PROSPECT OF DIGITAL BANK IN THE CONTEXT OF BANGLADESH

BY

Setu Basak
ID: 0242310004213002

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Masters of Science in Management Information System

Supervised By

Dr. Sheak Rashed Haider Noori
Professor & Head
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

JULY 2024

APPROVAL

This Project titled "**Prospect of Digital Bank in the context of Bangladesh**", submitted by Setu Basak to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 6 July, 2024

BOARD OF EXAMINERS

Board Chairman

Narayan Ranjan Chakraborty
Associate Professor and Associate Head
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner 1

Md. Sadekur Rahman
Assistant Professor
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner 2

Dr. Ohidujjaman Tuhin
Assistant Professor
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

External Examiner

Sadat Hossain
Data Scientist
Risk Management Division,
BRAC Bank Limited

DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Dr. Sheak Rashed Haider Noori, Professor & Head, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

Dr. Sheak Rashed Haider Noori
Professor & Head
Department of CSE
Daffodil International University

Submitted by:

Setu Basak
ID: 0242310004213002
M. S in Management Information System (MIS)
Department of CSE
Daffodil International University

ACKNOWLEDGEMENT

First I express our heartiest thanks and gratefulness to almighty for His divine blessing makes me possible to complete the final year project/internship successfully.

I am really grateful and wish our profound our indebtedness to **Dr. Sheak Rashed Haider Noori, Professor & Head**, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of "*Fintech*" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this project.

I would like to express my heartiest gratitude to my supervisor, Professor & Head**,** Department of CSE, for his kind help to finish the project and also to other faculty member and the staff of CSE department of Daffodil International University.

I would like to thank my entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledge with due respect the constant support and patience of my Parents & Spouse.

ABSTRACT

Digital banking has brought about a significant shift in the way that financial services are delivered and consumed in the modern day. The emergence of these organizations in Bangladesh can be attributed to the government's support of digital banking and the country's rising internet penetration. This is an attempt to examine the possibilities of digital banking in Bangladesh by providing a more comprehensive overview of the industry's current situation and weighing its advantages and disadvantages. There is a growing population of internet users and a proliferation of mobile financial services (MFS) providers such as bKash, Rocket, and NAGAD. These fintech businesses are now an integral part of the nation's financial ecosystems. The benefits of digital banking in Bangladesh are manifold, including enhanced customer satisfaction, economies of scale for both banks and clients relative to physical facilities, and better convenience and accessibility. Reaching the full potential of these advantages will require overcoming certain obstacles. Infrastructure barriers, such as those relating to biometrics, privacy concerns, and consumer trust difficulties; hazards linked with the internet, such as hacking and server vulnerabilities that might be exploited; and the desire for commerce to be legalized. The use of further cutting-edge technologies like big data analytics, block chain, and artificial intelligence is anticipated to advance the state of digital banking services as we move forward. Mobile financial services, expanding alliances between traditional banks and fintech companies, and more regulatory support will all support future expansion. The prospect of digital bank in Bangladesh is promising, with the potential to significantly contribute to the country's economic development and the broader goal of achieving a SMART Bangladesh.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1

Introduction

1.1 Introduction

Delivering and consuming banking services has been revolutionized by digital banking, which has become a disruptive force in the global financial sector. The change from traditional, branch-based banking to a seamless, technology-driven banking experience is what defines this paradigm shift. A wide range of services are included in digital banking, such as electronic financial transfers, digital wallet use, online and mobile banking, and more. The desire for more accessibility and efficiency in financial services, together with changes in consumer behavior and technological advancements, have all contributed to the broad acceptance of digital banking.

Digital banking is growing more important in Bangladeshi contexts. The nation's financial industry is modernizing quickly because to encouraging government initiatives, the spread of smartphones, and rising internet usage.

Access to financial services has greatly increased with the rise of mobile financial services (MFS) providers like bKash, Rocket, and NAGAD, especially in underserved and rural areas. Millions of Bangladeshis are now able to engage in the official financial system because to these services, which encourage financial inclusion and advance economic growth. Notwithstanding the encouraging expansion, a number of obstacles still exist, including as legislative limits, infrastructure constraints, and cybersecurity concerns. To fully realize the potential of digital banking in Bangladesh, stakeholders must have a thorough understanding of its current condition and future prospects.

This study paper aims to investigate the potential of digital banking in Bangladesh by carefully examining the state of affairs at the moment, assessing the advantages and disadvantages that come with it, and projecting future developments.

1.2 Motivation

This study's purpose stems from the realization that digital banking may significantly improve financial inclusion and promote economic growth in Bangladesh. Even with the nation's notable economic advancements, a sizeable section of the populace—especially in rural and neglected areas—remains unbanked or underbanked. This poses a serious obstacle to inclusive growth since financial services accessibility is essential for reducing poverty, promoting economic empowerment, and seizing opportunities.

