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MAKERERE UNIVERSITY BUSINESS SCHOOL

**ASSESSING FINANCIAL TECHNOLOGIES USAGE PRACTICES: A CASE OF
CENTENARY BANK**

BY

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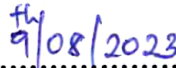
**A RESEARCH REPORT SUBMITTED TO MAKERERE UNIVERSITY BUSINESS
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MAKERERE UNIVERSITY**

PLAN B

AUGUST, 2023

DECLARATION

I **KEMBABAZI BRENDA** declare that this report is my original work and has never been submitted to any University or Institution of learning for any award.

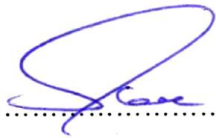
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APPROVAL

This is to certify that this research report has been submitted with our approval as the University Supervisors.

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DEDICATION

I dedicate this piece of work to my dear parents, Dr. Kanyima Benon Mbabazi and Mrs. Jane Mukahigiro, my beloved sister, Ainembabazi Kisha Liana who encouraged me to pursue this degree and add another milestone to my education career.

May God bless you abundantly.

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ABSTRACT

This study was based on assessing financial technologies usage in Centenary bank and was based on three objectives which were; to assess the nature of financial technologies usage in Centenary bank, to examine the challenges of financial technologies in Centenary bank and to propose strategies of improving the usage of financial technologies in Centenary bank.

The study adopted a descriptive research design as the best design for assessing financial technologies usage in Centenary bank. The reason for choosing a descriptive research design is that, the study was intended to describe the causes of increased customer complaints that are as a result of increased network failures associated with financial technologies. The population study of 2,400,000 customers was considered which gave the sample size of 384 respondents. The questionnaires were given to customers who provided various opinions on the issue of financial technology usage of Centenary Bank.

The study found out that financial technology usage practices in the Centenary bank are fundamental with the use of ATMs, mobile, internet, and agency banking as they improve the efficiency and effectiveness of bank operations, and most importantly aid in operational cost reduction which directly impacts the bank's profitability.

The challenges affecting financial technology usage practices demonstrated various risks with banks being susceptible to internal and external cyber-attacks, lack of knowledge on usage of financial technologies, frequent system and network failures, fraudulent transactions, preference for traditional banking services as opposed to digital ones, and security breaches causing infringement on customer personal financial information.

In the same accord, the various strategies for improving the usage of financial technologies recommended that Centenary bank adopt heavy security measures and control systems in tandem with their customers' information to prevent breaches, embark on massive sensitization campaigns which involve training and equipping their customers with knowledge on usage, and invest in modern infrastructure and technologies to counter system and network failures.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial technologies, known as “FinTech,” have brought disruptive changes to virtually every aspect of financial services, and is currently revolutionizing the whole financial industry (Goldstein et al., 2019).

Today, the banking Industry is continuously re-inventing itself and spearheading practices and innovations that make banking easier, flexible and affordable. These days, people can access bank services without necessarily going to the bank (Uganda Bankers Association, (2019).

The emergence of financial technologies (fintechs) is disrupting the financial markets by creating new business models like peer-to-peer lending and crowdfunding which have challenged traditional banking models. (Tashtamirov, Magomed. (2023).

The impact of financial innovation on the banking system is multifaceted. On the one hand, it can improve the efficiency and effectiveness of banks' operations, reducing costs and increasing profitability. On the other hand, it can also increase risk, particularly when new financial products or services are poorly understood or regulated. (Tashtamirov, Magomed. (2023).

One of the positive aspects of financial innovation in banking is increased access to financial services. For example, mobile banking has allowed millions of people to access financial services that they did not have access to before. Also, digital payments have made transactions faster and more convenient, reducing the need for cash and checks. (Tashtamirov, Magomed. (2023).

According to a McKinsey report, the digital revolution has already changed the shape of retail banking, with global online banking revenues growing 6% annually from 2014 to 2021 and digital sales growing 10% per year over the same period. (Tashtamirov, Magomed. (2023).

According to a PwC survey, mobile banking usage has grown to 46% worldwide, with 82% of mobile banking users accessing their accounts at least once a week. In addition, the same survey showed that digital banking has increased customer satisfaction by 13% and reduced the customer churn rate by 15%. (Tashtamirov, Magomed. (2023).

The use of financial technology (fintech) and digital solutions has enabled banks to improve their operational efficiency and reduce costs. (Tashtamirov, Magomed. (2023).

Fintech can be understood as the application of innovative technology to the financial services sector with the purpose of providing customers with more convenient and efficient services at a lower cost than traditional banking. (Patrick Schueffel, 2016). Fintechs are characterized by speed, agility, flexibility which in turn allows financial institutions to provide their customers with faster and better highly customized services in a cost-effective manner. (Ndungu, & Moturi, (2020). Due to the rapid development of technological infrastructure, big data, data analytics and mobile devices, fintechs are able to provide unique niche and personalized services to customers and challenge various aspects in the business model of traditional financial institutions. (The Fintech Revolution, 2015)

The banking sector in Uganda has been at the forefront in spearheading the adoption and usage of financial technologies to improve their product and service delivery and remain competitive in the market. Today, people can access numerous bank services without necessarily going to the bank (Uganda Bankers Association, 2019). Commercial banks in Uganda have largely embraced financial technologies with which services like ATM services, agent banking, internet and mobile banking, to mention but a few are being provided.

As a result of the covid 19 outbreak that hindered physical access of financial services in banks, most commercial banks like Centenary bank accelerated their ambition into launching digital innovations. The bank increased their footprint from 77 bank branches to 80 and from 191 ATMs in 2021 to 205 in 2022 and 6496 agents' from 5400 in 2021 country wide with

anticipation of attainment of 12,000 agents by 2025. Centenary bank registered 200,000 new visa card customers bringing their total number to 1,200,000 (Centenary Bank, annual report, 2022)

Despite these interventions, to meet and improve customer needs and experience, the Centenary bank customers are still hesitant to engage in the usage of these technologies and as a result continue to physically seek this deposit, withdraw, payment and lending services from the banks, an aspect that these fintechs catered for. There are fewer customers using these digital services than anticipated with only 1% using the Cente online/internet banking platform, 21% using the ATM, 30% using Cente mobile banking and 33% with agent banking against the 87% target against each by 2025 and 10% of the branch transactions of the 2.4m customers on the centenary bank network. (Centenary bank Annual report, (2021)

With this, understanding the psychological factors that explain the intention to use financial technologies by Centenary bank customers is important for the bank in order to increase the rate of usage of these financial technologies. The theory of reasoned action was adopted by this study since it considers behavioral intention as the best predictor of behavior and is driven by two main structures; attitude and behavior. (Ezati Rad et al. BMC Public Health (2022) Social psychologists attempt, among other things, to explain how and why attitude affects behaviour, which is equally very important in mirroring this study. (Otieno et al, (2016)

While quite effective and flexible in providing services in novel ways, financial technology solutions pose a major limitation, which is market concern over data security. Centenary bank faces increasing sophistication of fraudulent activity including heightened cyber risk. (Centenary bank annual report, (2021). This in turn endangers the customers' financial information and risk of potential loss of those customers.

For banks that seek to increase the usage of the financial technologies, it is fundamental for them to promote these digital services, sensitize their customers on usage and continuously upgrade their cyber security while instituting appropriate controls.

1.2 Statement of the Problem

Technological advancement through financial technologies in the banking sector which has brought about benefits like simplicity, convenience, flexibility and affordability.

