

KIBOGORA POLYTECHNIC

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ROLE OF FINANCIAL TECHNOLOGY COMPANIES IN PROMOTING FINANCIAL INCLUSION IN NYAMASHEKE DISTRICT.

Case study: Airtel Mobile Commerce Rwanda Ltd, Airtel Nyamasheke Services Centre.

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Undergraduate research thesis presented in partial fulfillment of the requirements for the award of Bachelor's degree with honor in Economics and Management.

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DECLARATION

We, UWIMPAYE Françoise and UWICYEZA UWERADE La Reine Marie, hereby declare that this is our own original work and not a duplication of any similar academic work. It has therefore not been previously or concurrently submitted for any other degree, diploma, or other qualification to Kibogora Polytechnic or any other institution. All materials cited in this paper which are not my own have been duly acknowledged.

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Declaration by the Supervisor

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ABSTRACT

Our study is conducted on Role of Financial Technology Companies in promoting Financial Inclusion in Nyamasheke district. This study has three specific objectives such as to evaluate the contribution of Financial Technology products in promoting financial inclusion, to identify challenges to adopt financial Technology solutions in promoting financial inclusion, and to find out possible solutions to adopt Financial Technology solutions in promoting financial inclusion.

Target populations was 11447 people and sample size were 99 people, qualitative and quantitative research approaches were used, descriptive research design was used and purposive and stratified sampling procedures was used, Microsoft Excel was used to analysis the data our finding were shown that the contribution of Financial Technology products to the financial inclusion, 20% was the number of respondents who were neutral that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion, the challenges to adopt financial technology solution in promoting financial inclusion, 42% was the number of respondents who were agree that the System vulnerabilities was the challenges to adopt financial technology solution in promoting financial inclusion and 57% was the number of respondents who were strongly agree that the System vulnerabilities is the challenges to adopt financial technology solution in promoting financial inclusion,39% was the number of respondents who were agree that the Digital identities is the challenges to adopt financial technology solution in promoting financial inclusion. The possible solutions to adopt Fintech solutions in promoting financial inclusion, 56% was the number of respondents who were strongly agree that adopting secure-by-design mindset was possible solutions to adopt Fintech solutions in promoting financial inclusion, 42% was the number of respondents who agree that the Protecting sensitive data was Possible solutions to adopt Fintech solutions in promoting financial inclusion.

DEDICATION

To the Almighty GOD

To our parents, brothers, sisters, relatives, and friends

We dedicate this work.

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We are deeply thankful to the Almighty God for guiding us through the course of our studies for the past three years. We are very grateful to our parents, siblings, friends, and classmates who supported us in various ways such as tuition, school supplies, accommodation, personal needs, love, care, prayers and more.

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LIST OF ACRONYMS AND ABBREVIATION

3G: Third Generation

4G: Fourth Generation

ATM: ATM Number

ATM: Automated Teller Machine

B2B: Business-to-Business

B2C: Business-to-Consumer

B2G: Business-to-Government

C2C: Consumer-to-Consumer

CBN: Central Bank of Nigeria

FinTech: Financial Technology

G20: Group of Twenty

MSMEs: Micro, Small, and Medium Enterprises

POS: Point of Sale

SMEs: Small and Medium Enterprises

TAM: Technology Acceptance Model

VC: Venture Capital

CHAPTER ONE: GENERAL INTRODUCTION

1.0 INTRODUCTION

The purpose of this chapter is to provide an overview of the main elements that will be discussed in this research. The introductory part includes various subheadings, namely the background of the study, research problem, the objective of the study, research questions, significance of the study, scope of the study, and limitations of the study.

1.1 BACKGROUND OF THE STUDY

Financial technology (FinTech) is used to describe new technology that seeks to improve and automate the delivery and use of financial services. At its core, FinTech is utilized to help companies, business owners and consumers better manage their financial operations, processes, and lives by utilizing specialized software and algorithms that are used on computers and, increasingly, smartphones. The possibility now looms that, entities driven by FinTech may emerge as competitive alternatives to traditional financial intermediaries, markets, and infrastructures. The widespread adoption of modern technologies offers advantages but also poses risks. FinTech may spur efficiency gains in the financial sector, offer better and more targeted products and services, and deepen financial inclusion in the developing world. However, it may also pose risks, if its application undermines competition, trust, monetary policy transmission, and financial stability (Zeidy, 2021). FinTech has the potential to increase financial inclusion by providing access to financial services for people who have been excluded from formal financial markets. FinTech companies are developing digital services that could help billions of people gain access to banking and investment products. Digital innovations across the financial sector have had a major impact on the provision of financial services. Digital technologies have spread rapidly in many parts of the global economy, but there is still potential for increased use (Korynski, 2019).

In Africa, 370 million people were still unbanked across the continent by the end of the year 2021. The Sub-Saharan Africa region counted alone 45% of adults who were unbanked by the end of year 2021 (Statista, 2023). Rwanda, on the other hand, has made significant progress where today more than 93% of the population has access to some form of formal or informal financial services either through traditional banking, microfinance institution, or mobile wallet accounts provided by telecommunication companies operating in Rwanda (Kumar & Nkundabakura, 2020).

The Rwandan Government has taken a proactive approach to support innovation by placing clear policy emphasis on the role of digitization to accelerate growth and reduce poverty. Through Rwanda's Vision 2050, the government launched three strategic initiatives to enable this digital transformation: the National Strategy for Transformation 2017-2024, the SMART Rwanda Master Plan 2015-2020, the Rwanda Capital Market Master Plan 2018-2028, and the Rwanda Payment System Strategy 2018-2024. These initiatives in place have enabled the growth of Fintechs in Rwanda. During the Covid-19 period alone, the mobile peer-to-peer (P2P) payments grew by over 450%. This is all thanks, in great part, to the Rwanda's well developed digital ID system and robust mobile penetration estimated at 87% of the population (MINICT, 2022).

The Government of Rwanda has adopted a five-year FinTech strategy to support the FinTech ecosystem systematically and holistically in the country. The strategy aims to maximize the potential that FinTech holds for economic growth and socio-economic transformation while mitigating its potential risks (MINECOFIN, 2022).

The Rwandan fintech sector is relatively small but growing. The majority of fintech in Rwanda are payments, clearing, and settlement providers, or fintech enablers. Other fintech subsectors include deposit lending, insurance, savings, capital raising/alternative finance, and crypto assets. In terms of the service offering of FinTech, 56% are catered towards B2C services, followed by B2B, G2C, B2G, and C2C. The low penetration of FinTech offering more advanced financial services, such as insurance and capital raising products, suggests there may be an opportunity for FinTech to pilot products in these spaces (MINECOFIN, 2022).

In terms of the economic sector within which the FinTech is based, 47 of the FinTech operate purely in the financial sector, followed by transport, agriculture, energy, education, and health. The low number of FinTech that offer services tailored for the agricultural sector, which employs nearly 72% of all Rwandans and makes up a third of all economic activity, highlights an important opportunity for FinTech (MINECOFIN, 2022).

In terms of the proportion of FinTech that are homegrown, 52% of all FinTech identified were founded in Rwanda, while 12% and 7% were founded in the US and Kenya respectively. The remaining 39% are dispersed across 10 different countries. The high proportion of FinTech which have set up in Rwanda with foreign origins suggests Rwanda is an attractive proposition for foreign FinTech to expand into and pilot financial products (MINECOFIN, 2022).

Rwanda's FinTech ecosystem is characterized by key strengths that are also its competitive advantages for FinTech development in the next five years. These strengths have contributed to Rwanda earning its title as one of Africa's fastest-growing FinTech ecosystems. However, the ecosystem also has several roadblocks that could potentially stifle fintech innovation and block the fintech strategy's vision (MINECOFIN, 2022).

One of the biggest roadblocks is the financing gap. Early stage fintech struggle to access traditional debt financing, while the venture capital (VC) and private equity investment ecosystem is still nascent. This is because there is a lack of grant and early-stage funding, and because there are limited traditional debt financing mechanisms from the incumbent financial sector catered for start-ups and MSMEs. As a result, many Rwandan Fintechs are over-reliant on informal financing mechanisms (such as friends and families). The objective of this study is to explore the role of financial technology companies in promoting financial inclusion in the Nyamasheke district.

1.2 STATEMENT OF THE PROBLEM

Although the level of financial inclusion in Rwanda is relatively high at 93%, there is still some work to do to close the gap. The government has an ambitious goal of reaching 100% financial inclusion by the end of 2024 but currently, 7% (0.5 million) of the Rwandan population is still financially excluded. The levels of exclusion vary significantly across the country from 0% in Gasabo district to 17% in Gatsibo and Rusizi districts. The more likely groups to be financially excluded are those labelled as poor, people living in very remote rural areas, the youth, women, and senior citizens. Mobile money continues to be an enabler for financial inclusion and used by both banked and unbanked population. There is no doubt it will continue to play a role in closing the financial inclusion gap (Access to Finance Rwanda, 2020).