Financial Inclusion:

The unbanked population and formal financial services might be connected through digital banking. Because of the high operational expenses and logistical difficulties associated with traditional banking, its reach is sometimes restricted in rural and distant locations. Digital banking can more effectively and economically reach these underprivileged populations through internet and mobile banking services. Digital banking may assist people and small companies in better managing their money, investing in possibilities, and reducing risks by offering access to savings accounts, credit, insurance, and payment services.

Economic growth: There are a number of ways in which the wider use of digital banking might greatly advance economic growth.

Encouraging Small and Medium-Sized Businesses (SMEs): SMEs play a major role in Bangladesh's GDP and employment, making them essential to the country's economy. However, because of strict lending requirements and a lack of collateral, many SMEs find it difficult to get formal financial services. SMEs may expand and prosper with the help of digital banking's customized financial solutions, which include digital payments and microloans.

Increasing Efficiency: Digital banking makes financial transactions more efficient by cutting down on time and expenses associated with them. This helps businesses and the economy as a whole, in addition to individual customers. Transactions that are quicker and more secure can boost the economy and boost output.

Encouraging Innovation: By supporting the creation of new financial technology, the digital banking industry (fintech) encourages innovation. This may result in the development of fresh financial services and solutions that better suit the requirements of companies and customers. Financial services may be made even more efficient, secure, and easily accessible with the help of innovations like block chain, AI, and big data analytics.

Reducing Poverty: Reducing poverty requires having access to financial services. Low-income people may save money, get credit, and develop financial resilience with the aid of digital banking. Digital banking can help people escape poverty and lead better lives by making formal financial services more accessible.

1.3 Rationale of the Study

The purpose of this research is to present a thorough review of digital banking in Bangladesh, emphasizing its advantages, disadvantages, and potential. Policymakers, financial institutions, and other stakeholders are to be informed by this report about the potential and prerequisites for the effective adoption and expansion of digital banking in the nation.

1.4 Research Questions

This study aims to address the following research questions:

- What is the current state of digital banking in Bangladesh?
- What are the primary benefits and challenges of digital banking for consumers and financial institutions in Bangladesh?
- How does digital banking contribute to financial inclusion and economic development in Bangladesh?

- What are the future trends and potential developments in the digital banking sector in Bangladesh?
- What strategies can be implemented to improve the adoption and effectiveness of digital banking in Bangladesh?

1.5 Significance of the Study

There are several reasons why this research is important.

Financial Institutions: By highlighting the opportunities and difficulties present in the field of digital banking, the research aids banks and other financial organizations in developing strategies and maximizing the potential of their digital banking products.

Customers: By being aware of the advantages and possible hazards associated with digital banking, customers may use digital financial services responsibly and make well-informed decisions.

For Policymakers: It helps develop policies that foster innovation while guaranteeing consumer safety by offering insights into the infrastructure and regulatory requirements to enable the expansion of digital banking.

For Researchers and Academics: By offering a thorough examination of the Bangladeshi environment and suggesting topics for more research, this paper adds to the body of knowledge already available on digital banking in emerging nations.

1.6 Scope & Limitations

Scope: The scope of this study is the digital banking industry in Bangladesh. It looks at a number of topics, including customer experiences, the uptake of digital banking services, and the effects on financial inclusion and economic growth. Data from surveys, interviews, and secondary sources—both qualitative and quantitative—are analyzed in this study.

Limitations:

The study's scope is restricted to Bangladesh, and its applicability to other nations with disparate economic and technical contexts may be limited. Secondary data sources' dependability and availability place restrictions on data collecting. Since digital banking is a quickly changing industry, many conclusions may become antiquated when new technology and legislative changes are introduced.

1.7 Expected Outcome

The intended outcome of this research is a detailed analysis and collection of actionable insights of Bangladesh's digital banking ecosystem. The goal of the research is to present a thorough picture of the market as it stands right now, complete with important players, adoption rates, and technical infrastructure. In addition to highlighting the advantages of digital banking—such as increased consumer happiness, economic efficiency, and financial inclusion—it will also highlight its drawbacks, including cybersecurity concerns, infrastructural constraints, legal restrictions, and gaps in digital literacy. The study will evaluate how digital banking affects economic growth and financial inclusion while making forecasts about upcoming advancements in technology, market patterns, and laws. In order to improve the uptake and efficiency of digital banking, the research will also include strategic suggestions for decision-makers, financial institutions, and consumer education initiatives.

CHAPTER 2

Background study

2.1 Preliminaries/Terminologies

The term "digital banking" describes the process of digitizing all of the conventional banking services and offerings that, in the past, were exclusive to clients who were present in person at a bank branch. This covers tasks like making deposits, taking money out and transferring it, managing checking and savings accounts, applying for loans, managing credit, paying bills, and providing account services. Important terms used in online banking include:

Online banking refers to using a bank's website to access banking services over the internet.

Mobile banking: Using specialized applications on mobile devices to conduct financial transactions.

The electronic transmission of funds between bank accounts is known as an electronic funds transfer, or EFT.

Digital wallets are software-based devices that keep track of a user's passwords and payment details for a variety of websites and payment methods.

Fintech refers to financial technology firms that use technology to develop financial services.