Despite these benefits, Centenary bank customers have still demonstrated a low rate of using financial technologies evidently with long lines in their branches with only 1% the using the Cente online banking platform, 30% using the Cente mobile banking platform, 33% using agency banking and only 21% using the ATMs which is far below the digital usage target of 90% for each of the services and 10% for branch transactions (Centenary Annual Report, 2021).

It is evident that there are increased customer complaints as a result of delays and poor-quality service delivery due to system breakdowns and network failures most especially with the automated teller machines, agency, mobile and online banking. (Centenary Annual Report, 2021).

The management of the bank fears that the usage rate of these financial technology services is likely to remain constant or further decline if appropriate measures are not put in place, hence the need to carry out a study on the financial technologies usage practices in centenary bank.

1.3 Purpose of the study

The purpose of the study was to assess the usage of financial technologies, its challenges and to propose strategies to counter the challenges faced in Centenary bank.

1.4. Objectives of the study

- i. To assess the nature of financial technologies usage in Centenary bank
- ii. To examine the challenges of financial technologies in Centenary bank

- iii. To propose strategies that will improve the usage of financial technologies in Centenary bank.

1.5 Research Questions

- i. What is the nature of usage of financial technologies in Centenary bank?
- ii. What are the challenges of financial technologies in Centenary bank?
- iii. What are the strategies to improve usage of financial technologies in Centenary bank?

1.6 Scope of the study

1.6.1 Geographical Scope

This study was conducted at the Centenary bank head office which is located at Mapeera House, Plot 44-46 Kampala Road & Plot 2 Burton Street. The reason for choosing the main branch is because it bears a lot of information relevant to the usage of financial technologies.

1.6.2 Time Scope

The study was conducted in between January 2022 to December 2022

1.6.3 Content Scope

This study assessed the financial technology usage in Centenary bank head office. This looked into the nature of financial technologies usage; the challenges encountered and suggest possible strategies to counter the challenges.

1.7 Significance of the study

- This study informed the government, banks and consumers about the prospects of the financial technology industry; articulated the gaps existent that are hindering the usage of fintechs in banks, as well as with consumers.
- This study enlightened policy formulating bodies like Bank of Uganda, (BOU) Uganda bankers association,(UBA) National Information Technology Authority(NITA),Financial technology service providers association(FITSPA) and

Uganda communication commission(UCC) about the forms of risk existent, sustainable strategies and policies to counter them.

- The banks are bound to benefit through enlightenment on the pivotal roles of fintechs in this dynamic, volatile and complex business environment especially with streamlining operational capabilities, and boosting profitability.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers literature review on the adoption and usage of financial technologies, challenges and strategies of improving the usage of financial technologies.

There are a number of theories and models that have been employed over the years in understanding and studying users' technology adoption behaviors. These theories and models focus on people's intention to engage in a certain behavior such as the adoption and use of new technologies. The Theory of Reasoned Action (TRA) is one of such theories that have been widely used in technology adoption as well as used in a number of other research fields as a foundation to such studies. (Otieno et al., 2016)

2.2 Theory of Reasoned Action (TRA)

Having been originally developed by Ajzen & Fishbein in 1977, the theory of Reasoned Action (TRA) has been widely used to predict human behaviour. The Theory of Reasoned Action (TRA) explains that individual behaviour is driven by behavioral intentions, which are the determinants of an individual's attitude toward behaviour. In short, a person who strongly believes in positive outcomes will have a positive attitude about the behaviour, while a person who strongly believes in negative consequences will have a negative attitude about the behaviour.

According to TRA, one's behavioral intention is influenced by two predictors, attitude and subjective norms. Attitude toward behaviour refers to one's evaluation about performing a given behaviour and is influenced by the attitude toward the behaviour and social pressure. Attitude refers to the positive or negative feeling when performing a given behaviour (Al-Mamary, Al-nashmi, Hassan, & Shamsuddin, 2016). The study found that a positive attitude is a prerequisite for adopting new technologies (Hua *et al*, 2019).

The objective of this study is to determine the customer's perceived risks factors for the intention to use Fintechs. The intention of FinTech usage is controlled by the attitude of FinTech users towards the use of Fintechs which is achieved by applying the theory of Reasoned Action (TRA) to the Fintech environment. (Tang, Ooi, & Chong, 2020)

Social psychologists suggest that attitude includes behavior and cognition, and that attitude and behavior is positively correlated, giving the reason for applying TRA in understanding financial technologies usage practices (Otieno et al., 2016).

“The stronger the intention to adopt financial technologies, the more the person is expected to try applying this technology and therefore the greater the possibility that the behavior will actually be performed, and thus the primary concern is with identifying the factors underlying the formation and change of behavioral intent”. A person’s intention to behave in a certain way is based on: their ‘attitude’ toward the behavior in question and their perception of the social pressures on them to behave in that way, that is, ‘subjective norms (Otieno et al., 2016). Since consumers may be reluctant to use Fintech due to risk considerations, it is crucial to understand the perceived risk factors when developing and promoting the use of FinTech.

2.3 Financial technologies usage in Banks

Financial services have changed dramatically over the past decades, mainly due to technological developments arising from advances in telecommunications, information technology and financial practices. The advances in technology encouraged financial innovations to alter several financial products, services, production processes and organizational structures (Frame *et al.*, (2019). Technologies like Big data analytics, artificial intelligence, machine learning, crowdfunding and blockchain are changing how banks operate today. (Ebrahim, Rabab & Kumaraswamy, Sumathi & Abdulla, Yomna. (2020).

During the past few years, the term “fintech” became popular worldwide in relation to financial services. The term fintech is derived by joining two expressions, which are financial services and digital technology, (PwC 2016,)

Financial technology (popularly known as Fintech) refers to the use of technology to upgrade and automate the design and delivery of financial services. FinTech firms provide a variety of services under a single umbrella such as money transfer, financing start-ups, wealth management services, and insurance (Das, & Das, D. (2020)

Currently, Commercial Banks are a quick change to virtual banking. Virtual banks, defined as banks that are not branches, as providers of banking services through electronic means such as ATMs, telephones, personal computers, Internet. In addition, many people currently refer to the existence of the modern bank as a variety of aspects in the application of technology, e.g., mobile banking, online banking and ATMs. In addition, the presence of mobile banking and the use of mobile devices will send messages and financial information, as well as consumer transactions just as with the physical branch. (Sorongan, Legowo, & Subanidja, (2021)

Banks and other financial institutions have a long history regarding adopting new technologies; however, the use of technology was mostly related to bank processes in back-office operations. (Consumers International, 2017; Breidbach *et al.*, 2019). Today, however they increasingly represent technologies that are transforming traditional financial services, including payments, money transfers and asset management. The financial crisis of the year 2008 and the intensified regulation of the banking sector introduced by various financial market authorities opened the door for a new kind of financial service providers to come into the picture (Consumers International, 2017; Gomber *et al.*, 2017; Anagnostopoulos, 2018). Since that time, fintech startups have expanded rapidly in the financial market providing

financial services to customers in an innovative way that banks were not used to do (Breidbach *et al.*, 2019).

Paulet and Mavoori (2019) indicated that digitalization had influenced banking efficiency by placing clients and service supply at the core of financial institutions' strategy. The irrelevance of distance in banking transactions has reduced expenses and contributed to increasing revenues for banks. However, Paulet and Mavoori (2019) mentioned that contrary to pure digital financial platforms, bankers will continue to have a card to play concerning the human advice they can bring to their clients and that banks will continue to be the preferred interface between depositors and borrowers. Furthermore, a number of researches and reports about Fintech adoption by financial institutions in developing and emerging countries (such as African countries) have shown that financial Institutions are actively looking for ways to improve customer convenience, raise efficiency and productivity, reduce risks and enhance risk management as well as expand outreach to new markets by leveraging Fintech solutions (Triple Jump, 2018; World Bank and Bank Negara, 2017)

2.4 Challenges of Financial technologies.

In Uganda, Fintechs are still a relatively modern concept that are yet to gain full acceptance but bear numerous benefits like flexibility, accessibility and affordability. However, despite the benefits they advance, there a number of risks and challenges associated with them.