Despite the potential of financial technology (FinTech) to promote financial inclusion in the rural areas, there are significant challenges that hinder its effective implementation and impact. The district is characterized by rural areas with limited access to formal financial services, relying heavily on savings and credit cooperatives and mobile money services. However, there is a need to investigate the role of FinTech companies in addressing the financial inclusion gap and enhancing access to financial services for the underserved population in rural areas. One major problem is the lack of access to financial services and lack of awareness and understanding of

FinTech solutions among the local population. Many individuals in rural areas may not be familiar with the benefits and functionalities of digital financial services, leading to low adoption rates. This lack of awareness can stem from limited access to information and limited digital finance literacy skills among the target population.

Another problem is the limited availability of tailored FinTech products and services that address the specific needs and preferences of the local population. The existing financial services may not adequately cater to the unique challenges and opportunities in rural areas, such as agriculture-related financial risks and the need for convenient and affordable banking solutions in remote areas. Addressing these challenges and gaps is crucial to harnessing the potential of FinTech to promote financial inclusion in the rural areas.

1.3 OBJECTIVES OF STUDY

Under this section research objectives which spell out the goals of the study are discussed.

The study objective included general objective and specific objectives.

1.3.1 GENERAL OBJECTIVES

The purpose of this study is to examine the role of financial technology companies in promoting financial inclusion in Nyamasheke district.

1.3.2 SPECIFIC OBJECTIVES

This thesis seeks to address the following research objectives:

- i. To evaluate the contribution of Financial Technology products to the financial inclusion in Nyamasheke district.
- ii. To identify challenges to adopt financial technology solutions in promoting financial inclusion in Nyamasheke district.
- iii. To find out possible solutions to adopt Fintech solutions in promoting financial inclusion in Nyamasheke district.

1.4. RESEARCH QUESTIONS

These are specific questions that could be answered to address each research objective:

- i. What is the contribution of Financial Technology products to the financial inclusion in Nyamasheke district?
- ii. What are challenges to adopt financial technology solution in promoting financial inclusion in Nyamasheke district.
- iii. What are possible solutions to adopt Fintech solutions in promoting financial inclusion in Nyamasheke district?

1.5 SIGNIFICANCE OF THE STUDY

The benefits of the research findings are manifold and will benefit a wide range of stakeholders.

1.5. 1 For the researchers

This research carried out as partial fulfillment as requirement for the award of bachelor's degree in economics and management. The researcher improved the skills and knowledge of us as researchers to practice what they learnt in classes, and experience from field.

1.5.2 For Kibogora Polytechnic

The research responds to academic requirement that every finishing a formal academic program must write and present a thesis to apply the theories learned in class to real world problems, and thus test the academic maturity that was intended towards the completion of the bachelor's degree.

1.5.3 For Airtel Mobile Commerce Rwanda, Ltd

Airtel Mobile Commerce Rwanda, Ltd, the AirTel Rwanda's Fintech subsidiary in charge of AirTel Money services and products, could also use this present research to understand its services impact and perception in Nyamasheke and use the results to inform the company's next strategic directions. The research findings will help FinTech companies to understand the market potential in Nyamasheke district and to develop strategies for entering and growing in the market. This will help to increase the availability and suitability of FinTech products and services for the local population.

1.5.4 The Local population

The research findings will help the local population to understand the benefits of FinTech and to adopt FinTech solutions. This will help them to improve their financial inclusion and to access financial services easily.

1.6 LIMITATIONS OF THE STUDY

Our research has been challenged by the climate conditions, and lack of stamp for introduction letter.

1.7 SCOPE OF THE STUDY

1.7.1 Time scope

The study has been conducted in December 2022.

1.7.2 Geographical Scope

This research took place in Kanjongo sector, Nyamasheke district.

1.7.3 Domain Scope

Our research focused on Financial Technology companies in domain of Digital finance sector.

1.8 THESIS ORGANIZATION

This study is made of five chapters. Chapter one highlighted the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, limitations of the study, the scope of the study as well as the structure of the study in question.

Chapter two covered an extensive literature review related to the present study and detailed the conceptual framework, definitions of key concepts, theoretical framework, and empirical framework of this study.

Chapter three covered the research methodology used in this study and indicated the population, sample size and all techniques used for data collection and analysis.

Chapter four discuss findings and presents all relevant information from the data which will be collected from the field.

Lastly, Chapter five cover conclusion and recommendations based on the findings and literature presented in this study.

SUMMARY

In chapter one highlighted that financial inclusion plays a crucial role in poverty reduction.

However, we saw that during the time our research was being conducted more than 1.4 billion of adults are still unbanked globally and that services and products provided financial technology companies commonly known as Fintech companies could help extend access to financial services and uplift more people out of poverty.

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

This section discusses concepts that have recurred in this study. This is followed by theoretical review which looks at the existing theories, the relationships between them, the scope of the theories studied, and the formulation of new hypotheses and review conceptual and empirical framework. Also, this section summarizes and discusses previous publications on our research topic.

2.1 DEFINITIONS OF KEY CONCEPTS

2.1.1 Financial Technology (FinTech)

Financial Technology, or FinTech, refers to the use of technology and innovation to improve and automate financial services, processes, and products. It involves the application of advanced software, algorithms, and platforms to provide efficient and convenient financial solutions. FinTech encompasses a wide range of activities, including mobile banking, payment systems, lending, investment management, and crypto currencies (Eckenrode, 2017).

FinTech refers to the integration of technology into financial services to deliver faster, more accessible, and cost-effective solutions. It leverages advancements such as artificial intelligence, big data analytics, blockchain, and cloud computing to enhance financial processes and customer experiences. FinTech disrupts traditional financial models by providing innovative solutions that cater to changing consumer needs and preferences (Jesse, 2015).

Financial Technology (FinTech) encompasses various technological innovations that facilitate financial transactions, streamline operations, and enhance financial services. It encompasses a broad range of applications, including digital payments, online lending, robo-advisory, crowdfunding, insurtech, regtech, and more. FinTech solutions often focus on improving efficiency, transparency, security, and accessibility within the financial industry (IMF, 2020).

2.1.2 Financial Inclusion

Financial Inclusion refers to the availability and accessibility of financial services and products to all individuals and businesses, particularly those who are underserved or excluded from the traditional banking system. It aims to promote equal participation in the formal financial sector and enable individuals to manage their finances, save, borrow, invest, and protect against risks.

Financial inclusion plays a crucial role in poverty reduction, economic development, and social empowerment (Asli & Leora, 2020).

Financial Inclusion is the process of ensuring that individuals and communities have access to affordable and appropriate financial services, such as banking, credit, insurance, and savings, provided by formal financial institutions. It involves overcoming barriers, such as physical distance, high costs, documentation requirements, and limited financial literacy, to bring financial services within the reach of marginalized populations and unbanked individuals (Tomilova & Myra, 2018).

Financial Inclusion refers to the provision of inclusive and equitable access to financial services for all individuals, regardless of their income level, social status, or geographical location. It involves extending banking services to the unbanked and under-banked populations, promoting financial education and literacy, developing appropriate financial products, and building an enabling regulatory environment. Financial inclusion aims to reduce inequalities, foster economic growth, and enhance the overall well-being of individuals and communities (UNCDF, 2016).

2.2 THEORETICAL FRAMEWORK

There are many theories that attempt to explain the role of financial technology companies in promoting financial inclusion. Some theories, such as the Technology Acceptance Model" (TAM). For studying the role of financial technology companies in promoting financial inclusion in the Kanjongo sector, a theory that could be appropriate is the "Technology Acceptance Model" (TAM).

2.2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theory introduced by Fred Davis in 1989 that explains how people adopt and use new technology. TAM is based on the following two factors:
Perceived usefulness: This is the degree to which a person believes that using a new technology will enhance their job performance or personal life (Davis, 1989).

Perceived ease of use: This is the degree to which a person believes that using a new technology will be easy to learn and use (Davis, 1989).

TAM has been used to explain the adoption of a wide range of new technologies, including financial technology (FinTech). In the context of FinTech, TAM suggests that people will be more likely to adopt FinTech solutions if they believe that the solutions are useful and easy to use (Peacock, 2014).

The Nyamasheke district is a rural area in Rwanda that has a low level of financial inclusion. This means that many people in the sector do not have access to traditional financial services, such as bank accounts and loans. FinTech solutions have the potential to promote financial inclusion in the Nyamasheke district by making financial services more accessible and affordable.

TAM suggests that the adoption of FinTech solutions in the Nyamasheke district will be influenced by the perceived usefulness and ease of use of these solutions. If people in the sector believe that FinTech solutions are useful and easy to use, they will be more likely to adopt these solutions (Alalwan, 2017).

There are several factors that could influence the perceived usefulness and ease of use of FinTech solutions in the Nyamasheke district. These factors include the following:

The features and benefits of the FinTech solutions: The FinTech solutions offered in the Nyamasheke district should be designed to meet the specific needs of the local population. The solutions should be easy to use and should offer features that are useful to people in the sector.

