights from the participants who are working in the microcredit sectors, the author found it more flexible and relevant since they are working dimensions are revolved around the people who are the key factors of the microcredit operations in Bangladesh. The author initiated initial contact with the participants of the interviews via email or phone and conducted the interviews via video conferences, providing a comprehensive overview of the research, extending invitations to participate, obtaining consent, and scheduling interviews at their convenience.

To ensure the validity and reliability of the data, the following steps were taken:

- Preparation of a clear and consistent interview guide covering all pertinent topics and questions for the research.
- Conducting a pilot test with one participant to validate the clarity, validity, and reliability of the interview questions.

- Recording each interview with audio & video by using necessary electronic devices and screen recording soft-wares with the participants' permission.
- Transcribing every interview from Bengali (Since the interviews were conducted in Bengali for better understanding both for the author/interviewer and the interviewees) to English into text format.
- Employing thematic analysis for coding each transcript.
- Identifying main themes and patterns from the data.
- Cross-validating findings by triangulating data from diverse sources, including the existing literature.

Between October 2023 and November 2023, the author conducted around 7 interviews with key personnel representing a spectrum of organizations within the banking and microcredit sectors in Bangladesh. Each session spanned approximately 45 minutes to an hour, taking place either face-to-face or via online platforms like Zoom, Skype or Google Meet.

3.3 Data Analysis

In this very section the author depicted the data analysis from the collected data through interviews with different stakeholders in the microcredit sectors. Three key main aspects were considered with respect to the research questions: distribution, internal operational benefits & mobile financial systems in loan collection and repayments. Employing general coding and thematic analysis techniques, the study uncovers significant revelations regarding the integration & impact of digital payment systems. This analysis sheds light on their pivotal role in refining distribution channels, enhancing internal operational processes, and reshaping the landscape of mobile financing systems. The process of data analysis offers a comprehensive perspective on how the adoption of digital payment systems influences microfinance operations in the specific context of Bangladesh. Through analysis of the narratives shared by industry experts, the author identifies the far-reaching implications of digital payment system integration on distribution streamlining, internal operational efficiency, and the evolution of mobile financing practices within microfinance operations.The interviews provided valuable insights into the adoption of digital payment systems

in microfinance operations within the context of Bangladesh. Participants emphasized the transition from traditional and obsolete paper-based methods to digital platforms, highlighting the integration of specialized software for loan disbursement and data analysis. This shift was seen as a crucial step towards streamlining distribution processes. Challenges were noted, including initial trust issues with agents and a lingering preference for cash transactions. Additionally, participants underscored the importance of employee training for efficient digital operations. Furthermore, the integration of mobile financing systems was identified as a significant factor in leveraging microfinance loan collection processes. Participants emphasized the operational benefits, including enhanced transparency, reduced manpower costs, and time efficiency. The adoption of digital banking applications was seen as a promising avenue for future microcredit operations, particularly for SME loans, where reduced cash-out charges were highlighted as a key advantage. Challenges related to limited digital literacy and communication infrastructure in rural areas were acknowledged, indicating the need f or continued efforts to bridge the digital divide.To provide a comprehensive overview of the findings, the themes and relevant codings are summarized in the Table 2 below.

Table 2: Themes & Relevant Codes

Research Questions	Themes	Codes
RQ 1	Distribution Process	▪ Transition to digital systems ▪ Improved Accessibility ▪ Trust issues ▪ Enhanced Reach in Rural Areas
RQ 2	Operational Benefits	▪ Enhanced data analysis process ▪ Faster Record Keeping ▪ Reduced Administrative Costs ▪ Employee training
RQ 3	Mobile Financing Systems	▪ Reduced manpower costs ▪ Transparency ▪ Faster Loan Approval Process ▪ Easy Access to Credit

The first theme was selected with an aim to find how the adoption of digital payment systems contributes to the streamlining of microfinance distribution processes in the Bangladeshi context. The interviews caught valuable insights in this regard. Participants emphasized the transition from traditional, paper-based methods to digital platforms, showcasing the integration of specialized software for loan disbursement and data analysis. This shift was identified as a significant step towards streamlining distribution processes. Participants noted that this transition not only reduced the time required for processing loans but also enhanced the accuracy of data management, aligning with the broader goal of operational efficiency and other benefits.