2.2 Related Works

Numerous studies have explored the evolution, adoption, and impact of digital banking globally and within specific regions, offering valuable insights that inform this research.

Global Adoption and Trends: Studies reveal a notable surge in the global acceptance of digital banking, mostly due to technological progress, evolving consumer inclinations, and the demand for enhanced efficiency in financial services. A 2017 PwC study found that digital banking improves customer satisfaction and operational effectiveness by providing quick, easy, and accessible financial services [14]. In a similar vein, Deloitte (2019) emphasizes that the use of digital banking solutions is growing in order to satisfy the needs of a client base that is increasingly tech aware, optimize processes, and cut expenses [13].

Digital Banking in Developing economies: Digital banking has been recognized as a vital instrument for promoting financial inclusion in developing economies. The use of mobile banking in these areas, according to Shaikh and Karjaluoto (2015), dramatically increases the unbanked and underbanked population's access to financial services and closes the gap in financial inclusion [4]. Yaseen, Dingley, and Adams' (2016) research conducted in Kenya demonstrates how digital banking platforms have empowered small enterprises and people by making financial services easily accessible, hence promoting economic development and progress[5].

Bangladesh Situation: Research conducted specifically for Bangladesh by Bangladesh Bank (2020) and the Bangladesh Institute of Bank Management (BIBM) (2021) shows the explosive expansion of mobile financial services (MFS) companies including bKash, Rocket, and NAGAD[11][12]. Financial inclusion has increased dramatically as a result of these services, especially in rural regions with weak traditional banking infrastructure. To fully reap the rewards of digital banking, these studies also point out a number of obstacles, such as cybersecurity threats, infrastructural constraints, and regulatory roadblocks.

Impact on Financial Inclusion and Economic Development: Raihan and Ahmed (2018) look into how mobile financial services affect financial inclusion in Bangladesh, pointing out that millions of unbanked people now have easier access to banking[2], which has helped with economic empowerment and the decline of poverty. By emphasizing how fintech and digital banking are promoting financial inclusion and bolstering economic activity in Bangladesh, Khan and Alam (2018) provide even more evidence in favor of this [7].

Problems and Suggestions: The literature also covers the problems Bangladesh's digital banking is facing. Rahman (2021) cites three main obstacles to the expansion of digital banking: legislative restrictions, insufficient technology infrastructure, and cybersecurity risks [3]. Ali (2020) suggests strengthening cybersecurity safeguards, upgrading technology infrastructure, and creating helpful legislative frameworks in order to handle these issues [9].

2.3 Synopsis and Comparative Analysis

The adoption and maturity of digital banking trends varies by location, according to a comparative examination of these trends. Digital banking is well-established and has a high penetration rate in industrialized nations thanks to strong legal frameworks and technology infrastructure. On the other hand, the adoption of digital banking is growing quickly in emerging economies such as Bangladesh, mainly due to the presence of mobile financial services. Important variations include of:

Infrastructure: Developed nations enjoy the advantages of highly developed IT infrastructure, whereas emerging markets struggle with issues like low internet penetration and inadequate technological resources.

Regulatory Environment: Developed nations have more well-established regulatory frameworks that offer precise instructions for digital banking. In order to stay up with technology changes, emerging economies are still evolving their regulatory regimes.

Consumer Behavior: While consumers in emerging regions continue to be mostly uninitiated or suspicious of digital banking services, consumers in industrialized countries are more accustomed to using these services.

2.4 Scope of the Problem

Digital banking has a great deal of promise to revolutionize the financial industry in Bangladesh. Important areas of attention consist of:

Financial Inclusion: Especially in rural regions, digital banking has the potential to increase the number of unbanked and underbanked people who have access to financial services. Digital banking may break through long-standing obstacles like the absence of physical bank branches by utilizing mobile financial services (MFS) and online banking, which will help to advance financial inclusion and economic empowerment. This is especially important in a nation where a sizable fraction of the populace lacks access to traditional financial services.

Enhanced Operational Efficiency and Lower expenses: Digital banking lowers expenses for banks as well as customers. By automating procedures, lowering the requirement for physical infrastructure, and speeding up transaction times, digital banking solutions simplify operations. Financial companies may pass on cost savings to customers in the form of cheaper fees and better interest rates because of this efficiency. Furthermore, consumers need less time and effort to manage their accounts thanks to the simplicity of digital banking, which increases customer happiness and loyalty.

Growth in the Economy: Digital banking makes financial transactions and services simpler and more effective, which boosts the economy. Small and medium-sized businesses (SMEs) benefit from digital banking because it gives them access to the financial resources they need to grow and run their operations effectively. Digital banking facilitates financial inclusion and efficiency, which in turn stimulates economic activity, jobs creation, and general economic growth. Furthermore, the greater financial inclusion and knowledge brought about by digital banking may result in more general economic advantages like lower rates of poverty and higher standards of living.

Enhancing the client experience is one of digital banking's main goals. Modern consumers have growing expectations, and digital banking delivers on them by offering services that are easy to use, convenient, and accessible. Digital banking systems come equipped with features including simple access to financial goods and services, individualized financial advice, and real-time tracking of transactions. These improvements help provide a better client experience, which increases interaction and faith in the financial system.