The marketing and promotion of the FinTech solutions: The FinTech solutions should be marketed and promoted in a way that reaches the target audience. The marketing should emphasize the usefulness and ease of use of the solutions.

The availability of support and training: People in the Kanjongo sector may need support and training to use FinTech solutions. FinTech companies should provide support and training to help people learn how to use the solutions.

2.2.2 Innovation Theory

González-Pernía and Galán (2018) also argue that Fintech innovation can have a positive impact on financial inclusion. Financial inclusion refers to the extent to which people have access to financial services, such as bank accounts, loans, and insurance. Fintech companies can help to increase financial inclusion by providing services to people who are traditionally underserved by the financial system.

For example, Fintech companies can use mobile technology to reach people in rural areas who do not have access to traditional banks. They can also use data analytics to identify people who are at risk of financial exclusion and provide them with tailored financial products and services.

Overall, González-Pernía and Galán (2018) argue that Fintech innovation has the potential to make financial services more accessible, transparent, and affordable for consumers. This can lead to increased financial inclusion and improved financial well-being for people around the world.

Arner et al. (2020) argue that Fintech companies can provide financial services more efficiently and at a lower cost, which can increase access to financial services and promote financial inclusion.

Only time will tell how Fintech innovation will ultimately impact the financial system. However, Fintech is a disruptive force that is changing the way we think about and use financial services.

2.2.3 Diffusion of Innovation Theory

The diffusion of innovation theory explains how new products or technologies are adopted by different segments of the population over time. According to Kshetri (2018), the adoption of Fintech can be characterized by the following stages: Awareness, Interest, Evaluation, Trial, and Adoption.

Fintech companies need to understand the different stages of adoption and how to overcome barriers to adoption to promote financial inclusion. For example, Fintech companies can use marketing strategies and user-friendly interfaces to encourage adoption by those who are not technologically savvy. According to González-Pernía and Galán (2018), some of the barriers to adoption include lack of trust in new technologies, privacy concerns, and regulatory constraints.

2.2.4 Digital Divide Theory

According to Sharma and Barua (2015), the Digital Divide Theory suggests that unequal access to technology can exacerbate social and economic inequalities. However, fintech can also bridge the digital divide by providing financial services through mobile devices or other technologies that are more accessible to underserved populations. Sharma and Barua (2015) argue that the digital divide in India is characterized by disparities in terms of access to digital infrastructure, skills, and content. Fintech companies can provide mobile banking solutions that allow customers to access their accounts and perform transactions through their smartphones, even in

areas with limited internet connectivity. This can help underserved populations access financial services that they may not have been able to obtain through traditional financial institutions.

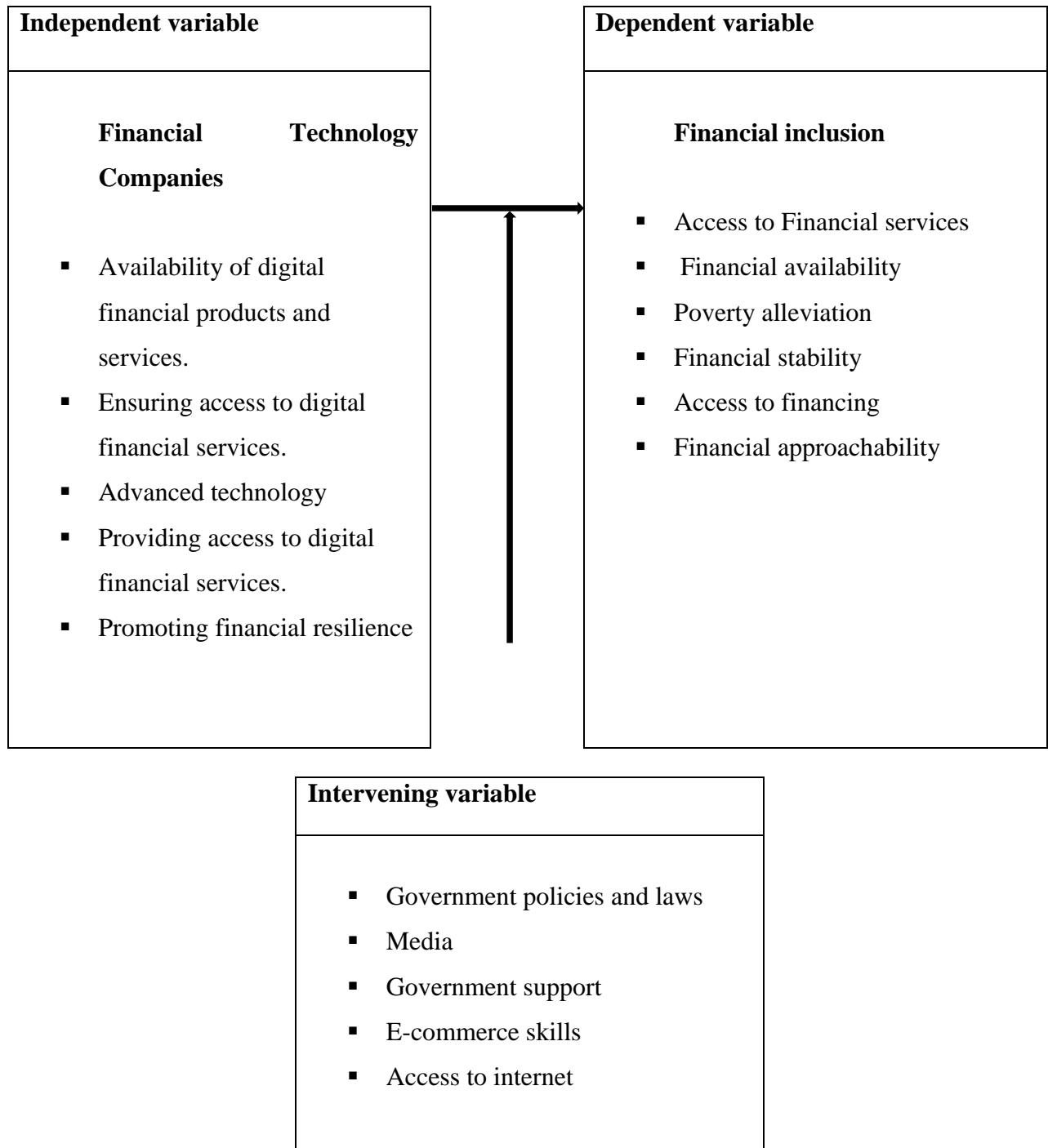
2.2.5 Social Network Theory

Liang and Turban (2011) argue that Social Network Theory suggests that people's social connections and networks influence their behaviors and decisions. Fintech companies can leverage social network theory to promote financial inclusion by using peer-to-peer lending platforms or crowdfunding to connect borrowers with lenders. According to Liang and Turban (2011), social commerce involves the use of social media and social networks to facilitate commercial transactions. Fintech companies can use social commerce to reach underserved populations and provide them with access to financial services. Peer-to-peer lending platforms, such as Lending Club and Prosper, allow individuals to lend money to others in their social network, bypassing traditional financial institutions.

2.3 CONCEPTUAL FRAMEWORK

Thus, point highlights the relationship between independent variables and dependent variables in our topic, and this is whereby in this study our independent variable is Financial Technology and the dependent variable is financial inclusion as shown in the framework.

Figure 1: Conceptual Framework



Financial inclusion is a critical aspect of economic development, and Financial Technology Companies, commonly known as Fintech, play a pivotal role in shaping the landscape of financial services. This analysis explores the impact of various independent variables on dependent variables associated with financial inclusion within the context of Fintech. To comprehend these dynamics, it is essential to examine how factors such as the availability of digital financial products and services, ensuring access to digital financial services, advanced technology, providing access to digital financial services, and promoting financial resilience influence key facets of financial inclusion.

The availability of digital financial products and services has a profound impact on expanding access to financial services and enhancing financial availability. According to the World Bank's Global Findex Database 2017, the proliferation of digital financial offerings allows underserved populations to access a broader range of financial services, including payments, savings, and investments (Demirgüç-Kunt et al., 2018). Furthermore, ensuring access to these digital financial services is vital for poverty alleviation. Improved access empowers individuals to manage their finances effectively, potentially lifting them out of poverty (Beck et al., 2019).

The utilization of advanced technology within the Fintech sector contributes significantly to financial stability. Through sophisticated risk assessment, fraud prevention, and regulatory compliance measures, advanced technology strengthens the overall stability of financial services (Beck et al., 2019). Additionally, it fosters financial approachability by simplifying user experiences and making services more user-friendly, thus accommodating individuals with varying levels of digital literacy (Aker & Mbiti, 2010).

Providing access to digital financial services is instrumental in promoting financial inclusion. By reducing geographical and infrastructure barriers, it facilitates a wider audience's access to these services, which is integral to improving access to financial services and financial availability (Demirgüç-Kunt et al., 2018). Furthermore, it directly contributes to enhancing access to financing, making credit and loans more accessible to individuals without a traditional banking history (Beck et al., 2019).