Participants that are interviewed sight on several internal operational advantages. Enhanced data analysis capabilities emerged as a central aspect, with digital platforms allowing for more comprehensive assessments of client profiles and financial trends. Transparency was also underscored, as digital systems facilitated real-time tracking of transactions, minimizing the risk of errors or discrepancies. Additionally, participants emphasized the significance of employee training in ensuring smooth digital operations, a factor that directly contributes to internal operational efficiency. The role of mobile financial systems are the most crucial factors regarding that particular study. The author found that a significant impact is possible with the digital integration of various mobile financial services in microcredit operation. The roles that mobile financing systems play in leveraging the microfinance loan collection process and their impact on overall operational efficiency was the most important aspect that was taken into consideration with utmost priority. Participants provided valuable insights into this aspect. Reduced manpower costs emerged as a key advantage, as digital payment systems streamlined the loan collection process, reducing the need for extensive manual intervention. Transparency was again highlighted as there are concerns of various fraud and other immoral activities that eventually harm many peoples, with digital platforms offering a clear audit trail of transactions. Furthermore, participants expressed optimism regarding the future of microcredit operations, particularly in the context of SME loans, where reduced cash-out charges were seen as a pivotal factor in promoting financial inclusion.

Figure 4: Various Aspects of Digital Payment Systems

3.4 Research Quality & Ethics

The author ensured the validity of this research by prioritizing an open-minded approach, respecting the privacy and perspectives of the respondents. There was no pre-decided agenda, allowing for the emergence of diverse and unanticipated findings. This approach facilitated a more comprehensive understanding of the impact of digital payment systems on microfinance operations in Bangladesh. Reliability was established through systematic data collection and analysis procedures. The research design, including the case study approach and qualitative methodology, aimed to provide a robust foundation for drawing meaningful conclusions. Additionally, member-checking was employed to validate the interpretations and ensure that the findings accurately reflected the participants' experiences and viewpoints.

Ethical considerations were paramount throughout the research process. Informed consent was obtained from all participants, emphasizing their voluntary participation and the right to withdraw at any stage without consequences. Confidentiality measures were implemented to protect the identities and responses of the respondents. All data was securely stored and anonymized to uphold participant privacy. As a member of the community studied, the author recognized the potential bias that could arise due to familiarity with the context. Being part of the microfinance community in Bangladesh, there was a risk of preconceived notions or assumptions. To mitigate this, the author maintained a reflexive stance, acknowledging their insider position and actively

seeking diverse perspectives. This included engaging with participants from different roles within microfinance institutions and valuing their unique insights. Openness to all potential findings was a guiding principle, allowing the research to unfold organically. The author remained receptive to unexpected themes and perspectives that emerged during data analysis, ensuring that the study's conclusions were grounded in the experiences of the participants rather than preconceived notions.

As an insider within the microfinance community, the author was aware of the potential bias that could arise from their familiarity with the industry. To address this, the author adopted a reflexive approach, acknowledging their position and actively seeking to bracket assumptions. This involved engaging with participants from diverse roles within microfinance institutions, including unit officers, managers, and area managers. By valuing the unique insights of each participant, the research aimed to transcend potential biases and provide a balanced representation of experiences.

Chapter 4: Results

4.1 Overview of the Participants

The participants in this study encompass a diverse range of professionals deeply entrenched in the microfinance sector. From unit officers to area managers, their collective experience totals to over 70 years. Among them, there are individuals with extensive backgrounds in renowned microfinance institutions such as BRAC and City Bank, providing a comprehensive understanding of the industry's nuances. The participants' affiliations with Dustho Sastho Kendro, South Asia Multipurpose Cooperative Society Limited, and other notable organizations in the Dhaka Division render them prime sources for evaluating the impact of digital payment systems on microcredit operations.All the interviewees agreed to the fact that integration of digital payment systems in microcredit will affect the industry as a whole. Besides, the operations of various microcrdit organizations will be effecient and effective in all aspects i.e. in loan distribution , loan collection, loan repayments and disbursements. On the other hand, participants also mentioned some drawbacks regarding the integration of digital payment systems specially in the context of Bangladesh. Loan default, security concerns, various threats and externalities can have negative effects in the process.

Table 3: Interviewees List

Serial	Designation	Organization
1	Branch Manager	IFIC Bank Ltd
2	Branch Manager	City Bank Ltd
3	Regional Manager	Sajida Foundation
4	Regional Manager	BRAC Bangladesh
5	Assistant Director	Dushtha Shasthya Kendra (DSK)
6	Area Manager	Sajida Foundation
7	Senior Manager	South Asia Multipurpose Co-Operative Society Ltd.

4.2 Current Status of Digital Payment Systems

According to the insights gathered from the interviews ,the currentstatus of digital payment systems in the microfinance sector of Bangladesh reflects a dynamic landscape. The prevailing trend indicates a gradual shift towards digital solutions, albeit at varying rates across urban and rural settings. Mobile Financial Services (MFS) like bKash, Nagad, and Rocket have become pervasive, fostering partnerships with microfinance institutions (MFIs) to facilitate loan disbursements, repayments, and financial transactions. These collaborations have notably reduced the reliance on physical cash handling while enhancing operational efficiency. Government initiatives, such as the National Payment Switch Bangladesh (NPSB), aim to further the reach of digital financial services for microcredit borrowers. Notably, City Bank has introduced its proprietary app "City Touch," which has gained significant traction, particularly in urban areas. However, in districts and rural regions, the adoption rate hovers around 60% and 30%, respectively. These figures illuminate the ongoing transition towards digitalization, showcasing its potential to revolutionize microfinance operations.