Some of the traditional banking operations may be incompatible with a new technology which is then considered a deficiency in the process of complete digitization of the banking system. Furthermore, like any other Information Technology based technique, the risk of technical failure highly exists. (Ebrahim, Rabab & Kumaraswamy, Sumathi & Abdulla, Yomna. (2020).

Since many of the Fintech firms are new to the banking industry such as blockchain, crowdfunding, and cryptocurrencies, Central banks worldwide have been trying to cope with

these innovations by providing them with the relevant regulations, the risk exists in case of the lag or inexistence of regulation. For instance, in the case of a fintech firm conducting P2P lending, lending regulations are usually based on the capital of the financial institution, so these regulations might not apply to them as it does technically lend. (Ebrahim, Rabab & Kumaraswamy, Sumathi & Abdulla, Yomna. (2020). The P2P is an online service of connecting borrowers to lenders. (Lee and Shin 2018)

The Perceived risk theory points out the obstacles for consumers to use Fintechs and discusses that financial risk; legal risk, security risk and operational risk are the main factors hindering the use of Fintech. (Tang, Ooi, & Chong. (2020)

The financial losses of Fintech caused by the malfunction of the financial transaction system, financial fraud, moral hazard and extra transaction fees associated with the initial adoption price (World Economic Forum (WEF), 2015; Zavolokina et al., 2016b), are negatively related to the intention of continuous use. In the field of financial services, financial risks have increased and include the possibility of recurrence of financial losses due to fraud.

Legal risk; Legal risk refers to the vague legal status and the lack of comprehensive guidelines for fintechs. Bank of Uganda (BOU), for example, under the National payment systems Act, (2017) put in place a framework that allows investors in fintech to live-test novel innovations that are interoperable within the traditional banking industry, according to a study on Uganda's fintech system, (Deloitte, 2022). Since Fintech is new to the market, the lack of guidelines on Fintech's currency-related misfortunes and security issues has created fear, suspicion and unease among user. (Tang, Ooi, & Chong, (2020).

In this study, the security risk is characterized as the potential misfortune caused by blackmail or hacker attack on the security system of financial transactions of Fintech companies. (Tang, Ooi, & Chong, (2020). Concerning electronic services, the concept of security risk is possible to protect against attacks. Security breaches can lead to mistrust about

mobile apps and detrimentally affect the intention to use FinTech services (Kang 2018). Fraud and network intrusion can cause financial misfortune for users as well as ignoring their security (Ryu, 2018). Ryu (2018) argues that the use of Fintech is usually accompanied by higher potential misfortune, such as confidentiality, personal information and trading.

Operational Risk; Operational risk refers to the potential loss due to inadequate or failed internal processes, employees and systems (Barakat and Hussainey, 2013). It could mean the possibility of product failure, or the product not working as it was designed and advertised, thus failing to provide the expected benefits.

If the risk likelihood of Fintech companies' financial systems and operations is high, users will not continue to use Fintech. Lack of operational skills and immediate responses, the malfunction of systems, and inadequate internal processes will result in users' distrust and dissatisfaction, leading to the hindrance of Fintech usage. Operational risk is a fundamental concern for users, as many major operational failures hit large financial institutions, leading to extreme currency volatility or the collapse of such institutions. (Tang, Ooi & Chong, (2020)

Network failures; Many of these financial technologies experience numerous inconsistencies especially with their availability thereby rendering them unreliable. Many Fintechs are based on new technologies, and it is challenging to integrate Fintech applications with existing systems (Lee & Shin, 2018)

Morgan and long, (2019) assert that high financial illiteracy levels have slowed the uptake and usage of these technologies especially among the rural community, In Uganda, the digitally illiterate account for 36% with 23% stating that they don't know how to use internet and 13% giving a negative assessment about their need for internet according to a 2019 study on the state of ICT in Uganda. The enormous benefits of Fintech provide a potential

opportunity for consumers to gain an environment of amplification and transparency, reduce expenses, eliminate intermediaries, and make financial information more accessible (Zavolokina, Dolata, & Schwabe, 2016).

While Fintechs provide major benefits to businesses, consumers, and economies, they also raise concerns regarding data privacy, funding security, and access equality. (Zetzsche et al., 2017)

2.5 Strategies of improving financial technologies usage

There are a number of strategies that can be adopted to improve the adoption and usage of financial technologies. Today, customers want to determine the expected value of Fintech usage, considering both its benefits and its risks. Customers will use the product or service if its benefits are greater than its risks. Thus, Fintech companies are challenged to increase the potential benefits of Fintech usage, while limiting its potential risks (Chan, 2015).

According to a report by Deloitte (2022), on the study of the state of Uganda's Fintech Industry, Interoperability is key for technology infrastructure as services remain largely restricted to the players that introduced the initial digital infrastructure, however the key differentiator for infrastructure service provider will be interoperability. This should help Fintechs develop a plug and play model as they launch new products and services. For this reason, there are ongoing discussions at Bank of Uganda to put in place a National Switch which will accelerate interoperability.

Banks should be able to adopt heavy security measures and control systems in tandem with their customers' information to prevent breaches. Every bank invests in security measures however the level of security and control measures at which they rest, drives consumer safety and perception. Constant cyber-attacks derail customers who in turn lose confidence in the banking system. A sound system of preventive, detective and corrective controls will help assure the integrity of the network and the information it handles (Zavareh *et al.*, 2012).

Automation and up gradation of the management information systems were some of the critical suggestions from the security experts to resolve these alarming security issues of Banks and Non-banking financial institutions. Addressing technical issues and business confidentiality is not enough and a continuous effort to keep an updated security system is essential. Improving preventive measures can minimize the collateral damages, instead of regular troubleshooting. (Ali, Hoq, Bari, Kabir, & Paul, (2022).

Heavy security measures and control systems involve installation and regular maintenance of fire walls, especially with the online platforms since they are connected to external networks. Firewalls are a combination of hardware and software placed between two networks through which all traffic must pass, regardless of the direction of flow. They provide a gateway to guard against unauthorized individuals gaining access to the bank's network. The mere presence of a firewall does not assure logical security and firewalls are not impenetrable: firewalls must be configured to meet a specific operating environment and they must be evaluated and maintained on a regular basis to ensure their effectiveness and efficiency (Mchopa et al., 2014).

There are three types of fire walls namely; packet filtering firewalls, proxy servers and stateful inspection firewall.

Additionally, banks should be able to adopt tight data encryption especially for both online and mobile banking platforms in line with the cyber risk at hand. Data encryption translates data into another form, or code, so that only people with access to a secret key (formally called a decryption key) or password can read it. Encrypted data is commonly referred to as cipher text, while unencrypted data is called plaintext. Currently, encryption is one of the most popular and effective data security methods used by organizations (Digital guardian, (2022).