2. 5 Challenges

Bangladesh's digital banking industry confronts a number of obstacles despite its potential:

Infrastructure constraints: Inadequate technology infrastructure, especially in rural regions, with low internet penetration and unstable electrical supplies.

Cybersecurity Risks: Growing risks of fraud and cyberattacks, requiring strong security measures and user knowledge.

Regulatory challenges: Adapting regulatory frameworks that must strike a balance between financial stability, consumer protection, and innovation.

Increasing customer knowledge and trust about the advantages and applications of digital banking services while fostering trust among those who are used to traditional banking methods.

CHAPTER 3

Research methodology

3.1 Research Subject and Instrumentation

This study's focus is on Bangladesh's potential for digital banking. The main goals are to comprehend the existing situation, recognize the advantages and difficulties, and project future developments. Both qualitative and quantitative research methodologies are used in this study. While the quantitative component entails the examination of statistical data on the use of digital banking, the qualitative component entails interviews with significant banking industry players.

Tools:

Surveys and Questionnaires: Designed to collect data from banking customers and employees regarding their experiences and perceptions of digital banking.

Interviews: Conducted with bank executives, fintech leaders, to collect insights into the strategic and operational aspects of digital banking.

Data Analysis Tools: Excel, SPSS and power BI are used for analysis.

3.2 The Data Collection Method/Dataset Used

Several stages were included in the data gathering procedure to guarantee accuracy and thorough coverage:

Literature Review: A comprehensive analysis of previous studies, reports, and articles on digital banking in Bangladesh and throughout the world.

Surveys: Disseminated to a representative sample of bank clients in both urban and rural Bangladesh. In the study, participants were asked about how they used digital banking services, how satisfied they were, and what advantages and difficulties they saw.

Interviews: 5 industry professionals, including bank managers, fintech founders, and Bangladesh Bank representatives, were interviewed.

Secondary Data: Taken from reliable sources, including yearly reports from top banks and MFS providers, the Bangladesh Bank, and the Bangladesh Bureau of Statistics.

Used Dataset:

- Customer survey answers
- Transcripts of expert interviews
- Statistics on transactions made using mobile banking between 2015 and 2023
- Reports on Bangladesh's use of smartphones and the internet

3.3 Proposed Methodology/Applied

A mixed-method approach is the suggested methodology for this study, bringing together quantitative and qualitative methods to present a comprehensive picture of digital banking in Bangladesh.

Qualitative Methods:

Interviews: Semi-structured interviews with professionals in the field to get comprehensive understanding of operational and strategic difficulties and prospects. Thematic analysis involves examining interview transcripts to find recurrent patterns pertaining to online and mobile banking.

Quantitative Methodologies:

Surveys: Formalized questionnaires used to collect information from bank clients.

Analytical Statistics: Survey data may be interpreted by descriptive and inferential statistical analysis using Microsoft Excel, SPSS & Power BI

CHAPTER 4

Experimental results and discussion

4.1 Experimental Configuration

In order to assess the present situation and potential future developments of digital banking in Bangladesh, the experimental design for this study comprised the gathering and examination of both qualitative and quantitative data. Included in the configuration were:

Tools and Technologies: Used survey platforms Google Forms for data gathering, statistical analysis with SPSS & Visualization with Power BI

Sample Size: The poll had 500 participants in all, representing a wide range of demographics such as banking clients from both urban and rural areas. 5 industry professionals were also questioned.

Time Frame for Data Gathering: In order to provide a thorough and up-to-date picture of digital banking usage and attitudes, data was gathered over a three-month period.

4.2 Data Preprocessing

To guarantee the accuracy and applicability of the data, a number of preprocessing procedures were carried out prior to dataset analysis. These actions are essential to the validity of the analysis.

i. **Data Purification:**

Missing Values: If necessary, entries with missing values were eliminated or filled in using the proper imputation techniques. The most common value was utilized for categorical data, while the mean or median value was assumed for continuous variables.

Duplicate Entries: In order to avoid distorting the outcomes, duplicate records were found and eliminated.

ii. Data Conversion:

Encoding Categorical data: Using methods like one-hot encoding and label encoding, categorical data including gender, location, education level, banking status, and satisfaction levels were transformed into numerical representations. For algorithms that require numerical input, this phase is crucial.

Normalizing Continuous Variables: To guarantee that each variable contributes equally to the study, variables such as age and income level were standardized to a standard scale.

iii. Engineering Features:

Developing New Features: To offer more insights, new features were created using the data that was already available.

Interaction Features: To capture any correlations that could be important for the investigation, interaction terms between various variables were generated.

4.3 Experiments

Several tests were carried out in order to extract important information about the future of digital banking in Bangladesh. Visualizations, machine learning models, and statistical analysis were used in these investigations.

The dataset was divided into training and testing sets using an 80-20 split for the purposes of the linear regression analysis. The training data was used to train the model, and the test data was used to evaluate it.