Challenges including digital literacy, connectivity in rural areas, and transaction security persist. Nevertheless, the adoption of digital payment systems has remarkably improved transparency,

reduced costs, and increased convenience for borrowers, significantly impacting microcredit operations in Bangladesh. For the most recent and detailed updates on this topic, referring to current reports or studies on the status of digital payment systems in microcredit operations in Bangladesh is advisable.

4.3 Perceived Benefits and Challenges

Participants unanimously acknowledge the multifaceted benefits of incorporating digital payment systems into microcredit operations. The advantages encompass enhanced efficiency, streamlined distribution processes, and reduced operational costs. Notably, the integration of digital tools like "City Touch" enables clients to execute essential banking transactions from the comfort of their homes, mitigating the need for physical visits to offices or agent services. Moreover, this transition towards digital platforms promises to expedite processes, leading to increased client satisfaction and loyalty.Conversely, the adoption of digital payment systems does not come without challenges. The primary hurdle lies in cultivating client trust and familiarity with these technologies, especially among those less versed in digital transactions. Skepticism and a lack of technological proficiency are identified as barriers to widespread adoption, especially for the rural people of Bangladesh. Additionally, concerns regarding data security, client transparency, and the potential for technical faults necessitate robust risk mitigation strategies. Participants emphasize the critical role of different parties that are responsible for verifying client information, thereby safeguarding against fraudulent activities.

Figure 5: Insights from the Interviews Regarding the Challenges & Opportunities

4.4 Factors Influencing the Adoption of Digital Payment Systems

Age demographics emerge as a pivotal factor influencing the adoption of digital payment systems. Clients aged between 35 and 50 are considered more reliable due to their greater familiarity with technology. This demographic trend underscores the importance of considering client profiles when introducing digital solutions. Government initiatives play a vital role in shaping the digital landscape of microfinance in Bangladesh. With the Bangladesh Bank's endorsement of digital banking systems, microfinance institutions are poised to leverage the potential of these technologies. Additionally, the recent authorization of select banks for digital payments signifies a broader regulatory push towards digitization.

Traditional cash-based transactions continue to hold sway in the microfinance sector, particularly in rural areas. The entrenched reliance on physical currency stems from a combination of factors, including lower technological literacy rates and entrenched cultural practices. Conversely, digital payment systems offer a paradigm shift in microcredit operations. They introduce efficiency gains, reduced costs, and enhanced accessibility, particularly for urban clients. The advent of user-friendly applications like "City Touch" and "Rocket" has facilitated the transition towards digitalization, heralding a promising future for the microfinance sector. The comprehensive

analysis of interviews, data, and industry insights yields several key findings. Foremost, the integration of digital payment systems holds immense promise in streamlining microcredit operations. While challenges persist, including client education and data security concerns, the benefits far outweigh the drawbacks. Regulatory support and targeted client education initiatives are poised to catalyze this transition. As microfinance institutions adapt to this evolving landscape, the potential for transformative change within the industry is feasible.

Chapter 5: Discussion & Conclusion

The preceding chapters have delved into the intricacies of digital payment systems within the context of microfinance operations in Bangladesh. This chapter provides a critical evaluation and synthesis of the findings, shedding light on the broader implications and contributions of the research. The discussion encompasses an assessment of the quality of results and the research process, theoretical contributions to existing knowledge, practical insights for industry practitioners, and acknowledges the limitations of the study. Additionally, avenues for future research are explored to further enrich the discourse surrounding the integration of digital technologies in microfinance operations. Through this comprehensive examination, the chapter seeks to distill the key takeaways and significance of the study's findings for both academia and the microfinance industry.

5.1 Assessment of Result & Process Quality

The assessment of the results and process quality reveals several key insights into the integration of digital payment systems in microfinance operations. The author successfully navigated the challenges of data collection, ensuring a diverse and representative sample of participants across various microfinance institutions. The thematic analysis approach employed in data analysis yielded rich and nuanced findings, allowing for a comprehensive understanding of the impact of digital payment systems. The validity and reliability of the research process were upheld through rigorous data verification and triangulation, enhancing the credibility of the study's conclusions. However, it is important to acknowledge that while every effort was made to ensure data accuracy, the inherent subjectivity of qualitative research may introduce some degree of interpretation bias.