To secure communications between your Internet Browser and the Bank's servers, Cryptography (encryption) is used to protect banking transactions from unauthorized access or tampering. The protocol used to establish the secure session is called Secure Sockets Layer (SSL) Encryption. Once a secure session is established, keys (public and private) are exchanged between your browser and our Online Banking server. The browser can tell whether is in a secure session mode by looking for the secured lock symbol at the bottom of the browser window. To provide the highest amount of security during an online banking session, it is recommending having an Internet browser with 128-bit encryption. To obtain authorized access to the Bank's Online Banking system, it prompts the user to enter a password at the beginning of each online banking session. The password is verified at a secure data center and blocked if entering a password incorrectly three (3) times during a Personal Online Banking session, or five (5) times during a Business Online Banking session. Adoption of intrusion detection systems and intrusion prevention systems that hinder unauthorized personnel from accessing sensitive information or sites. An Intrusion Detection System (IDS) is a system that monitors network traffic for suspicious activity and issues alerts when such activity is discovered. It is a software application that scans a network or a system for the harmful activity or policy breaching. Any malicious venture or violation is normally reported either to an administrator or collected centrally using a security information and event management (SIEM) system.

An Intrusion Prevention System (IPS) is a network security/threat prevention technology that examines network traffic flows to detect and prevent vulnerability exploits. Vulnerability exploits usually come in the form of malicious inputs to a target application or service that attackers use to interrupt and gain control of an application or machine. Following a successful exploit, the attacker can disable the target application (resulting in a denial-of-service state), or can potentially access to all the rights and permissions available to the

compromised application (Palo Alto Networks, (2022). Network Intrusion Detection Systems (IDS) monitor system behavior and alert on potentially malicious network traffic (Baker, 2004).

The IPS often sits directly behind the firewall and provides a complementary layer of analysis that negatively selects for dangerous content. Unlike its predecessor the Intrusion Detection System (IDS) which is a passive system that scans traffic and reports back on threats. (Palo Alto networks, 2022).

In order to cyber proof customers information and transactions, banks should be able to tighten their security measures with the IPS and IDS while dealing with network intrusions. Digital Signature and Certification; is like a fingerprint or an attachment to a digital document that ensures its authenticity and integrity. (Geeks for geeks, 2022) Digital signatures can provide the added assurances of evidence to the origin, identity and status, as well as acknowledging informed consent by the signer.

It is evident that banks experience numerous system and network breakdowns which hinder them from operating and progressing effectively. However, with the frequency of occurrence of these technical problems, the bank is expected to minimize the occurrence of these network failures through continuous adoption and upgrading of their infrastructure and advanced technologies in order to keep up with the trends, remain relevant and most importantly meet the fast changing needs of their customers.

In addition to adoption of modern technologies and infrastructure, banks ought to partner with trusted partners with instrumental expertise who can reliably ensure system resilience and relegate network outages. With well experienced partners, the bank is able to enjoy network reliability since these partners have a better understanding and knowledge of the latest technologies and are able to advise the bank promptly on the upgrade needs.

The bank is expected to constantly invest in modern technologies which meet the organization's objectives. Anagnostopoulos (2018) indicated that banks as financial institutions are not likely to disappear in the future. Hence, banks should heavily invest in cutting-edge technology (such as cloud computing and block chain) to match the changing customer needs in the financial services sector. It is imperative for the bank to spend on technologies that align with the goals of the company as way to avoid loss as a result of poor investment decisions, inefficiency, and loss of customer confidence in the bank's system. Cull et al. (2017) argued that the inefficiency in operations and low intermediation quality that characterize public banks reduce their competitiveness.

In a bid to keep growing the digital literacy of the population, commercial banks are expected to carry out massive digital literacy sensitization campaigns where they train and equip their customers with knowledge on usage of these financial technologies. The sellers of those services should conduct literacy programmes to make people aware about such services and improve usage. (Das and Das, (2020) with a youthful population which accounts for Uganda's largest, for pushing greater adoption of fast, easy financial solutions is forthcoming. This is evidenced with the ever-growing number of users on mobile money platforms and with this; usage of Fintech services is expected to grow even more in the future. According to a study on the state of Uganda's Fintech Industry, Deloitte, (2022)

Globally, the basis of e commerce is trust. Building on trust, many Ugandan consumers according to our survey do not exhibit strong trust in e-commerce, specifically with the online payment through debit/credit card and/or money for products that they have not yet received and verified. This is magnified by low digital literacy among both the consumers and service providers. Hence forth, service providers need to grow consumer trust in their e commerce platforms through a series of product verification, refund systems and active

customer care helpline according to a study on the state of Uganda's Fintech Industry, Deloitte, (2022)

According to the report on the study of the state of Uganda's Fintech Industry by Deloitte, (2022), regulation of financial technology in Uganda has evolved over the years, with a gradual shift from traditional banking regulation to mobile money regulation, and more comprehensive open-ended financial regulations. The survey results show that progress has been made in creating an enabling environment in Uganda that is more conducive to Fintech growth and development; most recently, with the enactment of the National Payments Systems Act 2020 that seeks not only to regulate but promote financial technology activity.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the research methodology that was used in achieving the objectives of the study. It covered the research design, population of the study, sampling size and procedures, data collection methods and instruments, quality control methods, data management and processing, limitations and ethical considerations of the study.

3.2 Research Design

This study adopted a cross-sectional research design which was carried out at one point in time. The rationale of using this was because it allowed for collection of data from many groups and comparison of the differences in those groups. The study used only quantitative data collected from the field. A Quantitative approach was used because it employs prescribed procedures to ensure validity and reliability using standard deviation and mean which is used to analyze and compare with similar studies.

3.3 Population of the study

This study population comprised of 2,400,000 customers of centenary bank who use technologies like the automated teller machine, agency banking, mobile Banking and internet Banking (Centenary Bank Annual Report,2021).

3.4 Sample Size and Sampling Procedure

A Sample Size of 384 respondents was determined using Krejcie and Morgan (1970). The researcher applied convenience sampling to select the customers to give the questionnaires, where by questionnaires were distributed to all customers that accessed the banking hall.

The economical nature, the easy access it provides for collecting data and the speed at which it delivers results justifies the use of convenience sampling.

3.5 Data sources

The researcher collected primary data from Centenary bank using a data collection instrument that was administered to the respondents by the researcher. This data source was used to avail the study with recent information regarding the phenomenon under investigation (Creswell, 2014).

3.6 Data collection instrument

A questionnaire instrument was designed to obtain the data which was later used for analysis. The questionnaire was designed and sectioned according to the research objectives. The instrument was selected because it was appropriate for collecting data from a highly dispersed group (Creswell, 2014). The questionnaire was structured with closed-ended questions which were presented on a 5-Point Likert scale. The points of the scale were defined as 1=strongly disagree, 2=disagree, 3=not sure 4=agree and 5=strongly agree. This scale was used to avail respondents with numerous options from which they can express the extent of agreement or disagreement with the presented items (Likert, 1967). The questionnaire was self-administered which enabled the researcher to explain to the respondents before they can actively tick the questionnaire. This was expected to improve on data quality.

3.7 Measurement of variables

Financial technology usage was adopted from the works of Davis (1986), the measurements to be considered included as the nature of financial technology usage, the challenges and strategies of improving of financial technology usage. These measurements were anchored on a five point Likert scales ranging from strongly disagree as a response of 1 to strongly agree as a response of 5.

The nature of financial technology usage

The nature of Financial technology usage was measured using five point Likert scale ranging from strongly disagree (1) to strongly agree (5). This helped the respondents to rate their responses against given items on the various measures.

The challenges of financial technologies

These were measured using five point Likert scale ranging from strongly disagree (1) to strongly agree (5). This helped the respondents to rate their responses against given items on the various measures.

The strategies of improving of financial technologies usage

These were measured using five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). This helped the respondents to rate their responses against given items on the various measures.