Promoting financial resilience is another crucial factor in the Fintech ecosystem. It aids in reducing financial vulnerabilities and can lead to increased financial stability. As individuals and businesses better manage financial shocks and uncertainties, financial stability is reinforced (Beck et al., 2019). Moreover, by empowering individuals to build savings and assets, promoting financial resilience can contribute to poverty alleviation (Demirgüç-Kunt et al., 2018).

In conclusion, Fintech's impact on financial inclusion is multifaceted and intricate. The availability of digital financial products and services, ensuring access to digital financial services, advanced technology, providing access to digital financial services, and promoting financial resilience all have significant implications for access to financial services, financial availability, poverty alleviation, financial stability, access to financing, and financial approachability. Understanding these relationships is vital for policymakers, researchers, and practitioners seeking to harness the potential of Fintech to promote financial inclusion and economic development.

2.4 EMPIRICAL FRAMEWORK

Tok and Heng (2022) in their study *Fintech: Financial Inclusion or Exclusion* with the objective to examine the role of Fintech in promoting financial inclusion, the authors specifically focus on the potential of Fintech to serve borrowers who are traditionally underserved by banks. They found that Fintech can play a significant role in promoting financial inclusion, especially in the areas of lending and payments. However, they also caution that Fintech could also lead to financial exclusion if it is not properly regulated.

The authors conclude that Fintech has the potential to be a powerful tool for promoting financial inclusion, but it is important to carefully consider the risks and challenges involved.

Fuster, Tang, and Dahiya (2019) in their study *The Impact of Fintech on Financial Inclusion: Evidence from India* with the objective to examine the impact of Fintech on financial inclusion in India, the authors specifically focus on the use of mobile money by rural households. They found that mobile money has had a significant impact on financial inclusion in India. The use of mobile money has increased the number of bank accounts held by rural households, and it has also made it easier for these households to access financial services.

The authors conclude that Fintech can be a powerful tool for promoting financial inclusion, especially in developing countries.

Demirgüç-Kunt, Klapper, Singer, and Ansari (2017) in their study *Objective of the study Financial Inclusion and Development: Measuring Access to and Use of Financial Services* with the objective to develop a comprehensive measure of financial inclusion, the authors specifically focus on the availability and use of financial services by individuals and businesses. They found that financial inclusion is a key driver of economic development. Countries with higher levels of financial inclusion tend to have higher levels of economic growth and lower levels of poverty.

The authors conclude that financial inclusion is an important policy goal for developing countries. They recommend that governments and development organizations take steps to promote financial inclusion.

Hau, Jagtiani, and Lemieux (2018) in their study *Fintech and Financial Inclusion: Evidence from Lending Clubs* with an objective to examine the impact of Fintech on financial inclusion in the United States, the authors specifically focus on the use of peer-to-peer lending platforms by borrowers who are traditionally underserved by banks. They found that Fintech can play a significant role in promoting financial inclusion in the United States. The use of peer-to-peer lending platforms has increased the availability of credit to borrowers who are traditionally underserved by banks.

The authors conclude that Fintech has the potential to be a powerful tool for promoting financial inclusion in developed countries as well as developing countries.

Sumit, Agarwal, and Chaurasia (2019) in their study *Fintech and Financial Inclusion in India: A Review of Literature* with an objective to review the literature on the role of Fintech in promoting financial inclusion in India, the authors specifically focus on the use of mobile money, peer-to-peer lending, and crowdfunding platforms. They found that Fintech has had a significant impact on financial inclusion in India. The use of mobile money has increased the number of bank accounts held by rural households, and it has also made it easier for these households to access financial services. The use of peer-to-peer lending and crowdfunding platforms has also made it easier for borrowers to access credit, even if they are traditionally underserved by banks.

The authors conclude that Fintech has the potential to be a powerful tool for promoting financial inclusion in India. However, they also caution that Fintech could also lead to financial exclusion if it is not properly regulated.

2.5 RESEARCH GAPS

Previous research on the role of Fintech in promoting financial inclusion has focused on developed countries or on specific aspects of Fintech, such as mobile money or peer-to-peer lending. Our research fills a gap in the literature by focusing on the role of Fintech in promoting financial inclusion in a developing country, with a focus on Nyamasheke district in Rwanda. We aim to evaluate the contribution, identify the challenges, and find possible solutions related to Fintech and financial inclusion in this district.

Our research is different from previous research in several ways. First, we focus on a specific developing country, which allows us to examine the specific challenges and opportunities that Fintech faces in this context. Second, we take a holistic approach to Fintech, considering a variety of Fintech products and services. Third, we use a mixed-methods approach, which allows us to collect both quantitative and qualitative data.

We believe that our research will make a significant contribution to the literature on the role of Fintech in promoting financial inclusion. Our findings will be valuable to policymakers, regulators, and Fintech companies who are interested in promoting financial inclusion in developing countries.

SUMMARY

This chapter presented a review of existing literature of financial inclusion and financial technology companies and the role that the latter plays in enabling more people to easily access financial services and products. At the end of the chapter, we also discussed Fintech evolution in Rwanda and its impact on financial inclusion specifically in Nyamasheke district.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 .INTRODUCTION

This chapter covers the research methodology; in this section, the researcher discusses the research strategy, research technique, research approach, data collection methods, sample selection, research process, data analysis and ethical issues.

3.1 RESEARCH APPROACHES AND DESIGN

3.1.1 Research Approaches

The research approach for this project will involve a qualitative research design. Qualitative research is defined as "an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Connor & Copland, 2018). Qualitative research is an effective tool for gathering information to gain an understanding of the nuances of a particular subject. Qualitative research is also useful for gaining insights into the motivations, beliefs, and attitudes of individuals or groups related to a given topic (Connor & Copland, 2018).

In our study, we will use interviews and other quantitative methods to gain a more comprehensive understanding of the research topic.

3.1.2 Research Design

The research approach for this project will involve a qualitative and quantitative research design. Qualitative research is defined as "an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Owen, 2018). Qualitative research is an effective tool for gathering information to gain an understanding of the nuances of a particular subject. Qualitative research is also useful for gaining insights into the motivations, beliefs, and attitudes of individuals or groups related to a given topic (Owen, 2018). On the other hand, quantitative research is a scientific method of gathering and analyzing numerical data. It is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population (Shah, 2014).

In our study, we will use an interview-guide and questionnaires to collect the data from respondents and use qualitative and quantitative methods to analyze the data to gain a more accurate understanding of the research topic and target population.

3.2 TARGET POPULATION

The target population is a group of people from whom a sample is drawn for measurement. This is the group of people that researchers believe will benefit from a given study (Kombo & Tromp, 2016). The target population is the set of all Airtel money users based in Kanjyongo sector. The study population is a subset of the target population, consisting of 11447 Airtel money users according to (Airtel, 2022) who have agreed to participate in the study.

3.3 SAMPLING PROCEDURES

Sampling procedures are also used to draw samples that are used to draw conclusions about populations (Yilmaz, 2014).

Sampling procedures can be either probability-based or non-probability-based. Probability-based sampling procedures involve random selection from a population such that each element has an equal chance of being selected. Examples of probability-based sampling procedures include simple random sampling, systematic sampling, stratified sampling, and cluster sampling. Non-probability-based sampling procedures do not involve random selection. Instead, elements are selected based on the researcher's judgment. Examples of non-probability-based sampling procedures include convenience sampling, purposive sampling, snowball sampling, and quota sampling. In our research, we are going to use simple random sampling.

3.4 SAMPLE SIZE

Sample size is a part of the population chosen for a survey or experiment (Prof. Essa, 2013). To get a sample size, Yamane's (1967) provided a formula as found in the paper published by University of Florida.

The formula is given as follows:

$$n = \frac{N}{1 + N e^2}$$

Where:

N: Population size,

e: Level of precision equals to 10%

n: Sample size

The sample size comprised of representative sample from Airtel Money, and the following formula helped in calculating the sample size. The Stratified sampling was used for students.

$$\begin{aligned}
 n &= \frac{N}{1 + N e^2} \\
 &= \frac{11447}{1 + 11447(0.1)^2} \\
 &= \frac{11447}{1 + 11447 \times 0.01} \\
 &= \frac{11447}{1 + 114.47} \\
 &= \frac{11447}{115.47} \\
 &= 99.133 \approx 99 \text{ people}
 \end{aligned}$$

3.5 DATA COLLECTION PROCESS

Data collection can be grouped into two major categories: Primary Data and Secondary Data. The methods used to collect primary data usually include interviews, focus groups, surveys and questionnaires, experimentation, and observations whereas methods or tools used to collect secondary data include documents, books, reports, online and other offline publications. In our research, we used mainly a combination of interviews and questionnaires to collect our primary data and online and offline publications to collect secondary data where necessary.

3.5.1 DATA COLLECTION INSTRUMENT

Bryman (2001), O’ Leary (2004) remarks, “Collecting credible data is a tough task, and it is worth remembering that one method of data collection is not inherently better than another.” Therefore, which data collection method to use would depend upon the research goals and the advantages and disadvantages of each method? To collect data, the researcher used both questionnaires and key informant interview, which was structured to gather the information needed to help in answering the main problem.