5.2 Theoretical Contribution

The findings of this study resonate with and extend the knowledge base presented in Chapter 2. The theoretical contributions are twofold. Firstly, the study affirms the transformative potential of digital payment systems in streamlining microfinance distribution processes, aligning with previous research highlighting the role of technology in enhancing financial inclusion. Secondly, the operational benefits derived from the integration of digital payment systems underscore the broader industry shift towards technology-driven solutions. This aligns with the evolving discourse on the digitization of financial services and its implications for the microfinance sector.

5.3 Practical Contribution

Practitioners within the microfinance sector, particularly those working remotely and their managers, stand to gain valuable insights from this research. The study emphasizes the critical importance of client education and targeted training programs to facilitate the seamless adoption of digital payment systems. Additionally, microfinance institutions can leverage the findings to strategically position themselves in the evolving landscape of financial services.

By embracing digital solutions, institutions can not only enhance operational efficiency but also expand their reach to previously underserved segments of the population.

5.4 Limitations of the Study & Future Directions

While the findings of this study provide valuable insights, it is essential to acknowledge certain constraints regarding the direct applicability of results. The study was conducted within the specific context of the Bangladeshi microfinance sector, and as such, the conclusions may be influenced by cultural, regulatory, and technological nuances unique to this setting. Additionally, the dynamic nature of technology and financial services warrants consideration, as future developments may introduce new variables not accounted for in this research. To advance the understanding of digital payment systems in microfinance operations, future research could adopt

a broader scope, encompassing a more extensive geographical and cultural context. Exploring the long-term impacts of digital integration and assessing the scalability of such initiatives would provide valuable insights for industry stakeholders. Furthermore, delving deeper into the nuances of client education and training programs could uncover optimal strategies for maximizing the adoption and effectiveness of digital payment systems.

5.5 Conclusion

The investigation into the adoption of digital payment systems in microfinance operations within the context of Bangladesh has unveiled a landscape of significant transformation and potential. Through in-depth interviews with key stakeholders in the microfinance sector, this study has delved into critical dimensions of adoption, operational benefits, and the pivotal role of mobile financing systems.

The research reveals a nuanced interplay of motivations driving the uptake of digital payment systems. Notably, the pursuit of cost-efficiency, market responsiveness, and competitive edge emerge as paramount drivers. However, it is evident that the level of perceived self-efficacy plays a pivotal role in influencing the readiness of microfinance practitioners and clients to embrace digital platforms. This underscores the necessity of tailored strategies to address psychological barriers and enhance confidence in utilizing digital tools. The integration of digital payment systems brings about a paradigm shift in the way microfinance organizations manage their internal processes. Streamlined operations, reduced time overheads, and optimal resource allocation are among the tangible benefits. Moreover, this transition necessitates a strategic reallocation of human and financial resources towards more innovative and adaptive pursuits. These benefits collectively signify the transformative potential of digitalization in microfinance operations. Mobile financing systems emerge as linchpins in the optimization of microfinance processes. Specifically, they significantly enhance loan collection processes, ensuring accuracy and efficiency. Beyond this, mobile platforms facilitate seamless coordination, data-driven decision-making, and heightened client engagement. This holistic impact underscores the central role of mobile financing systems in driving operational excellence.

In conclusion, this research underscores the pivotal role of digital payment systems in reshaping microfinance operations in Bangladesh. The adoption dynamics, internal operational benefits, and the transformative impact of mobile financing systems collectively herald a new era of efficiency

and adaptability within the microfinance sector. As the sector continues to evolve, leveraging the full potential of digitalization will be instrumental in driving financial inclusion and empowerment for diverse clientele.

Appendices

Appendix 1. Interview Questionnaire

1.What are the main benefits and challenges of using digital payment systems in microcredit for your organization and your clients?

2. How do you select and implement digital payment solutions for your microcredit operations? What are the criteria and processes that you follow?

3. How do you ensure the security, reliability, and interoperability of digital payment systems in microcredit? What are the risks and mitigation strategies that you adopt?

4. How do you monitor and evaluate the impact and effectiveness of digital payment systems in microcredit on various outcomes, such as financial inclusion, poverty reduction, gender equality, social welfare, etc.?

5. How do you train and educate your staff and clients on the use and adoption of digital payment systems in microcredit? What are the best practices and challenges that you face?

6. How do you communicate and collaborate with other stakeholders in the digital payment ecosystem, such as regulators, service providers, partners, etc.? What are the opportunities and barriers that you encounter?

7. How do you cope with the changing regulatory environment and customer preferences regarding digital payment systems in microcredit? How do you anticipate and respond to future trends and innovations?

8. How do you measure and improve customer satisfaction and loyalty with digital payment systems in microcredit? What are the feedback mechanisms and incentives that you use?

9. How do you balance the trade-offs between cost, efficiency, transparency, and relationship with digital payment systems in microcredit? How do you manage the expectations and perceptions of your staff and clients?

10. How do you integrate digital payment systems with other aspects of your microcredit operations, such as product design, delivery channels, marketing strategies, etc.?