3.8 Validity and Reliability

Validity is the extent to which a test measures what it claims to measure, (Carter and Porter, 2000). It is vital for a test to be valid in order for the results to be accurately applied and interpreted. Validity is an important criterion of good measurement. To ensure validity of data collection instruments, this study used the expert judgment technique where the proposed data collection instruments were presented to the supervisor and accountants to give an expert advice on how best the tools should be designed to be valid for data collection.

Devellis (1991) defines reliability as the proportion of variance attributable to the true score of the latent variable. The researcher used the Cronbach Alpha Coefficient with a threshold of 0.7 to test the consistence and reliability of the research instrument.

Table 3.1: Reliability of Coefficients

Variable	No. of Items	Alpha
The nature of financial technologies usage	10	0.811
The challenges of financial technologies usage	10	0.832
Strategies improving financial technologies usage	10	0.787

Source: Primary data

The Cronbachs' alpha (α) Coefficients for all the variables were above 0.7 indicating that the instruments used to measure the variables were consistent and reliable (Amin, 2005). The researcher used Cronbach's Alpha coefficient to determine the internal consistency of the item in the questionnaires. The questionnaire was given to the customers of the bank to get their opinions in the field of financial technologies usage with the help of the bank supervisors.

3.9 Data analysis, Presentation and Interpretation

Quantitative data collected was cleaned, classified, and processed edited, coded, and eventually entered into computer software for analysis. Analysis was done using the Statistical Package for Social Scientists version 26 (SPSS) a computer data analysis program. The objectives of the study were answered by descriptive statistics as well as using frequency distribution tables.

CHAPTER FOUR

PRESENTATION, INTERPRETATION ANALYSIS OF FINDINGS

4.0 Introduction

This chapter is comprised of the presentation, interpretation and analysis of findings. It includes descriptive statistics which show the results as tested by the objectives of the study which were;

- To assess the nature of financial technologies usage in Centenary bank
- To examine the challenges of financial technologies in Centenary bank
- To propose strategies for improving the usage of financial technologies in Centenary bank

4.1 Response rate

The researcher used convenience sampling to issue 384 questionnaires to the customers of centenary bank who were selected as they walked into the banking hall. However, a total of 309 questionnaires were duly filled and returned representing a response rate of 80%, which is suitable to draw valid and reliable conclusions. This is consistent with Amin (2005) assertions, which stated that a response rate of 70% and above is representative of the population, and can be relied on to draw valid conclusions.

4.2 Descriptive characteristics of the sample

In this section, the demographic characteristics of the sample under study are presented. These include: Gender, age bracket, marital status, highest level of education and period spent with the bank.

Table 4.1: Characteristics of the sample

Gender

		Frequency	Percent	Cumulative Percent
Valid	Male	127	41.1	41.1
	Female	182	58.9	100.0
	Total	309	100.0	

Age bracket

		Frequency	Percent	Cumulative Percent
Valid	Below 25 years	85	27.5	27.5
	26-35 years	133	43.0	70.5
	36-45 years	46	14.9	85.4
	46-55 years	32	10.4	95.8
	Above 55 years	13	4.2	100.0
	Total	309	100.0	

Marital status

		Frequency	Percent	Cumulative Percent
Valid	Single	107	34.6	34.6
	Married	159	51.5	86.1
	Divorced	43	13.9	100.0
	Total	309	100.0	

Highest Education level

		Frequency	Percent	Cumulative Percent
Valid	Certificate	56	18.1	18.1
	Diploma	196	63.4	81.5
	Bachelors	33	10.7	92.2
	Masters	24	7.8	100.0
	Total	309	100.0	

Number of years as a customer in the bank

		Frequency	Percent	Cumulative Percent
Valid	Less than 5 years	79	25.6	25.6
	5-10 years	167	54.0	79.6
	11 years and above	63	20.4	100.0
	Total	309	100.0	

Source: Primary data

Results from table 4.1 show that majority of the respondents were female accounting for 58.9% than male respondents representing for 41.1%. This implies the study was over dominated by female customers as compared to male counterparts.

Results from table 4.1, show that majority of the respondents were in the age groups of 26-35 years 43.0%, followed by below 25 years 27.5%, 36-45 years 14.9%, 46-55 years 10.4%, and above 55 years 4.2%. This implies that majority of the respondents were in their active years and mature enough to understand the statements that were being asked.

Results on the above table show that, the majority of respondents represented by 51.5% were married and 34.6% were single. This implies that the study engaged more of married respondents than single respondents who have the general knowledge on of financial technologies usage in centenary bank.

Basing on the findings above from table 4.1 majority of the respondents were Diploma holders as represented by (63.4%) while 18.1% had certificate as their highest qualification, 10.7% had Bachelor's Degree and 7.8% were of master's degree. This implied that respondents had enough skills to respond to the questionnaires on the implementation of financial technologies usage in Centenary Bank Limited.

The findings from table 4.1 above showed that 54.0% were the majority respondents who have been centenary bank customers for 5-10 years, followed by 25.6% less than 5 years and 20.4% for 11 years and above. This implies that majority of the respondents had enough experience on the usage of financial technologies in Centenary Bank.

4.3 The nature of financial technologies usage in Centenary bank

The results in the section below were generated so as to assess the nature of financial technologies usage in Centenary Bank. From the table a mean tabulation was used to present

the results as presented. A mean between 1 and 2 shows a disagreement while a mean of 3 shows that respondents were undecided where as a mean between 4 and 5 means agreement.

Table 4.2 Descriptive Statistics showing the nature of financial technologies usage in Centenary bank.

PARTICULAR	N	Min	Max	Mean	SD
The customer has the knowledge to use ATMs, mobile and online banking services	309	1	5	4.09	1.028
The Customer registered their account to transact via mobile and online banking	309	1	5	4.01	.959
The Customer finds it easy to transact using mobile and online banking	309	1	5	3.91	0.135
The customer often checks for their account statement using the online and mobile platforms	309	1	5	3.80	0.130
The Customer is comfortable making payments using agency banking	309	1	5	3.81	1.131
The Customer regularly uses the ATMs and mobile banking to withdraw money from their account	309	1	5	4.78	0.082
The Customer can easily open up an account with the online platforms	309	1	5	3.76	1.091
The Customer can always access their account and transact from any location.	309	1	5	4.72	0.114
The Customer finds it convenient to use the ATM and agency banking services	309	1	5	4.85	1.050
The Customer can easily pay bills using the mobile and online platforms	309	1	5	3.93	1.074
AVERAGE MEAN				4.17	

Source: Primary data

The findings in the table above revealed that in line with objective one, which is what is the nature of usage of financial technologies, an average mean of 4.17, was obtained which indicated that majority of the respondents use these financial technologies in Centenary Bank. Some of the key usage practices are that the customer finds it convenient to use the ATM and agency banking services with the mean of 4.85. It was noted that customers regularly use the ATMs and mobile banking to withdraw from their account with a mean 4.78. This study further indicated that the customer can always access their account and transact from any location with a mean 4.72. The customer has the knowledge to use ATMs, mobile and online

banking services with a mean of 4.09. The Customer registered their account to transact via mobile and online banking with a mean of 4.01. The customer easily pays their bills using the mobile and online platforms with the mean of 3.93. The Customer finds it easy to transact using mobile and online banking with a mean of 3.91. The Customer is comfortable making payments using agency banking with a mean of 3.81. The customer often checks for their account statement using the online and mobile platforms with a mean of 3.80 and the customer can easily open up an account with the online platforms with a mean of 3.76.

4.4 The challenges faced in using Financial Technologies

The result in the table below were generated using the scale coded such as 1 up to 5 represents (Strongly Disagree, Disagree, Not Sure, Agree, Strongly Agree) ranging from (1, 2, 3, 4 and 5) respectively. A mean close to 1 or 2 showed disagreement, a mean of 3 showed uncertain while mean close to 4 or 5 showed agreements about the issue.