3.5.1.1 Questionnaires

Questionnaires are a popular data collection method used in thesis writing because they provide a structured means of collecting data from many people (Dillman, 2000). For example, Dillman (2000) found that questionnaires are particularly useful when the researcher is interested in measuring attitudes, beliefs, or behaviors of a population. Questionnaires also offer the advantage of being relatively inexpensive, easy to administer, and providing a way to collect data from a large, geographically dispersed population (Dillman, 2000; Babbie & Mouton, 2011).

3.5.1.2 Interview

Interviews are a common data collection method for thesis writing. They can be used to gather qualitative data from research participants by asking them open-ended questions (Kvale, 2007). The information obtained from interviews can be used to answer research questions and provide insights into the topic.

An interview guide will be developed and used to facilitate the conversations during the collection of primary data from respondents. The interview participants will be chosen using simple random sampling.

3.5.2. Source of data

3.5.2.1 Primary data

Primary data is a type of information that is obtained directly from first-hand sources by means of surveys, observation, or experimentation.

3.5.2.2 Secondary data

Secondary data is information that has been collected by someone else for some other purpose (Yilmaz, 2014). It often exists in published sources such as newspapers, books, and websites, but can also be found in unpublished sources such as surveys and interviews.

3.6 RELIABILITY AND VALIDITY OF MEASUREMENTS

The terms: reliability and validity, are utilized to evaluate the quality of a research project. They characterize the precision with which a technique, strategy, or a test measure something. The consistency with which a method measures something is referred to as reliability. If the same outcome can be attained on a consistent basis utilizing the same procedures with the same conditions, then the measurement is reliable.

To create the study, make the techniques, and document the findings, the researcher will use universal methodologies. The study will guarantee that all the items on the tests reflect the same underlying construct, so that people's answers can be compared. Validity is the priority for people constructing measures, and genuine scientific measurement is the priority for those looking for valid assessment results. Professional judgment and test-retest approaches will be used to decide the content validity and reliability of the study tools.

3.7 DATA ANALYSIS

For data to be effectively communicated to others, it must be analyzed in a precise, consistent, and inclusive manner. The thematic analysis technique was employed to expand existing data and theories on FinTech expansion, financial inclusion, and poverty reduction. Thematic analysis is a process of identifying, analyzing, organizing, characterizing, and reporting themes found within a data collection, which is achieved through a systematic classification process of editing, coding, and identification of variables via tabulation of collected data (Yilmaz, 2014).

Data editing, coding, tabulation, and software analysis are all methods that we might utilize in this study to guarantee that the outcomes acquired are of high quality. The purpose of data editing is to locate flaws that could possibly compromise the validity of the results. Inconsistent values and outliers were detected and modified during the process. Coding involved classifying the data into both quantitative and qualitative categories to make it easier to analyze. Tabulation might be applied to arrange the numeric data in a manner that allowed for comparison and statistical analysis. Lastly, a computer program called SPSS and MS Excel will be used if necessary to assist with the analysis and representation of the research findings to determine the frequency, percentages, and average of certain data sets. The presentation of findings will include text, tables, graphs, and other visuals to help the readers understand the research outcomes.

SUMMARY

In this chapter, the research design, methods, and tools that will be used. The researchers also determined. Once the sample size and population are determined, they will be included here too. This chapter highlighted a conceptual framework reflecting the relationship between the independent variable which is Financial Technology companies, and dependent variable which is financial inclusion.

CHAPTER FOUR: DATA PRESENTATION, INTERPRETATIONS, ANALYSIS AND SUMMARY

4.0 INTRODUCTION

This chapter presents the analysis and interpretation of results from data collected in relation to the study objectives. The data collected was presented in form of descriptive statistical tables and percentages and frequency. This chapter is divided into three parts, the first part presents the different data gathered while carrying out this research, their interpretation and analysis, part two presents the discussion of the result and part three deals with summary of Findings.

4.1 PRESENTATION OF FINDINGS

The researcher presents the gathered data from the respondents by considering the demographic information of respondents about the Gender, age, Education level, current Marital status, and attitude of respondents about the Role of financial technology companies in promoting financial inclusion in Kanjongo sector.

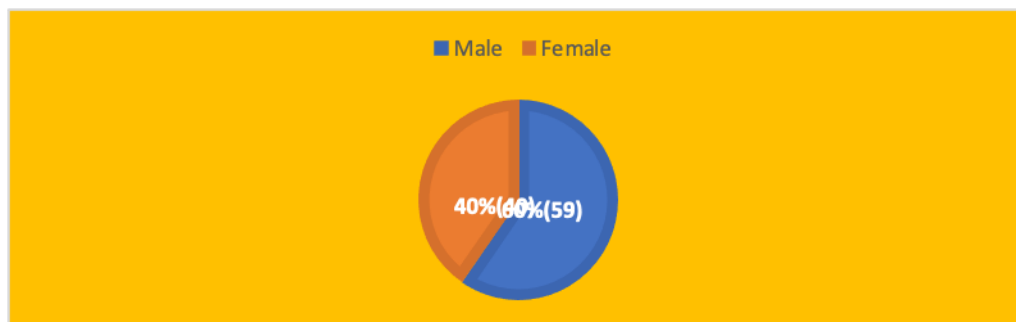
4.1.1 Demographic profile of respondents

Demographic profile of respondents contains gender groups and respondent's age.

4.1.1.1 Respondents gender groups

While carrying out this research the ideas of both sex (male and female) were used by considering putting the practical the policy and regulations of gender balance, it was shown by the figure below with the percentages and frequency.

Figure 2: Gender of respondents



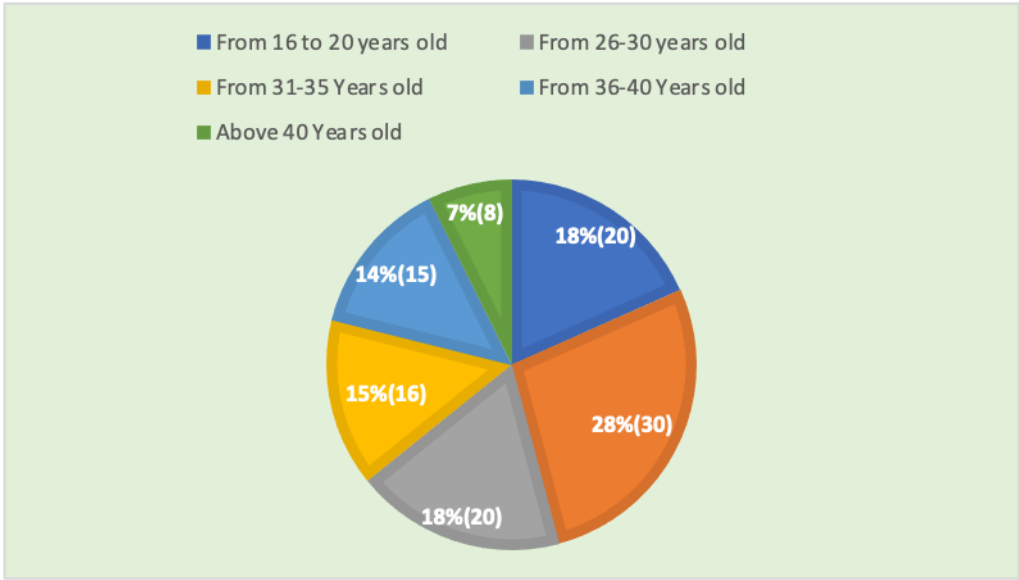
Source: Primary data, December 2022

The figure above shows the number of respondents according to the Gender, 59 were the number of respondents who were male and 40 were the number of respondents who were Female.

4.1.1.2 Respondents Age

The age of respondents was facilitating our research with quality of information regarding to questions asked by researchers.