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Appendix 2. Interview Data

Interview # 1

Questions	Answers
1. What are the main benefits & challenges using digital payment systems in microcredit for your organization & your clients?	**Benefits:** - Cost minimization on traveling & time-saving for credit officers, leading to increased efficiency. - Ability to handle more clients without physical presence. - Preference for bKash for digital payments. **Challenges:** - Less education among microcredit participants leads to insecurity regarding digital payments. Limited encouragement for digital transactions among clients.
2. How do you select & establish digital payment systems for your microcredit operations?	- Preference for prevalent systems like bKash, Nagad, and Rocket. - Education initiatives to increase client participation. - Utilization of payment methods used by a significant portion of clients (e.g., salaries received via Rocket). - Incremental targets to gradually increase the percentage of clients engaged in digital payments. - Provision of instructions and user manuals in payment books to encourage convenient payments.
3. How do you minimize problems related to scams in small sub-branches in Bangladesh?	Ensuring accurate payment information and providing clients with documentation of their transactions for transparency and safety in transactions involving substantial currency.
4. How do you ensure security, reliability & interoperability of digital payment systems in microcredit?	- Integration of client account numbers with associated mobile numbers for transaction verification. - Manual verification by accounts officers in case of doubts or mistakes. - Risks include challenges for small organizations during implementation and the potential for mistakes by clients during transactions. - Emphasis on precautions during transactions to mitigate risks and assurance of global security based on experiences in other countries.
5. Do you think invoicing systems are important?	- Pilot testing underway for the introduction of invoicing systems.
6. What about small organizations and invoicing systems?	Small organizations reaching a sustainable state can introduce invoicing systems.
7. How do you train & educate staff & clients in the use & adoption of digital payment systems in microcredit?	- Varied approaches within organizations. - Client meetings in branches for explanation of procedures, regulations, and schemes. - Customer service assistants providing detailed explanations through videos or presentations. - Training clients during payment interactions, emphasizing early payments with digital systems.
8. How do you train your staff?	- Scripted training materials from higher authorities. - Provision of training materials and videos accessible on electronic devices like tablets.

9. Do big companies like bKash, Nagad, Rocket have future plans for microcredit?	- bKash initiated digital loan services and campaigns but faced challenges.
10. How do you communicate & collaborate with stakeholders in the digital payment ecosystem?	- Focal persons for communication between companies. - Call centers for issue resolution and communication with higher authorities. - No immediate plans for working with invoicing services or specific bank credentials due to the clientele's lack of access or apprehension toward bank services.
11. How do you balance trade-offs among cost, efficiency, transparency & relationships with digital payment systems?	- Digital payment channels incur specific costs but enhance employee efficiency and cost reduction. - Challenge in convincing rural clients accustomed to pen-and-paper systems over SMS-based systems.
12. How do you integrate digital payment systems with other aspects of microcredit operations?	- Consideration of client preferences and geographical positions for system integration.
13. What are your thoughts about digital payment systems' contributions in Bangladesh, considering difficulties or drawbacks?	- Emphasis on consumer comfort and preference. - Example of providing savings through digital transactions during the COVID-19 pandemic. - Efforts to encourage clients through interest-free payments. - Consideration of cost minimization to reach more clients. - Flexibility for both clients and organizations. - Prediction of increased adoption rates (50-60%) in the next decade.

Table 4: Interview Summary 1

jamk

Interview # 2

Questions	Answers
1. What are the main benefits & challenges using digital payment systems in microcredit for your organization & your clients?	- Transitioning from pen-and-paper to digital formats in 376 branches. - Use of "Microfin 360" software for loan disbursement and data analysis. - Utilization of mobile apps by officers for data entry. - Limitations on multiple accounts for clients within different branches. - Challenges faced due to limited transparency with agents using Rocket and Bkash services.
2. Can your client directly make payments digitally?	- Clients can make payments digitally through designated software-associated numbers. - Challenges arise for instalment deposits without third-party involvement (agents). - Digital transactions were less popular initially compared to the present. - Costs incurred for digital transactions are managed through minimizing charges to clients and optimizing employee costs.
3. How do you select and implement digital payment solutions for your microcredit operations?	- Priority given to educating at least one family member to encourage digital payment use. - Employee training as a crucial criterion. - Emphasis on maintaining digital records or creating a consumer and organizational portal. - Approximately 5 crore people are engaged in microcredit.
4. How do you ensure the security, reliability, and interoperability of digital payment systems in microcredit?	- Emphasis on data security and client education regarding confidential services. - Provision of a 24/7 hotline for ease of access. - Collaboration with MRA (Microcredit Authority) for implementing digital transactions. - Future plans for using NID numbers for identification and security purposes.
5. Do you think invoicing systems are important for the future?	- Advocacy for invoicing systems utilizing NID. - Prediction of increased digital transaction adoption in 10 years among different age groups.