Table 4.3 Descriptive Statistics on the challenges faced when using Financial Technologies by Centenary bank customers.

PARTICULAR	N	Min	Max	Mean	SD
The customer doesn't know how to use mobile and online banking.	309	1	5	4.96	1.047
Online and mobile banking require a lot of knowledge to use	309	1	5	3.74	1.084
The ATMs and agency banking services aren't reliable	309	1	5	3.77	1.109
The customer prefers physical interactions to digital bank interactions	309	1	5	3.84	1.067
Financial or payment frauds are likely when the customer uses Online banking	309	1	5	4.75	1.121
The customer's financial information is not safe when they use mobile and online banking	309	1	5	3.77	1.033
The customer is doubtful about using the ATMs, agency banking and the online platforms for transacting.	309	1	5	3.45	1.196
The network failures are frequent	309	1	5	4.01	1.022
It is expensive to transact using agency banking and the online platforms	309	1	5	3.60	1.071
Financial losses are likely when the customer uses agency banking and online banking	309	1	5	3.47	1.195
AVERAGE MEAN				3.93	

Source: Primary Data

In line with objective two, which is what are the challenges of financial technologies in Centenary Bank. The study attained an average mean of 3.93 which implies that majority of the respondents were uncertain about the challenges faced in using financial technologies by Centenary bank customers however it leaned more to agreement. This implies that the findings above revealed that the majority of the respondents were not sure with the issues that were raised. Some of the key challenges are that the customers don't know how to use mobile and online banking with mean 4.96. financial or payment frauds are likely when the customer uses online banking with mean of 4.75, The network failures are frequent with mean of 4.01.

The customers prefer physical interactions to digital bank interactions with a mean of 3.84, the ATMs and agency banking services aren't reliable with a mean 3.77, the financial information is not safe when the customers use mobile and online banking with a mean of 3.77, online and mobile banking require a lot of knowledge to use with a mean of 3.74, it is expensive to transact using agency banking and the online platforms with a mean of 3.60, financial losses are likely when I use agency banking and online banking with a mean of 3.47 and the customer is doubtful about using the ATMs, agency banking and the online platforms for transacting with mean of 3.45. This meant that most of respondents show that these are very challenges that affect the customers when using financial technologies of Centenary Bank.

4.5 The strategies for improving the usage of financial technologies.

The result in the table below were generated using the scale coded such as 1 up to 5 which represents (Strongly Disagree, Disagree, Not Sure, Agree, Strongly Agree) ranging from (1, 2, 3, 4 and 5) respectively. A mean of close to 1 or 2 showed disagreement, a mean of 3 showed uncertain while a mean close to 3 or 4 showed agreements about the issue.

Table 4.4 The strategies for improving the usage of Financial Technologies.

PARTICULAR	N	Min	Max	Mean	SD
The bank should offer training opportunities for customers	309	1	5	3.90	1.165
The bank should invest in safe and secure systems	309	1	5	4.82	1.120
The bank Institute appropriate controls.	309	1	5	4.69	1.155
The bank should regularly seek customers feedback	309	1	5	4.70	1.122
The bank should address network concerns promptly	309	1	5	3.65	1.201
The bank should promote these financial technology services	309	1	5	4.65	1.167
The central bank should encourage and support the usage of these financial technology services.	309	1	5	3.79	1.079
The bank employees should uphold the banks values of integrity	309	1	5	4.81	1.244
The Bank should continuously sensitize its customers about its digital services.	309	1	5	4.61	1.246
The bank should invest in more appropriate technologies to counter system interruptions.	309	1	5	4.69	1.212
AVERAGE MEAN				4.43	

Source: Primary Data

In reference to objective three which stated that what are the strategies to improve the usage of financial technologies, an average mean of 4.43 was obtained which implied that most of the respondents strongly agreed with the suggested strategies for improving the usage of financial technologies in Centenary bank. Some of the key strategies are that the bank should invest in safe and secure systems with a mean 4.82; the bank employees should uphold the banks values of integrity with a mean 4.81 while the bank should regularly seek customer's feedback with a mean of 4.70. The bank should invest in more appropriate technologies to counter system interruptions with a mean 4.69, the bank Institute appropriate controls with a mean of 4.69, the bank should promote these financial technology services with a mean of 4.65, banks should continuously sensitize its customers about its digital services with a mean of 4.61. The bank should offer training opportunities for customers with a mean of 3.90, the central bank should encourage and support the usage of these financial technology services with a mean of 3.79 and the bank should address network concerns promptly with mean of 3.65.

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the findings, discussion of findings in relation to the available literature as well as providing a conclusion based on the objectives. The chapter also suggests recommendations based on findings and identifies the gap that the researcher realized in handling this research that requires other researchers to find out in the stipulated area of further study. The objectives that guided the study included to assess the nature of financial technologies usage in Centenary bank, to examine the challenges of financial technologies in Centenary bank and to propose strategies that will improve the usage of financial technologies in Centenary bank.

5.2 Discussion of findings

5.2.1 Assessing the nature of financial technologies usage in Centenary bank

The findings of the nature of financial technologies usage in Centenary bank revealed that an average mean of 4.17 was obtained which indicates that majority of the respondents use these financial technologies. According to the Theory of reasoned action (TRA), the most accurate determinant of behaviour is behavioural intention. The direct determinants of people's behavioural intentions are their attitudes towards performing the behaviour and the subjective norms associated with the behaviour. Attitude is determined by a person's beliefs about the outcomes or attributes of performing a specific behaviour, weighted by evaluations of those outcomes or attributes. The subjective norm of a person is determined by whether important referents approve or disapprove of the performance of a behaviour (that is, normative beliefs), weighted by the person's motivation to comply with those referents. (Otieno et al, 20016)

In this study, of the 384 sampled customers of Centenary bank who participated in this study and the 309 who returned the questionnaires showed that with an average mean of 4.17 which implied usage of fintechs displayed positive attitudes in their behavior to use financial technologies which agrees with the TRA,

5.2.2 Challenges of financial technologies in Centenary bank.

The findings on the challenges of financial technologies in Centenary bank revealed that an average mean of 3.93 was obtained which implies that majority of the respondents were uncertain with the challenges facing financial technologies in Centenary bank though it was leaning to agree.

The study proves that the behavioral intention to use through factors like the attitude and subjective norm indeed hinder usage of financial technologies according to the theory of reasoned action. Attitude and subjective norm related to intention to use financial technologies. Customers with a good attitude towards usage of these financial technologies tend to use these fintechs however those with negative attitudes are most likely not to use the fintechs. In line with the study, the challenges posed like lack of knowledge on how to use the fintechs and preference for physical interactions as opposed to the digital ones, as well as financial frauds being most likely when using these financial technologies most likely create a negative attitude towards usage which in turn affects the usage rates.

5.2.3 Strategies for improving the usage of financial technologies in Centenary bank

The findings in this study demonstrate that most of the respondents strongly agreed with the strategies for improving the usage of financial technologies in Centenary bank as evidenced with the average mean of 4.43.

According to the TRA, trust is significant in the attitude and intention of the customer to use financial technologies. In line with the study findings, the customers agreed with the strategy for the bank to invest in safe, modern and secure technologies to counter system breakdowns

and cyber-attacks which derail customers thereby hindering them from using financial technologies. Trust of the technologies is very important for the customers especially if the related risks are high concerning data privacy. A customer has to trust the technology before using it. Constant cyber-attacks derail customers who in turn lose confidence in the banking system. A sound system of preventive, detective and corrective controls will help assure the integrity of the network and the information it handles (Zavareh *et al.*, 2012).