Figure 3: Respondents age groups



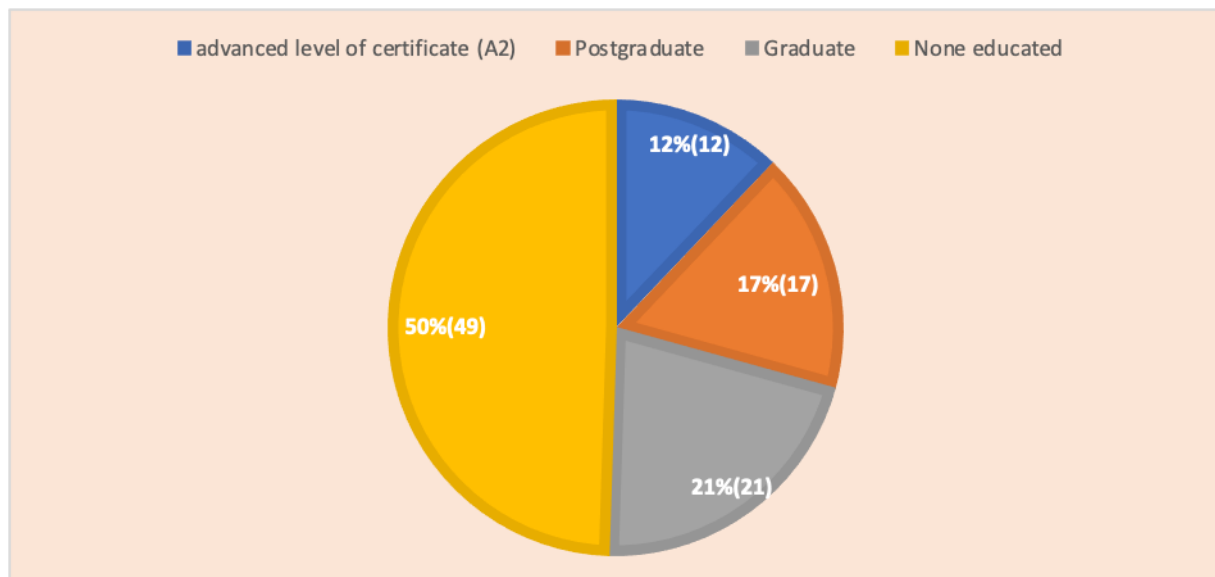
Source: Primary data, December 2022

The Figure shows the age group of respondents, 20 were the respondents located on age group From 16 to 20 years old, 30 were the respondents located on age group from 21 to 25 years old, 20 were the respondents located on age group from 26 to 30 years old, 16 were the respondents located on age group from 31to 35 years old, 15 were the respondents located on age group from 26 to 40 years old and 8 were the respondents located on age group.

4.1.1.3 Findings on the respondent's education level

The education level of respondents facilitates the researchers on her research with high level of performance regarding to the questions prepared by the researchers.

Figure 5: Respondent's level of education



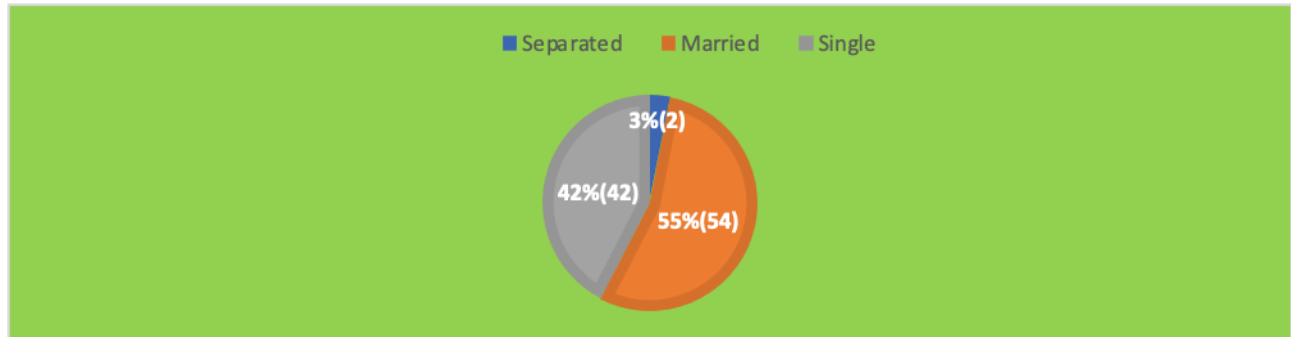
Source: Primary data, December 2022

The figure above shows the number of respondents according to the education level, 12 were the respondents who have advanced level of certificate (A2), 17 were the respondents who were Postgraduate and 21 were the respondents who were Graduate and none of above 50 were the respondents who were none educated.

4.1.1.4 Findings on the respondent's current marital status

The marital status of respondents who single, Married and Divorced/Separated was facilities the study by the following Figure.

Figure 4: Current Marital status of respondents



Source: Primary data, December 2022

The figure above shows the number of respondents according to their Current Marital status of respondents, 2 were the respondents who was separated, 54 were the respondents who were Married and 42 were the respondents who were Single.

4.1.1.5: Information based on how long respondents have been using AirTel Money.

The respondents who have High level of Experience were used by getting quality information.

Table 1: Period of respondents have been using AirTel Money

Period of respondents have been using AirTel Money	Frequency	Percentages %
From 1 to 3 years	40	30
From 4 to 7 years	26	20
From 8 to 11 years	24	35
Above 11 years	9	15
Total	99	100

Source: Primary data, December 2022

The table above shows the Period of respondents have been using AirTel Money, 40 users of AirTel money from 1 to 3 years, 26 users of AirTel money from 4 to 7 years, 24 users of AirTel money from 8 to 11 years and 9 users of AirTel money above 11years.

4.2. FINDINGS RELATED TO THE SPECIFIC OBJECTIVES

4.1.2.1. Findings on the Contribution of Financial Technology Products to the Financial Inclusion

The contribution of Financial Technology products to the financial inclusion were better customer segmentation, More Customer-Centric Services, Fraud Detection and Security Protocols, Optimizing Operations and Credit Risk Scoring. it was shown by the table below with the following terms: SD= Strongly disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly agree.

Table 2: The contribution of Financial Technology products to the financial inclusion

Items	SD		D		N		A		SA		Total	
	F	P%	F	P%	F	P%	F	P%	F	P%	F	P%
Better customer segmentation is the contribution of Financial Technology products to the financial inclusion	0	0%	0	0%	0	0%	41	41%	58	59%	99	100%
More Customer-Centric Services is the contribution of Financial Technology products to the financial inclusion	0	0%	0	0%	0	0%	40	40%	59	60%	99	100%
Fraud Detection and Security Protocols is the contribution of Financial Technology products to the financial inclusion	0	0%	0	0%	20	20%	31	31%	48	49%	99	100%
Optimizing Operations is the contribution of Financial Technology products to the financial inclusion	0	0%	0	0%	0	0%	44	44%	55	56%	99	100%
Credit Risk Scoring is the contribution of Financial Technology products to the financial inclusion	0	0%	0	0%	0	0%	42	42%	57	58%	99	100%

Source: Primary data, December 2022

The table above shows the number of respondents according to the contribution of Financial Technology products to the financial inclusion, 41 were the number of respondents who were agree that the Better customer segmentation was the contribution of Financial Technology products to the financial inclusion and 58 were the number of respondents who were strong agree that the Better customer segmentation was the contribution of Financial Technology products to the financial inclusion, 40 were the number of respondents who were agree that the More Customer-Centric Services was the contribution of Financial Technology products to the financial inclusion and 59 were the number of respondents who were strong agree, 20 were the number of respondents who were neutral that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion and 31 were the number of respondents who were agree that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion and 48 were the number of respondents who were strong agree that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion, 44 were the number of respondents who were agree that the Optimizing Operations is the contribution of Financial Technology products to the financial inclusion and 55 were the number of respondents who were strong agree that the Optimizing Operations is the contribution of Financial Technology products to the financial inclusion and 42 were the number of respondents who were agree that the Credit Risk Scoring is the contribution of Financial Technology products to the financial inclusion and 57 were the number of respondents who were strong agree that the Credit Risk Scoring was the contribution of Financial Technology products to the financial inclusion.

4.1.2.3. Findings on the challenges to adopt financial technology solution in promoting financial inclusion.

The challenges to adopt financial technology solution in promoting financial inclusion were System vulnerabilities, Digital identities, Ownership of data, Cloud migration and User retention and experience it was shown by the table below with the following terms: SD= Strongly disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly agree

Table 3: The challenges to adopt financial technology solution in promoting financial inclusion

Items	SD		D		N		A		SA		Total	
	F	P%	F	P%	F	P%	F	P%	F	P%	F	P%
System vulnerabilities is the challenges to adopt financial technology solution in promoting financial inclusion	0	0%	0	0%	0	0%	42	42%	57	57%	99	100%
Digital identities are the challenges to adopt financial technology solution in promoting financial inclusion	0	0%	0	0%	0	0%	39	39%	60	60%	99	100%
Ownership of data is the challenges to adopt financial technology solution in promoting financial inclusion	0	0%	0	0%	20	20%	32	32%	47	48%	99	100%
Cloud migration is the challenges to adopt financial technology solution in promoting financial inclusion	0	0%	0	0%	0	0%	30	30%	69	69%	99	100%
User retention and experience is the challenges to adopt financial technology solution in promoting financial inclusion	0	0%	0	0%	0	0%	43	43%	56	67%	99	100%

Source: Primary data, December 2022.