4.4 Results

The outcomes of the surveys and interviews gave important new information about the uptake, difficulties, and possibilities for digital banking in Bangladesh.

Analytical Report:

Rates of Adoption: 68% of respondents to the poll said they actively using banking services digitally [Fig.4.2.1].

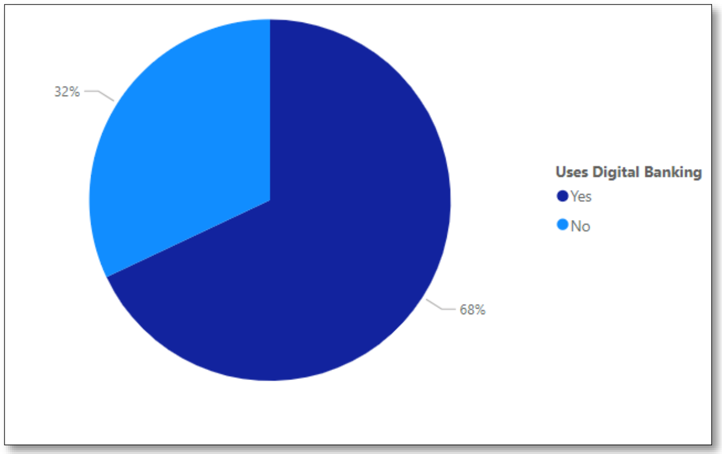

Figure.4.2.1: Rate of adaption of banking services digitally

55% percent of users of banking services access using mobile apps, making mobile banking the most popular [Fig.4.2.2].

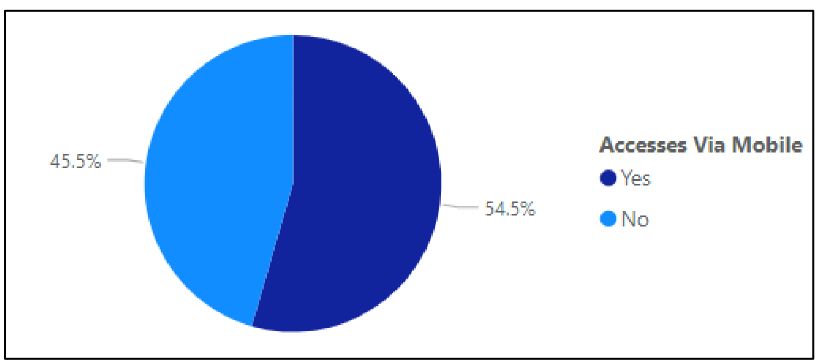

Figure.4.2.2: Access of banking services through Mobile Devices

Patron Contentment: The main advantages mentioned by 75% of consumers who expressed pleasure with digital banking services were accessibility and ease. But 25% of respondents voiced worries about transaction dependability and security [Fig.4.2.3].

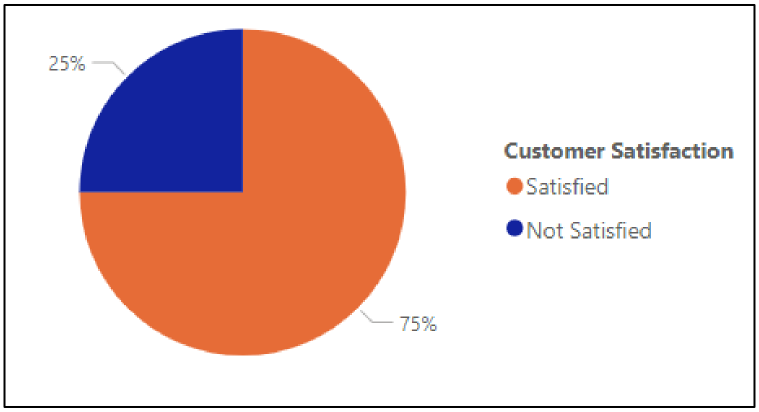

Figure. 4.2.3: Customer satisfaction

Usage Patterns: The unique transactions are bill payments (26%), cellphone recharges (29%), and money transfers (51%) [Fig.4.2.4].

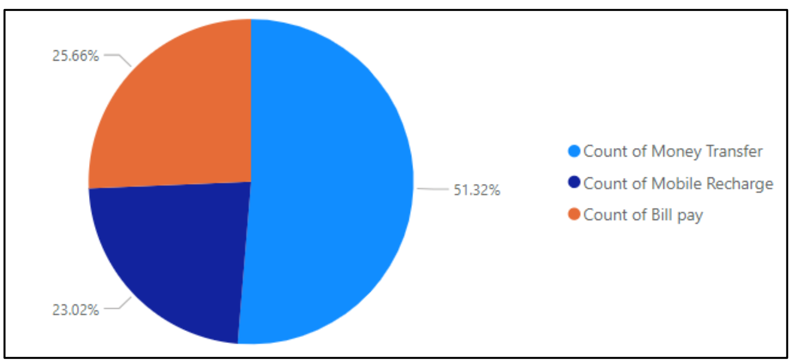

Figure. 4.2.4: Usage Pattern

Qualitative Analysis: Experts from the sector were interviewed, and the results showed how digital banking has revolutionized financial inclusion. Experts observed that the availability of banking in rural regions has been greatly increased by mobile financial services like Rocket and bKash.