5.3 Conclusions

Centenary bank has adopted and uses financial technologies and the platforms are indeed in use by the customers, though not all of them have indeed adopted them.

It is well recognized that ATMs, agency, internet and mobile banking have immense potential of conducting financial transactions thus leading to financial growth as they foster convenience at a much reduced cost. For inclusive growth, the benefits of mobile banking should reach to the common man in the remotest location in the country. Through the mobile banking platform, customers can enjoy a wide range of services without necessarily having to visit their domicile branches or ATMs. Such services include: money transfer across accounts, Balance inquiry, making payments (utility bills), phone banking and buying airtime which according to the respondents, strongly agree that the bank has the ability to keep customers transactions secure and confidential.

From the findings of the study; it can be inferred that the introduction of financial technologies have contributed to the effectiveness of the banking institutions. Convenience and flexibility of various digital money transfer services has largely led to increased customer satisfaction and loyalty despite occasional technical hitches that prove disappointing to the Centenary bank customers.

Additionally, the high rate of cyber-crime in form of cyber-attacks, data privacy breaches, and digital illiteracy have hindered the comprehensive usage of these financial technologies.

From the customer's agreement with the proposed strategies and responses, we can see that there is still sufficient room for Centenary bank to improve in the usage of financial technologies as proposed by the findings of this study.

The interface between digital money service providers and banking institutions has proven to be of great use to the Ugandans socio-economic life and thus one cannot envisage a future without digital money services. The future of the Ugandan banking industry remains digital banking and the going concern of certain banking institutions will largely be determined on how well they are going to invest in technology infrastructure to make digital banking more reliable to the ever-growing middle class.

5.4 Recommendations

The use of FinTech services is found more among the younger generation, thus new space should be provided to them to promote better and efficient use of such services. The awareness and use of FinTech services is very low among the bank customers belonging to the older generation, and the reason for low use is unawareness and misconception. Thus, steps should be taken to improve the awareness and discern the customers that such services are dependable because there is no choice and the adoption of technology is inevitable

The study revealed that most of the customers don't know how to use these financial technologies and therefore recommends that Centenary bank should continuously emphasize usage of financial technologies through carrying out massive sensitization campaigns aimed at training and equipping their customers with knowledge on the usage of these technologies.

From the findings, it is evident that system breakdowns and network failures are frequent and in a bid to counter them, the study recommends that the bank should invest in modern, safe and secure technologies and infrastructure to meet the growing demands of their customers and also aid in countering system and network failures.

From the study findings, security breaches and financial fraud were more likely especially from within and thus the study recommends that Centenary bank should embark on emphasizing ethical standards amongst their employees and penalize breaches to these standards as way to mitigate fraudulent transactions that are initiated by the staff.

The study recommends that Centenary bank should regularly seek feedback from its customers through carrying out surveys as way to identify gaps and effectively devise solutions that bridge the gaps identified. This would lure customers to eventually use these technologies as a culture as a result of the minimal gaps thus ensuring the future sustainability of digital Banking.

The study found out that most of the Commercial banks operating in Uganda don't adequately promote these financial technologies. The study therefore recommends that Centenary bank sufficiently promotes these financial technologies and emphasizes their usage among its customers.

5.5 Limitations of the Study

The study intended to use a structured questionnaire which limited respondents from expressing views and opinions.

The researcher anticipated limited response from customers considering the limited knowledge of the subject matter basing on Centenary banks' target customer audience.

In reference to the area of study(Financial technologies usage),which is highly technology based and keeps evolving, this study will not be able to capture changes overtime considering that it was be conducted in a cross-sectional design.

The mobility of the respondents and their tight busy schedules made it hard for them to respond to the questionnaires and this affected the general response rate.

5.6 Areas for further study

In the future, the researcher recommends that further study be carried out in areas of financial technologies usage practices in other fields like microfinance institutions, insurance, and so on. This is to draw further interest and understanding on the adoption of technology on those sectors since technology keeps evolving and the scenarios might be different hence confirming or disregarding the findings of the study.

Further research is required to study the effect of the COVID-19 pandemic on financial technology activities and whether or not financial technology firms are likely to exploit the market opportunities created to integrate their products into people's daily life.

Further research may be needed to address the demographic characteristics of the individual users of financial technology services. Prior studies demonstrated the interest of millennials in fintech products and services. More research is required to know whether or not the usage of fintech services is significantly affected by the age, income level, culture and backgrounds of the people in the community

More research could also be carried out on how banks could integrate these technologies and ensure sustainability with their daily bank operations like the Know your customer process, loan processing and performance to mention but a few.

It is also vital to note that Centenary bank should balance the use of online, mobile, agency and ATM banking with human interaction as a way to continuously facilitate customer satisfaction, build confidence and loyalty.

REFERENCES

- Ali SM, Hoq SMN, Bari ABMM, Kabir G, Paul SK (2022) Evaluating factors contributing to the failure of information system in the banking industry
- Buckley, R. P., Arner, D. W., Zetsche, D. A., & Selga, E. (2019). The dark side of digital financial transformation: The new risks of fintech and the rise of techrisk. *UNSW Law Research Paper*, (19-89).
- Centenary bank (2020) Annual report
- Centenary bank (2021) Annual report
- Cochran W.G (1977) Sampling techniques (3rd edition) New york John Wiley and sons
- Creswell, J.W. (2014). *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research*, (4th Ed), Pearson Merrill Prentice Hall.
- Das.A, & Das, D. (2020). Perception, adoption, and pattern of usage of FinTech services by bank customers: Evidences from Hojai District of Assam. *Emerging Economy Studies*, 6(1), 7-22.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- Davis, R. (1978). The data encryption standard in perspective. *IEEE Communications Society Magazine*, 16(6), 5-9.
- Elsaid, H. M. (2021). A review of literature directions regarding the impact of fintech firms on the banking industry. *Qualitative Research in Financial Markets*.
- Fang, Z.; Zhang, J.; Zhiyuan, F. Study on P2P E-finance platform system: A case in China. In Proceedings of the 11th IEEE International Conference on E-Business Engineering, Guangzhou, China, 5–7 November 2014; pp. 331–337
- Fintech in Uganda, FSD, 2018
- Jünger, M., & Mietzner, M. (2020). Banking goes digital: The adoption of FinTech services by German households. *Finance Research Letters*, 34, 101260.

- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, 30(3), 607-610.
- Kumaraswamy, P., Shashikala, M., Sruthi, M., Kumar, B. V., & Nagaraju, G. (2022). *Proceedings* (Vol. 2418, No. 1, p. 020070). AIP Publishing LLC.
- Li, L. (2010). A critical review of technology acceptance literature. *Referred Research Paper*, 4, 2010.
- Li, Y. H., & Huang, J. W. (2009). Applying theory of perceived risk and technology acceptance model in the online shopping channel. *World Academy of Science, Engineering and Technology*, 53(1), 919-925.
- Navaretti, G. B., Calzolari, G., Mansilla-Fernandez, J. M., & Pozzolo, A. F. (2018). Fintech and banking. Friends or foes? *Friends or Foes*.
- Tashtamirov, Magomed. (2023). Financial Innovation and Digital Technology in the Banking System: An Institutional Perspective. SHS Web of Conferences. 172. 10.1051/shsconf/202317202004.
- Ndungu, J. M., & Moturi, C. A. (2020). Determinants of mobile Fintech uptake in Kenyan microfinance sector. *Current Journal of Applied Science and Technology*, 39(28), 102-114.
- Otieno, O. C., Liyala, S., Odongo, B. C., & Abeka, S. O. (2016). Theory of reasoned action as an underpinning to technological innovation adoption studies.
- Románova, I., & Kudinska, M. (2016). Banking and Fintech: a challenge or opportunity?. In *Contemporary issues in finance: Current challenges from across Europe*. Emerald Group Publishing Limited.
- Study on the state of Uganda's Fintech Industry, Deloitte 2022
- Suryono, R. R., Budi, I., & Purwandari, B. (2020). Challenges and trends of financial technology (Fintech): a systematic literature review. *Information*, 11(12), 590.
- Tang, K. L., Ooi, C. K., & Chong, J. B. (2020). Perceived risk factors affect intention to use FinTech. *Journal of accounting and finance in emerging economies*, 6(2), 453-463.