The table above shows the number of respondents according to the challenges to adopt financial technology solution in promoting financial inclusion, 42 were the number of respondents who were agree that the System vulnerabilities was the challenges to adopt financial technology

solution in promoting financial inclusion and 57 were the number of respondents who were strong agree that the System vulnerabilities is the challenges to adopt financial technology solution in promoting financial inclusion, 39 were the number of respondents who were agree that the digital identities is the challenges to adopt financial technology solution in promoting financial inclusion and 60 were the number of respondents who were strong agree that the Digital identities was the challenges to adopt financial technology solution in promoting financial inclusion,20 were the number of respondents who were neutral that the Ownership of data was the challenges to adopt financial technology solution in promoting financial inclusion, 32 were the number of respondents who were agree that the Ownership of data was the challenges to adopt financial technology solution in promoting financial inclusion and 47 were the number of respondents who strong agree that the Ownership of data was the challenges to adopt financial technology solution in promoting financial inclusion, 30 were the number of respondents who were agree that the Cloud migration was the challenges to adopt financial technology solution in promoting financial inclusion and 69 were the number of respondents who were strong agree that the Cloud migration was the challenges to adopt financial technology solution in promoting financial inclusion and 43 were the number of respondents who were agree that the User retention and experience was the challenges to adopt financial technology solution in promoting financial inclusion and 56 were the number of respondents who were strong agree that the User retention and experience is the challenges to adopt financial technology solution in promoting financial inclusion.

4.1.2.4. Findings on Possible solutions to adopt Fintech solutions in promoting financial inclusion.

Possible solutions to adopt Fintech solutions in promoting financial inclusion were the Adopting secure-by-design mindset, protecting sensitive data, using software composition analysis and Final thoughts, it was shown by the table below with the following terms: SD= Strongly disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly agree

Table 4: Possible solutions to adopt Fintech solutions in promoting financial inclusion.

Items	SD		D		N		A		SA		Total	
	F	P%	F	P%	F	P%	F	P%	F	P%	F	P%
Adopting secure-by-design mindset is Possible solutions to adopt Fintech solutions in promoting financial inclusion	0	0%	0	0%	0	0%	44	44%	55	56%	99	100%
Protecting sensitive data is Possible solutions to adopt Fintech solutions in promoting financial inclusion	0	0%	0	0%	0	0%	42	42%	57	58%	99	100%
Using software composition analysis is Possible solutions to adopt Fintech solutions in promoting financial inclusion	0	0%	0	0%	19	19%	29	29%	51	52%	99	100%
Final thoughts are Possible solutions to adopt Fintech solutions in promoting financial inclusion	0	0%	0	0%	0	0%	40	40%	59	60%	99	100%

Source: Primary data, December 2022

The table above shows the number of respondents according to the Possible solutions to adopt Fintech solutions in promoting financial inclusion, 44 were the number of respondents who were agree that the Adopting secure-by-design mindset was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 55 were the number of respondents who were strong

agree that Adopting secure-by-design mindset was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 42 were the number of respondents who agree that the Protecting sensitive data was Possible solutions to adopt Fintech solutions in promoting financial inclusion and 57 were the number of respondents who were strong agree that the Protecting sensitive data was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 19 were the number of respondents who were neutral that the Using software composition analysis was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 29 were the number of respondents who were agree that the Using software composition analysis was the Possible solutions to adopt Fintech solutions in promoting financial inclusion and 51 were the number of respondents who were strong agree that the Using software composition analysis was the Possible solutions to adopt Fintech solutions in promoting financial inclusion, 40 were the number of respondents who were agree that the Final thoughts was Possible solutions to adopt Fintech solutions in promoting financial inclusion and 59 were the number of respondents who were strong agree that the Final thoughts was Possible solutions to adopt Fintech solutions in promoting financial inclusion.

4.2. DISCUSSION OF FINDINGS

4.2.1 The contribution of Financial Technology products to the financial inclusion

According to the contribution of Financial Technology products to the financial inclusion, 41% was the number of respondents who were agree that the Better customer segmentation was the contribution of Financial Technology products to the financial inclusion and 58% was the number of respondents who were strong agree that the Better customer segmentation was the contribution of Financial Technology products to the financial inclusion, 40% was the number of respondents who were agree that the More Customer-Centric Services was the contribution of Financial Technology products to the financial inclusion and 60% was the number of respondents who were strong agree , 20% was the number of respondents who were neutral that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion and 31% was the number of respondents who were agree that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion and 49% was the number of respondents who were strong agree that the Fraud Detection and Security Protocols was the contribution of Financial

Technology products to the financial inclusion, 44% was the number of respondents who were agree that the Optimizing Operations is the contribution of Financial Technology products to the financial inclusion and 56% was the number of respondents who were strong agree that the Optimizing Operations is the contribution of Financial Technology products to the financial inclusion and 42% was the number of respondents who were agree that the Credit Risk Scoring is the contribution of Financial Technology products to the financial inclusion and 58% was the number of respondents who were strong agree that the Credit Risk Scoring was the contribution of Financial Technology products to the financial inclusion.

4.2.2 The challenges to adopt financial technology solution in promoting financial inclusion.

According to the challenges to adopt financial technology solution in promoting financial inclusion, 42% was the number of respondents who were agree that the System vulnerabilities was the challenges to adopt financial technology solution in promoting financial inclusion and 57% was the number of respondents who were strong agree that the System vulnerabilities is the challenges to adopt financial technology solution in promoting financial inclusion, 39% was the number of respondents who were agree that the Digital identities is the challenges to adopt financial technology solution in promoting financial inclusion and 60% was the number of respondents who were strong agree that the Digital identities was the challenges to adopt financial technology solution in promoting financial inclusion, 20% was the number of respondents who were neutral that the Ownership of data was the challenges to adopt financial technology solution in promoting financial inclusion, 32% was the number of respondents who were agree that the Ownership of data was the challenges to adopt financial technology solution in promoting financial inclusion and 48% was the number of respondents who strong agree that the Ownership of data was the challenges to adopt financial technology solution in promoting financial inclusion, 30% was the number of respondents who were agree that the Cloud migration was the challenges to adopt financial technology solution in promoting financial inclusion and 69% was the number of respondents who were strong agree that the Cloud migration was the challenges to adopt financial technology solution in promoting financial inclusion and 43% was the number of respondents who were agree that the User retention and experience was the challenges to adopt financial technology solution in promoting financial inclusion and 67% was the number of respondents who were strong agree that the User retention

and experience is the challenges to adopt financial technology solution in promoting financial inclusion.

4.2.3 The Possible solutions to adopt Fintech solutions in promoting financial inclusion.

The Possible solutions to adopt Fintech solutions in promoting financial inclusion, 44% was the number of respondents who were agree that the Adopting secure-by-design mindset was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 56% was the number of respondents who were strong agree that Adopting secure-by-design mindset was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 42% was the number of respondents who agree that the Protecting sensitive data was Possible solutions to adopt Fintech solutions in promoting financial inclusion and 58% was the number of respondents who were strong agree that the Protecting sensitive data was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 19% was the number of respondents who were neutral that the Using software composition analysis was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 29% was the number of respondents who were agree that the Using software composition analysis was the Possible solutions to adopt Fintech solutions in promoting financial inclusion and 52% was the number of respondents who were strong agree that the Using software composition analysis was the Possible solutions to adopt Fintech solutions in promoting financial inclusion, 40% was the number of respondents who were agree that the Final thoughts was Possible solutions to adopt Fintech solutions in promoting financial inclusion and 60% was the number of respondents who were strong agree that the Final thoughts was Possible solutions to adopt Fintech solutions in promoting financial inclusion.

SUMMARY OF FINDINGS

The contribution of Financial Technology products to the financial inclusion were Better customer segmentation, More Customer-Centric Services, Fraud Detection and Security Protocols, Optimizing Operations and Credit Risk Scoring, The challenges to adopt financial technology solution in promoting financial inclusion were System vulnerabilities, Digital identities, Ownership of data, Cloud migration and User retention and experience and Possible solutions to adopt Fintech solutions in promoting financial inclusion were the Adopting secure-by-design mindset, Protecting sensitive data, Using software composition analysis and Final thoughts.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

Based on the findings presented in the previous chapter, this chapter draws conclusions, provided recommendations and suggested areas for further research.

5.1. CONCLUSION

The study was conducted on Role of Financial Technology Companies in promoting Financial Inclusion in Nyamasheke district. This study has three specific objectives that are mentioned below. To evaluate the contribution of Financial Technology products in promoting financial inclusion, to identify challenges to adopt financial Technology solutions in promoting financial inclusion, and to find out possible solutions to adopt Financial Technology solutions in promoting financial inclusion. Target populations was 11447 people and sample size were 99 people, qualitative and quantitative research approaches was used, descriptive research design was used and purposive and stratified sampling procedures was used, Microsoft Excel was used to analysis the data our finding were shown that the contribution of Financial Technology products to the financial inclusion, 41% was the number of respondents who were agree that the Better customer segmentation was the contribution of Financial Technology products to the financial inclusion , 40% was the number of respondents who were agree that the More Customer-Centric Services was the contribution of Financial Technology products to the financial inclusion and 60% was the number of respondents who were strong agree , 20% was the number of respondents who were neutral that the Fraud Detection and Security Protocols was the contribution of Financial Technology products to the financial inclusion, the challenges to adopt financial technology solution in promoting financial inclusion, 42% was the number of respondents who were agree that the System vulnerabilities was the challenges to adopt financial technology solution in promoting financial inclusion and 57% was the number of respondents who were strong agree that the System vulnerabilities is the challenges to adopt financial technology solution in promoting financial inclusion,39% was the number of respondents who were agree that the Digital identities is the challenges to adopt financial technology solution in promoting financial inclusion. The Possible solutions to adopt Fintech solutions in promoting

financial inclusion, 56% was the number of respondents who were strongly agree that Adopting secure-by-design mindset was Possible solutions to adopt Fintech solutions in promoting financial inclusion, 42% was the number of respondents who agree that the Protecting sensitive data was Possible solutions to adopt Fintech solutions in promoting financial inclusion.