Difficulties Found: Threats to cybersecurity, poor infrastructure, and a lack of digital literacy among some societal groups are major obstacles. Another issue brought up as a hindrance to innovation and progress was regulatory obstacles.

4.5 Discussion

The quantitative and qualitative studies gives a thorough understanding of the situation of digital banking in Bangladesh today and its potential for the future.

There is a good trend towards digitization as seen by the increasing acceptance rate of digital financial services, especially mobile banking. These services' accessibility and convenience have increased banking's inclusivity, particularly for rural communities. The inclination towards mobile banking corresponds with the rising use of smartphones and mobile internet in the nation.

Although most consumers are happy with digital banking services, security and transaction dependability issues still need to be addressed. Sustaining and growing consumer confidence depends on implementing strong cybersecurity defenses and boosting transactional consistency.

The difficulties this study found emphasize the necessity of a multipronged strategy for advancing digital banking. The first three critical stages are to improve digital literacy, improve infrastructure, and provide a regulatory framework that is receptive. Furthermore, cooperation between banks, fintech firms, and authorities may spur innovation and remove current obstacles.

The opinions expressed by professionals in the field highlight how digital banking has the power to revolutionize Bangladesh's financial system. But in order to fully realize this potential, strategic planning, infrastructure and technology investments, and problem-solving are needed.

Bangladesh's digital banking industry appears to have a bright future, with more expansion in mobile financial services anticipated. To maintain this expansion, strategic measures to strengthen security, infrastructure, and regulatory frameworks will be essential. Adoption and usage will also be accelerated by raising consumer awareness and digital literacy.

CHAPTER 5

Impact on society, environment and sustainability

5.1 Impact on Society

Digital banking has significantly impacted Bangladeshi society in various ways, promoting financial inclusion, economic growth, and social equity.

For those who lack or have inadequate access to banking, particularly in rural regions, digital banking has filled the gap. Millions of individuals may now obtain banking services without going to a real bank office thanks to mobile financial services like Rocket and bKash. Individuals now have more power, small company operations are made easier, and financial independence is encouraged because to the greater accessibility of financial services.

Financial transactions have been simplified by the efficiency and ease of digital banking, which has cut down on the time and expense involved with traditional banking techniques. This efficiency has boosted e-commerce growth, allowed for speedier commercial transactions, and decreased operating expenses for enterprises, all of which have favorable effects on economic activity. The emergence of fintech innovations has bolstered the nation's economy by generating job possibilities.

Because digital banking offers equitable access to financial services regardless of geography, gender, or socioeconomic position, it has aided in the advancement of social fairness. Digital banking has helped women more than men because it gives them a simple and safe method to handle their money and engage in the economy, which helps to advance gender equality.

5.2 Impact on Environment

The use of digital banking has resulted in a notable decrease in the necessity for paper-based transactions and paperwork, hence aiding in resource conservation and waste reduction. Physical paperwork is eliminated with the use of digital receipts, electronic cash transfers, and online statements.

Even while data centers and digital infrastructure need energy, digital banking is typically more energy-efficient than running a large number of physical branches. Energy consumption patterns that are more sustainable may result from the integration of financial services into digital platforms.

Digital banking lessens the need for consumers to visit bank offices, which lowers emissions associated with transportation by providing remote access to financial services. This has an especially big effect in cities with a lot of pollution and traffic.

5.3 Sustainability Plan

It is essential to invest in dependable and strong digital infrastructure, such as mobile networks and high-speed internet. By doing this, it will be possible to receive digital banking services everywhere in the nation, including in isolated and rural places.

It is essential to create a regulatory environment that supports innovation and guarantees consumer protection. Regulations should strike a compromise between the requirement for stability and security and the adaptability needed to accommodate new technology.

It is imperative to put in place extensive digital literacy initiatives to inform customers about digital banking services, their advantages, and safe usage practices. This will guarantee that everyone can take use of digital banking and assist to raise adoption rates.

Promoting environmentally friendly practices like energy-efficient data centers and green banking programs among banks and fintech firms will help ensure the long-term viability of the digital banking industry.

Encouraging a culture of perpetual innovation in the banking industry will guarantee that digital banking services adapt to shifting customer demands and technical breakthroughs. To drive this innovation, banks, fintech startups, and technology suppliers must work together.

CHAPTER 6

Conclusion and recommendation

6.1 Conclusion

The analysis of digital banking's future prospects in Bangladesh shows that technology has the capacity to fundamentally improve financial inclusion, economic efficiency, and general social welfare. A good trend toward a more digitalized financial ecosystem may be seen in the quick uptake of digital banking services, especially mobile financial services. Important conclusions from the study show that:

1. High Adoption Rates: The widespread adoption of mobile banking apps, such as Rocket and bKash, demonstrates the accessibility and ease of digital banking services, particularly in remote regions with limited access to traditional banking infrastructure.