6. Does any bank associate with you for this service?	- Collaboration with Brac bank for significant transactions. - Encouragement for banks to engage in microfinance, like Islami Bank.
7. What do you think about staff transparency in this system?	- Claims of 100% transparency within the organization due to critical system design and observation.
8. How do you train & educate your staff & clients in the use & adoption of digital payment systems in microcredit?	- Online training for staff, focusing on cost minimization. - Employee incentives for increasing client engagement in microcredit services. - Piloting initiatives before implementation.
9. How do you inspire & train clients for this system?	- Organized meetings with clients, providing step-by-step training. - Encouragement for smartphone usage, potentially offering loans for smartphone purchase. - Offering an interest-free loan to staff to instill confidence in digital payment systems.
10. How do you communicate & collaborate with other stakeholders in the digital payment ecosystem?	- Deployment of relationship officers to manage client communication. - Immediate problem resolution. - Advocacy for close communication between law enforcement and stakeholders. - Participation of social activists in organization activities and meetings.
11. How do you measure and improve customer satisfaction & loyalty with digital payment systems in microcredit?	- Focus on time and money-saving for clients. - Cost minimization and convenience as a priority. - Reduction in operational costs used to minimize client interest rates. - Providing incentives to exemplary clients annually.

12. How do you integrate digital payment systems with other aspects of your microcredit operations?	- Differentiation of loans based on size with corresponding payment methods (small loans through bkash, nagad, etc., and large loans via banks). - Detailed loan classification mentioning instalments.
13. How can you increase your marketing channels in Bangladesh?	- Collaboration with NGO Authority Bureau (NAB) to introduce incentives and activities across microcredit organizations.

Table 5: Interview Summary 2

jamk

Interview # 3

Questions	Answers
1. What are the main benefits & challenges using digital payment systems in microcredit for your organization & your client?	**Benefits:** - Differentiates finance into SMEs, corporate, and retail. - Challenges related to microfinance default rates (4-6%) and risk mitigation criteria (DBR, DER, sales receivable payable, stock). - Emphasis on reliability from clients aged 35-50 years. **Challenges & Risk Mitigation:** - 3 basics criteria applied to loans. - Sustainability-focused product identification. - Consideration of clients' age as a reliability factor.
2. Which digital tools do you use?	- Use of the "City touch" app for banking needs. - Varying adoption rates across regions (80% in cities, 60% in districts, 30% in rural areas).
3. How do you recover any technical faults?	- Focus on client identification using Credit Information Bureau (CIB) data. - Incentives or subsidies provided in case of faults.
4. Do you think about invoicing or have any service like this?	- Emphasis on SMS and hotline services for client convenience, not invoicing.
5. How do you select & establish digital payment system for your microcredit operations? What are the criteria & process should be followed you think?	- Client selection based on manual systems and subsequent digital adoption. - Emphasis on CIB history check before agreements. - Utilization of NID for client identification.
6. Do you think about association with banks compared to small banking sectors or NGOs?	- Preference for NGOs due to higher interest rates in rural areas (48-50% compared to banks' 8-9%).

7. What do you think about the digital banking system in the future?	- Piloting apps like LOI (loan operating investigation) and ongoing services like Nano finance. - Predictions for a significant digital transaction shift in the future.
8. How do you ensure the security, reliability, and interoperability of digital payment systems in microcredit?	- Functioning cyber units to address security issues.
9. What risks do you consider in the microfinance sector in today's world economic crisis?	- Concerns about political issues, dollar scarcity, and money laundering.
10. How do you train & educate your staff & clients in the use & adoption of digital payment systems in microcredit?	- Regular training programs and seminars for both clients and employees. - Availability of call centers across Bangladesh to assist clients.
11. What are the present & future ratios of digital payment systems?	- Presently around 50%, expected to increase gradually.
12. How do you communicate & collaborate with other stakeholders in the digital payment ecosystem?	- Compliance with Bangladesh Bank guidelines and organizing regular meetings. - Hierarchical problem-solving structure within branches.
13. How do you measure & improve customer satisfaction & loyalty with the digital payment system in microcredit?	- Focus on client preferences and introducing trained manpower.

14. Do customers incur additional charges for using your app?	- Part of yearly charges, not separately charged for the app.
15. How do you integrate digital payment systems with other aspects of your microcredit operations?	- Focus on branding, advertising, and meetups for integration. - Collaboration with microfinance NGOs for system improvement.
16. Do you send the payment instantly when clients make payments through apps?	- Utilization of NPSB, IS, RTG services, enabling instant transactions based on segment selection.
17. What do you think about the future of the digital payment system & what additional services do you plan for more convenience in Bangladesh?	- Predictions of significant change within 1-2 years due to increased rural digital adoption. - Expectations of drastic changes in 10-20 years. - Examples of scholarships and pensions being managed through digital systems.
18. Are your customers satisfied?	- Yes, customer satisfaction is affirmed.