Thakor, A. V. (2020). Fintech and banking: What do we know?. *Journal of Financial Intermediation*, 41, 100833.

The PwC Global fintech survey 2016

Vasiljeva, T., & Lukanova, K. (2016). Commercial banks and FINTECH companies in the digital transformation: Challenges for the future. *Journal of Business Management*, (11).

Yaghoubi, N. M., & Bahmani, E. (2010). Factors affecting the adoption of online banking: An integration of technology acceptance model and theory of planned behavior. *International journal of business and management*, 5(9), 159-165.

Goldstein, I., Jiang, W., & Karolyi, G. A. (2019). To FinTech and beyond. *The Review of Financial Studies*, 32(5), 1647-1661.

Sorongan, F. A., Legowo, M. B., & Subanidja, S. (2021). FinTech as The Emerging Technologies in Banking Industry: Past, Present, and Future. *International Journals of Sciences and High Technologies*, 28(1), 371-378.

Ebrahim, Rabab & Kumaraswamy, Sumathi & Abdulla, Yomna. (2020). FinTech in Banks: Opportunities and Challenges. 10.4018/978-1-7998-3257-7.ch006

Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business horizons*, 61(1), 35-46.

Hua, X., Huang, Y., & Zheng, Y. (2019). Current practices, new insights, and emerging trends of financial technologies. *Industrial Management & Data Systems*, 119(7), 1401-1410.

Zetsche, D. A., Buckley, R. P., Arner, D. W., & Barberis, J. N. (2017). From FinTech to TechFin: the regulatory challenges of data-driven finance. *NYUJL & Bus.*, 14, 393.

Cull, R., Peria, M.M.S.M., Verrier, J., 2017. Bank Ownership: Trends and Implications. International Monetary Fund.

Deloitte, 2022, A study on the state of Uganda's Fintech Industry

Ezati Rad, R., Kahnouji, K., Mohseni, S., Shahabi, N., Noruziyan, F., Farshidi, H., ... & Aghamolaei, T. (2022). Predicting the COVID-19 vaccine receive intention based on the theory of reasoned action in the south of Iran. *BMC Public Health*, 22(1), 229.

APPENDIX I: QUESTIONNAIRE

Dear respondent,

I am a student at Makerere University Business School pursuing a Master's degree of Business Administration (MBA). As one of the requirements for being awarded with this qualification, I am conducting a study on a topic, "**ASSESSING FINANCIAL TECHNOLOGIES USAGE PRACTICES, A CASE OF CENTENARY BANK.**". You have been identified as one of the resourceful people to participate in this study. You are requested to answer the questions as honestly as possible to enable reliable conclusions and recommendations. All your responses will be used strictly for research purpose and treated with anonymity and utmost confidentiality.

SECTION 1: PERSONAL DATA

Please tick the option that best describes you

1. Gender

Male	Female
☐	☐

2. Age

Below 25years	26-35 years	36-45 years	46-55 years	Above 55 years
☐	☐	☐	☐	☐

3. Marital Status

Single	Married	Divorced	Others
☐	☐	☐	☐

4. Highest education level

Certificate	Diploma	Bachelor's	Masters	Others
☐	☐	☐	☐	☐

5. How long have you been a customer of the bank

Less than 5 years	5-10 years	11 years and above
☐	☐	☐

SECTION TWO: FINANCIAL TECHNOLOGIES USAGE

Using the following scale of Strongly Disagree (1), Disagree (2), Not Sure (3), Agree (4) and Strongly Agree (5), please indicate the level of opinion by ticking the appropriate box.

Codes		SD	D	NS	A	SA
FTU001	I have the knowledge to use ATMs, mobile and online banking services.	1	2	3	4	5
FTU002	I registered my account to transact via mobile and online banking.	1	2	3	4	5
FTU003	I find it easy to transact using mobile and online banking.	1	2	3	4	5
FTU004	I often check for my account statement using the online and mobile platforms	1	2	3	4	5
FTU005	I am comfortable making payments using agency banking	1	2	3	4	5
FTU006	I regularly use the ATMs and mobile banking to withdraw from my account.	1	2	3	4	5
FTU007	I can easily open up an account with the online platforms	1	2	3	4	5
FTU008	I can always access my account and transact from any location	1	2	3	4	5
FTU009	I find it convenient to use the ATM and agency banking services	1	2	3	4	5
FTU010	I easily pay my bills using the mobile and online platforms	1	2	3	4	5

SECTION THREE: CHALLENGES OF USING FINANCIAL TECHNOLOGIES

Using the following scale of Strongly Disagree (1), Disagree (2), Not Sure (3), Agree (4) and Strongly Agree (5), please indicate the level of opinion by ticking the appropriate box. Please indicate the level of opinion by ticking the appropriate box.

Codes		SD	D	NS	A	SA
CFT001	I don't know how to use mobile and online banking	1	2	3	4	5
CFT002	Online and mobile banking require a lot of knowledge to use.	1	2	3	4	5
CFT003	The ATMs and agency banking services aren't reliable	1	2	3	4	5
CFT004	I prefer physical interactions to digital bank interactions.	1	2	3	4	5
CFT005	Financial or payment frauds are likely when I use Online banking.	1	2	3	4	5
CFT006	My financial information is not safe when I use mobile and online banking	1	2	3	4	5
CFT007	I am doubtful about using the ATMs, agency banking and the online platforms for transacting.	1	2	3	4	5
CFT008	The network failures are frequent	1	2	3	4	5
CFT009	It is expensive to transact using agency banking and the online platforms.	1	2	3	4	5
CFT010	Financial losses are likely when I use agency banking and online banking	1	2	3	4	5

SECTION 4: STRATEGIES FOR IMPROVING THE USAGE OF FINANCIAL TECHNOLOGIES

Using the following scale of Strongly Disagree (1), Disagree (2), Not Sure (3), Agree (4) and Strongly Agree (5), please indicate the level of opinion by ticking the appropriate box.

Codes		SD	D	NS	A	SA
SUFT001	The bank should offer training opportunities for customer.	1	2	3	4	5
SUFT002	The bank should invest in safe and secure systems.	1	2	3	4	5
SUFT003	The bank Institute appropriate controls.	1	2	3	4	5
SUFT004	The bank should regularly seek customers feedback	1	2	3	4	5
SUFT005	The bank should address network concerns promptly	1	2	3	4	5
SUFT006	The bank should promote these financial technology services	1	2	3	4	5
SUFT007	The central bank should encourage and support the usage of these financial technology services	1	2	3	4	5
SUFT008	The bank employees should uphold the banks values of integrity	1	2	3	4	5
SUFT009	Banks should continuously sensitizing its customers about its digital services	1	2	3	4	5
SUFT010	The bank should invest in more appropriate technologies to counter system interruptions	1	2	3	4	5

Thank you for your time.