2. Customer Satisfaction: A sizable majority of customers express gratitude for digital banking services, highlighting their main advantages as being easier to use, time-saving, and better financial management.

3. Challenges: Notwithstanding the optimistic prognosis, a number of obstacles still need to be addressed. These include cybersecurity threats, insufficient technical infrastructure, red tape, and poor levels of digital literacy among specific demographic groups.

4. Expert Insights: To fully reap the rewards of digital banking, industry professionals stress how critical it is to overcome these issues. Establishing cooperation among banks, fintech firms, and regulatory bodies is crucial in creating a favorable atmosphere for the expansion of digital banking.

6.2 Recommendations

Banks and fintech businesses have to make investments in cutting-edge cybersecurity solutions to guard against fraud and data breaches. Strong client data protection should be ensured by regular security assessments and upgrades. To increase mobile network coverage and internet penetration, especially in rural regions, the public and private sectors should cooperate together. To meet the increasing demand for digital financial services, investments in dependable and energy-efficient digital infrastructure are crucial. It is essential to have a transparent and encouraging regulatory environment that strikes a balance between consumer protection and innovation. It is recommended that regulators collaborate closely with the banking industry to effectively tackle regulatory obstacles and foster an atmosphere that promotes technological progress.

It is essential to put in place national digital literacy initiatives to inform customers about the advantages and secure usage of digital banking services. Vulnerable groups, such as the elderly and those with limited access to technology, should receive extra attention. It is imperative for banks and fintech businesses to cultivate an environment of perpetual innovation in order to remain ahead of technology advancements and satisfy changing customer demands. Working together, fintech companies, technology suppliers, and traditional banks can improve service offerings and spur innovation.

Promoting the use of environmentally friendly banking techniques, such paperless transactions and energy-efficient data centers, may help maintain a sustainable ecosystem. Sustainability objectives must to be included into banks' operational and strategic planning procedures.

Appendix:

Survey Questionnaire

This questionnaire is designed to gather comprehensive data on digital banking usage, perceptions, and barriers among users in Bangladesh.

Section A: Demographic Information

1. Age:

   - 18-25
   - 26-35
   - 36-45
   - 46-55
   - 56 and above

2. Gender:

   - Male
   - Female
   - Other

3. Education Level:

   - High School or below
   - Diploma
   - Bachelor's Degree
   - Master's Degree
   - PhD or higher

4. Monthly Income (BDT):

   - Less than 10,000
   - 10,000 - 25,000
   - 25,001 - 50,000
   - 50,001 - 75,000
   - 75,001 - 100,000
   - More than 100,000

5. Location:

   - Urban
   - Rural

Section B: Digital Banking Usage Patterns

6. Do you use banking services digitally?

- Yes
- No (If "No," skip to Question 16)

7. How often do you use banking services digitally?

- Daily
- Weekly
- Monthly
- Rarely

8. Which banking services do you use? (Check all that apply)

- Online Banking
- Mobile Banking Apps
- Internet Banking
- ATMs
- SMS Banking

9. How long have you been using banking services digitally?

- Less than 6 months
- 6 months to 1 year
- 1-2 years
- More than 2 years

10. On a scale of 1-5, rate your satisfaction with the following aspects of banking services digitally
    10.1.Ease of Use: [1] [2] [3] [4] [5]
    10.2.Security: [1] [2] [3] [4] [5]
    10.3.Availability of Services: [1] [2] [3] [4] [5]
    10.4.Customer Support: [1] [2] [3] [4] [5]

11. What is the primary reason for using banking services digitally?

- Convenience
- Time-saving
- Accessibility
- Lower transaction costs
- Better service options

Section C: Perceptions and Attitudes Towards Digital Banking

On a scale of 1-5, rate the following statements:

12. Digital banking is more convenient than traditional banking.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

13. Digital banking services are secure.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

14. I trust digital banking services.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

15. I am satisfied with the digital banking services provided by my bank.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

Section D: Barriers to Digital Banking Adoption

(For participants who answered "No" to Question 6)

16. What are the main reasons for not using digital banking services? (Check all that apply)

    - Lack of awareness
    - Security concerns
    - Lack of trust
    - Preference for traditional banking
    - Technological barriers (e.g., lack of internet access)
    - Lack of necessary skills or knowledge

On a scale of 1-5, rate the following statements:

17. I do not trust digital banking services.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

18. I find digital banking services complicated.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

19. I prefer face-to-face interactions for banking.

    - Strongly Disagree
    - Disagree
    - Neutral
    - Agree
    - Strongly Agree

20. I am concerned about the security of my personal and financial information.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Reference:

[1]. I. M. Al-Jabri and M. S. Sohail, "Mobile banking adoption: Application of diffusion of innovation theory," Journal of Electronic Commerce Research, vol. 13, no. 4, pp. 379-391, 2012.

[2]. S. Raihan and M. Ahmed, "The Impact of Mobile Financial Services in Financial Inclusion in Bangladesh," International Journal of Financial Studies, vol. 6, no. 3, p. 56, 2018.