Table 6: Interview Summary 3

jamk

Interview # 4

Questions	Answers
1. What are the main benefits & challenges using digital payment systems in microcredit for your organisation & your client?	- Clients not fully adapted to digital payments, more comfortable with cash. - Efforts ongoing for cashless service establishment.
2. How many people are involved in digital transactions you think?	- Approximately 20-30% of the population. - Providing SME loans from 3 lakhs to 1 crore, reaching maximum consumers. - Plans for an invoicing system in progress.
3. How do you select & implement digital payment solutions for your microcredit operations?	- Piloting digital payment systems with SME clients in 2024. - Targeting 15-20% of SME clients for piloting. - Success in piloting to lead to cost minimization and time efficiency.
4. How do you ensure the security, reliability, and interoperability of digital payment systems in microcredit?	- Emphasis on awareness creation and client preference. - Demonstrating benefits of digital transactions. Challenges include lack of client transparency and education.
5. How do you monitor & evaluate the impact & effectiveness of digital payment systems in microcredit?	- Focus on various aspects like awareness building, technical training, sanitation, and healthcare initiatives to measure impact.

6. Do you think digital payment systems can result in or increase unemployment problems?	- Acknowledgment of both positive and negative impacts. - Positive effects include convenience, efficiency, and potential employment opportunities.
7. How do you train & educate your staff & clients in the use & adoption of digital payment systems in microcredit?	- Importance of training and awareness sessions. - Addressing staff corruption and local political issues through digitalization. Challenges include corruption, fraud, and climatic disturbances.
8. Do you use any technologies or other ways to train your clients?	- Training programs, flyers, and awareness materials used to educate clients.
9. How do you make digital marketing? Do you think of any incentives for client attraction?	- Offering incentives and subsidies, such as waiving account opening charges. - Launching programs considering company benefits and state.
10. Do you use any technologies or software for your organization?	- Using "G Banker" software associated with Grameenphone for payment input. - Enables field officers to input client payments remotely. - Provides branch and account status visibility.
11. How do you manage your accounts control section? Through software or manually?	- Utilizing software for both MIS and FIS systems.
12. How do you balance trade-offs between cost, efficiency, transparency & relationships with digital payment systems?	- Focusing on sustainability during piloting. - Planning initial subsidization for customer adaptation before profitability.

13. In which region do you face more loan defaulters?	- Urban areas due to limited familiarity among people, creating opportunities for fraudulent activities. - Challenges also present in garment areas and client migration.
14. What do you think about the future of digital payment systems & additional services for more convenience?	- NGO's role in economic development; aiming to create entrepreneurs for self-reliance. - Focus on socioeconomic and industrial improvements. - Impact expected on employment, reducing government pressure. - Vision for industrial and socioeconomic development in Bangladesh.

Table 7: Interview Summary 4

jamk

Interview # 5

Questions	Answers
1. What are the main benefits & challenges using digital payment systems in microcredit for your organization & your client?	**Benefits:** - Instant information - Protection from regulatory violence - Reduced client hassle - Cost and time efficiency - Entrepreneurship and organizational expansion **Challenges:** - Lack of awareness & education - Poor rural internet service - Potential client migration affecting digital payments - Lack of training & poor communication with clients
2. How do you select & establish a digital payment system for your microcredit operations?	- Conducting surveys in client sites - Emphasizing ease and reliability of the system - Ensuring comprehensive training sessions
3. How many clients do you have who make digital payments right now?	- Majority of clients prefer cash payments over digital transactions
4. Do you have any plans to make payments digitally?	- No current plans due to rural clients' limited acceptance and education - Future considerations aligned with the country's technological advancement
5. Does any bank assure you of association for digital payments?	- Government authorized two banks for digital payments - Future intentions to explore convenient digital payment systems
6. How do you train & educate your staff & clients in	**For Staff:** - Incentives for smartphone purchase - Internal training programs **For Clients:** - Illustrating benefits of digital transactions - Organizing meetings, training sessions, and advertising programs

the use & adoption of digital payment systems in microcredit?	
7. Are you thinking about any incentives for client attraction?	- Consider offering incentives tied to digital transaction savings - Incentives for smartphone purchase by clients
8. How do you integrate a digital payment system with other aspects of your microcredit operations?	- Planning an integrated application for clients and officers - Including beneficial features for education, health, etc. - App displaying organization information, visions, activities, and daily status reporting for employees
9. How would be your marketing to reach your clients?	- Focusing on staff training - Using Bengali-language SMS advertisements - Involving significant social figures - Virtual advertising
10. How do you balance trade-offs between cost, efficiency, transparency & relationships with digital payment systems?	- Emphasizing training programs for staff efficiency - Aiming for higher loan disbursement targets - Utilizing cost minimization through reduced employees to attract clients with better interests
11. After the Covid pandemic, which new problems are you facing?	- Balancing interest rate reduction during the pandemic - Facing minor client losses due to election issues
12. How do you see this digital transaction system in human life & Bangladesh after 5-10 years?	- Foresees a more comfortable and convenient life - Expects reduced risk in clients' businesses