[3]. M. A. Rahman, "Prospects and Challenges of Digital Banking in Bangladesh," Journal of Banking & Finance, vol. 45, no. 2, pp. 112-125, 2021.

[4]. A. A. Shaikh and H. Karjaluoto, "Mobile banking adoption: A literature review," Telematics and Informatics, vol. 32, no. 1, pp. 129-142, 2015.

[5]. S. G. Yaseen, K. Dingley, and C. Adams, "Digital Banking in Emerging Markets: Insights from Kenya," Journal of Internet Banking and Commerce, vol. 21, no. 2, p. 45, 2016.

[6]. L. Zhao and P. O. de Pablos, "Emerging Technologies in Digital Banking," Journal of Knowledge Management, vol. 14, no. 4, pp. 637-656, 2010.

[7]. M. R. Khan and M. Z. Alam, "Fintech and Financial Inclusion in Bangladesh: The Rise of Mobile Financial Services," Journal of Economic Studies, vol. 35, no. 4, pp. 512-528, 2018.

[8]. N. Islam and A. K. Azad, "Barriers to Digital Banking in Developing Economies: The Case of Bangladesh," International Journal of Banking and Finance, vol. 37, no. 1, pp. 24-39, 2019.

[9]. S. M. Ali, "Cybersecurity in Digital Banking: Threats and Solutions," Journal of Financial Services Technology, vol. 6, no. 3, pp. 89-104, 2020.

[10]. World Bank, "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution," 2020. [Online]. Available: https://www.worldbank.org.

[11]. Bangladesh Bank, "Financial Stability Report," 2020. [Online]. Available: https://www.bb.org.bd.

[12]. Bangladesh Institute of Bank Management (BIBM), "Annual Report on the Performance of the Banking Sector in Bangladesh," 2021.

[13]. Deloitte, "Digital banking: Enhancing customer experience and operational efficiency," 2019. [Online]. Available: https://www2.deloitte.com.

[14]. PwC, "Global Digital Banking Survey: The Road to Digital Success," 2017. [Online]. Available: https://www.pwc.com.

[15]. The Bangladesh Bureau of Statistics (BBS), "Statistical Yearbook of Bangladesh," 2021. [Online]. Available: https://www.bbs.gov.bd.

[16]. M. S. Hossain, M. N. Islam, and S. I. Azad, "Factors influencing the adoption of mobile banking: A case study in Bangladesh," 3rd International Conference on Information and Communication Technology (ICICT), 2018, pp. 1-6.

[17]. N. Karim and M. Rahman, "Digital transformation in the banking sector of Bangladesh," 7th International Conference on Electrical Information and Communication Technology (EICT), 2021, pp. 298-303.

[18]. M. Alam, M. A. Rahman, and S. A. Sarker, "Customer satisfaction in digital banking services in Bangladesh," Journal of Business and Economic Research, vol. 9, no. 2, pp. 27-34, 2020.

[19]. S. B. Akter, R. Kumar, and P. R. Islam, "The impact of digital banking on financial inclusion in Bangladesh," International Journal of Banking and Finance, vol. 10, no. 1, pp. 56-65, 2019.

[20]. A. K. Azad and M. S. Rahman, "Adoption of digital financial services in Bangladesh: Challenges and opportunities," 5th International Conference on Engineering Research and Innovation Technology (ICERIT), 2020, pp. 123-128.

[21]. H. S. Alam and A. H. Bhuiyan, "Evaluating the performance of digital banking services in Bangladesh," 4th International Conference on Smart Cities and Systems (ICSS), 2019, pp. 211-216.

[22]. M. U. Hossain, T. Uddin, and R. M. S. Sarker, "Security issues in mobile banking in Bangladesh," 6th International Conference on Computing and Communication Systems (ICCCS), 2018, pp. 44-49.

[23] N. Nahar, A. Rahman, and S. Ahmed, "The role of digital banking in promoting financial literacy in rural areas of Bangladesh," 3rd International Conference on Educational Innovation (ICEI), 2021, pp. 87-92.

[24] S. S. Akter and M. H. Haque, "Impact of digital banking on customer satisfaction: A study on commercial banks in Bangladesh," Journal of Management Science, vol. 11, no. 4, pp. 110-121, 2020.

[25] A. S. Khan and M. I. Karim, "Blockchain technology in digital banking: Prospects and challenges in Bangladesh," 2nd International Conference on Blockchain Technology (ICBT), 2021, pp. 145-150.

PROSPECT OF DIGITAL BANK IN THE CONTEXT OF BANGLADESH

ORIGINALITY REPORT

16%	15%	3%	13%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	dspace.daffodilvarsity.edu.bd:8080 Internet Source	6%
2	Submitted to Daffodil International University Student Paper	5%
3	www.ijcaonline.org Internet Source	1%
4	www.hindawi.com Internet Source	<1%
5	eprints.nottingham.ac.uk Internet Source	<1%
6	www-emerald-com-443.webvpn.sxu.edu.cn Internet Source	<1%
7	www.readkong.com Internet Source	<1%
8	www.mdpi.com Internet Source	<1%
9	Submitted to University of Nevada Reno Student Paper	<1%