Table 8: Interview Summary 5

jamk

Interview # 6

Questions	Answers
1. What percentage of people use digital payment systems in Bangladesh?	- Approximately 5 crore users engage in digital transactions annually worth 1000 crore BDT in mobile recharges.
2. Who are your exact customers?	- Students, those paying bank examination fees, various government incentives (freedom fighters, maternity), garment workers.
3. How many percentage transactions daily take place through digital payment systems?	- Bkash has the most transactions, corporate offices prefer Rocket, government offices prefer Nagad.
4. What kinds of difficulties do you face in daily life during operations?	- Users with limited technological knowledge face challenges, often influenced by family or neighbors due to lack of education.
5. How do you mitigate problems related to mis-transactions?	- Agents notify the company of a mis-transaction, account blocking occurs, efforts to recover the funds are made, and the block is lifted once the money is recovered.
6. How many clients do you have right now?	- In February 2023, transactions totaled 97,307 crores from 196,779,171 registered accounts.

7. What are your thoughts for the future 5-10 years?	- Envision a user-friendly rocket app or *222# service, allowing transactions without bank accounts, emphasizing simplicity and security.
8. How can digital transactions be used in microcredit?	- Low-cost services like Rocket benefit small to middle-class clients for cash-out services and serve as a channel between clients and NGOs.
9. Can digital transactions be effective in microcredit?	- Government permission for digital banks indicates a shift towards secure, app-based microcredit without physical branches. It aims to offer loans without hassle, requiring only a smartphone and internet connection.
10. Do you foresee a collapse of existing NGOs in this situation?	- Educated users might not face collapse, but the sector might experience a significant transformation in the next 5 years. Possibilities for small to middle-range business opportunities exist with the centralization of transactions.
11. How do you inspire and train clients for this system?	- Awareness building through advertisements, SMS services, and physical advertising tools like leaflets and billboards.
12. Do you provide incentives for client attraction?	- Offers biometric banking through agent banking.
13. Which criteria are needed for a digital banking application & getting permission?	- Requirements include a company value of 125 crores with a minimum of 5 members, SME programs, app-based service, virtual operations without tangible systems, and inter-transitional banking.
Additional Information (Organizations):	Brac, Asha, Palli Mongol, Bureau Bangladesh primarily focus on microcredit.

Additional Insight (Employment Opportunities):	Anticipates significant employment opportunities for Bangladeshi citizens through these digital systems.

Table 9: Interview Summary 6

Interview # 7

Questions	Answers
Can you discuss the benefits and challenges associated with using digital payment systems in microcredit?	Benefits include instant access to information, regulatory protection, client convenience, reduced costs, and time-saving transactions. Challenges involve lack of awareness, poor internet, and communication issues.
How do you plan to select and establish digital payment systems for your microcredit operations?	The strategy involves conducting surveys, introducing systems reliably, showcasing their benefits, and ensuring comprehensive training sessions.
How many of your clients currently make digital payments?	Presently, a minimal number of clients engage in digital payments; the majority prefer cash transactions.
Do you have plans to adopt digital payments in the future?	As of now, plans are not in place due to challenges with rural clientele, but future adoption as technology advances is anticipated.
Are there any associations or assurances from banks for collaboration?	While major banks offer apps, collaborations await government sanction. Future association with such systems is being considered.
How do you train and educate staff and clients on digital payment systems in microcredit?	Staff undergo training programs, and various client meetings and sessions are conducted. Additionally, incentives and advertisements are used to promote adoption.
Are you considering incentives to attract clients?	Yes, incentives such as savings bonuses and encouraging smartphone purchases are being considered.

How do you envision integrating digital payment systems with other aspects of your microcredit operations?	The plan is to develop an intuitive application reflecting organizational details, client profiles, and beneficial features for seamless user experience.
How do you balance cost, efficiency, transparency, and relationships with digital payment systems?	Staff training for efficiency, increased loan disbursement, and cost reductions through reduced manpower are the strategies employed to balance these aspects.
Have you faced any new challenges post-COVID pandemic?	Issues like adjusting loan interest rates and minor client losses due to election-related concerns have emerged post-pandemic.
How do you perceive the role of digital transaction systems in human life and Bangladesh in the coming 5-10 years?	Embracing technology is expected to enhance convenience, reducing risks associated with client businesses in the future years.

Table 10: Interview Summary 7

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