In brief, Financial Technology penetrate the economic environment it promotes financial inclusion by providing access to finance to all individuals.

5.2 RECOMMENDATIONS

Below are the research-based recommendations on how to invigorate financial inclusion and spur the digital revolution in the vibrant Kanjongo sector: **Broaden Internet Connectivity:** Let's focus on escalating internet connectivity in the Nyamasheke district, with a spotlight on the Kanjongo sector. Infrastructure development projects, like erecting more cell towers or expanding broadband coverage, could be the key. More internet access means more opportunities to interact with FinTech solutions.

Boost Financial Literacy: This could encompass engaging workshops, hands-on training programs, and impactful awareness campaigns, all designed to enlighten individuals about the perks and practicality of FinTech solutions. With enhanced financial literacy, we can break down barriers of fear and foster trust in these groundbreaking technologies.

Craft Mobile-Friendly FinTech Solutions: It's time to acknowledge the pivotal role of mobile devices in the region and ensure our FinTech solutions are mobile-friendly. This way, people can tap into financial services conveniently through their smartphones, often their primary internet access device in many burgeoning regions.

Fortify Data Protection and Security: Championing the use of unbreakable encryption, secure authentication methods, and routine security audits is crucial to safeguarding sensitive financial data. A proven dedication to privacy and security will instill trust among potential users.

Cultivate Public-Private Partnerships: Let's bridge the gap between public and private sectors to fuel the growth of FinTech startups in the Nyamasheke district. This could mean providing financial backing, crafting supportive regulatory frameworks, and offering technical aid to

entrepreneurs and innovators in the FinTech realm. These collaborations can amalgamate resources, expertise, and networks to accelerate the growth of a thriving FinTech ecosystem.

5.3 SUGGESTIONS FOR FURTHER RESEARCHERS

Based on the results of this study, further studies areas in the field could focus for our suggestion on:

- ❖ The effect of Financial Technology Companies on Traditional Banks.
- ❖ Effects of Financial Technology on stock returns.
- ❖ The impact of Fintech startups on financial institution's performance and default risk.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

SECTION I: BACKGROUND INFORMATION/AMAKURU Y'IBANZE

Dear respondents

We Françoise Uwimpaye and La Reine Marie Uwicyeza Uwerade are undergraduate students at Kibogora Polytechnic (KP), faculty of Business and Development Studies, department of Economics and Management. We are conducting research in partial fulfillment of the requirements for the award of bachelor's degrees with honors in Economics and Management. This questionnaire is a part of this research, which is designed on the topic entitled "The purpose of this study is to explore the role of financial technology companies in promoting financial inclusion in the Nyamasheke district.

We kindly request your assistance by answering the questions as concisely and honestly as possible. The information you provide will be treated confidentially, highly valued, and used strictly for the purpose of this research.

Your support is highly appreciated.

Françoise Uwimpaye

La Reine Marie Uwicyeza Uwerade

GENERAL INFORMATION/AMAKURU RUSANGE

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENT/IBIRANGA USUBIZA

Instructions/Amabwiriza: Tick with a in the box corresponding to your answer/ Shyira ikimenyetso mu kazu gateganye n'igisubizo cyawe.

Demographic Chartertstitics	Sub-variables	Tick Here
Gender	Male	[<input type="checkbox"/>]
	Female	[<input type="checkbox"/>]
Age group	18-25	[<input type="checkbox"/>]
	26-35	[<input type="checkbox"/>]
	36-45	[<input type="checkbox"/>]
Education level	Primary School	[<input type="checkbox"/>]
	Secondary School	[<input type="checkbox"/>]
	Diploma	[<input type="checkbox"/>]
	Degree	[<input type="checkbox"/>]
Marital Status	Married	[<input type="checkbox"/>]
	Single	[<input type="checkbox"/>]
	Divorced	[<input type="checkbox"/>]
	Widowed	[<input type="checkbox"/>]

SECTION II: QUESTIONS RELATED TO THE CONTRIBUTION OF FINANCIAL TECHNOLOGY PRODUCTS TO THE FINANCIAL INCLUSION IN NYAMASHEKE DISTRICT.

1. In your opinion:

- a) Do you think that AirTel money simplifies how its users access financial services?
/Ukurikije uko ubibona, ubona AirTel money yorohereza abayikoresha kubona serivisi zijyanye n'iby'amafaranga? (Kubitsa, kubikoza, kohereza amafaranga, n'izindi nkizo).

Yes/Yego

No/Oya

- b) If your answer was Yes or No, please elaborate below/Niba igisubizo cyawe ari Yego cyangwa Oya, tanga ubusobanuro bwisumbuyeho hano hasi

2. Do you believe that having an easy access to financial services through AirTel money help you and the other users in improving personal financial health? Explain here below. / Ese wizera ko kugira uburyo bworoshye bwo gukoresha servisi z'amafaranga biciye kuri AirTel money bifasha abazikoresha nawe ubwawe mu kwiteza imbere? (gukoresha neza cyangwa gucunga neza amafaranga). Sobanura hano hasi.

3. State at what degree you agree with statements below related to how AirTel money has changed how you interact with money/Erekana urugero wemeranywa hasi hano ku bijyanye n'uko AirTel money yahinduye uburyo ukoreshamo amafaranga.

Measuring scale/Uburyo bwo gusubiza ibibazo:

1= Strongly Agree (SA)/Ndemeranywa nabyo cyane

2= Agree (A)/Ndemeranywa nabyo

3= Neutral (N)/Ndifashe

4= Strongly disagree (SD)/Ntabwo nemeranywa nabyo cyane

5= Disagree (DA)/Ntabwo nemeranywa nabyo.

	Statement/Ingingo	SA (1)	S (2)	N (3)	SD (4)	DA (5)
1	I have easy access to financial services than ever before/Mbona serivisi zijyanye n'iby'amafaranga mu buryo bworoshye kurusha mbere					
2	It has increased my effectiveness and efficiency in managing my money/Yamfashije gukoresha neza amafaranga yanjye					
3	I get paid easily, I do not need to go to the bank, and I can transfer money safely/Nishyurwa mu buryo bworoshye, sinkenera kujya kuri banki, kandi nkohera amafaranga mu buryo bwizewe					
4	I understand better financial services and how they work/Byampaye gusobanukirwa byisumbuye ibijyanye na serivisi z'amafaranga n'uko zikora					

The contribution of Financial Technology products to the financial inclusion

No	Questions	SD	D	N	A	SA
the contribution of Financial Technology products to the financial inclusion						
1	Better customer segmentation is the contribution of Financial Technology products to the financial inclusion					
2	More Customer-Centric Services is the contribution of Financial Technology products to the financial inclusion					
3	Fraud Detection and Security Protocols is the contribution of Financial Technology products to the financial inclusion					
4	Optimizing Operations is the contribution of Financial Technology products to the financial inclusion					
5	Credit Risk Scoring is the contribution of Financial Technology products to the financial inclusion					

SECTION III: QUESTIONS RELATED TO THE CHALLENGES TO ADOPT FINANCIAL TECHNOLOGY SOLUTIONS IN PROMOTING FINANCIAL INCLUSION IN NYAMASHEKE DISTRICT.

No	Questions	SD	D	N	A	SA
the challenges to adopt financial technology solution in promoting financial inclusion						
1	System vulnerabilities is the challenges to adopt financial technology solution in promoting financial inclusion					
2	Digital identities is the challenges to adopt financial technology solution in promoting financial inclusion					
3	Ownership of data is the challenges to adopt financial technology solution in promoting financial inclusion					
4	Cloud migration is the challenges to adopt financial technology solution in promoting financial inclusion					
5	User retention and experience is the challenges to adopt financial technology solution in promoting financial inclusion					

SECTION IV: QUESTIONS RELATED TO THE POSSIBLE SOLUTIONS TO ADOPT FINTECH SOLUTIONS IN PROMOTING FINANCIAL INCLUSION IN NYAMASHEKE DISTRICT.

No	Questions	SD	D	N	A	SA
The Possible solutions to adopt Fintech solutions in promoting financial inclusion						
1	Adopting secure-by-design mindset is Possible solutions to adopt Fintech solutions in promoting financial inclusion					
2	Protecting sensitive data is Possible solutions to adopt Fintech solutions in promoting financial inclusion					
3	Using software composition analysis is Possible solutions to adopt Fintech solutions in promoting financial inclusion					
4	Final thoughts is Possible solutions to adopt Fintech solutions in promoting financial inclusion					

Thank you for your collaboration!

APPENDIX 2: RESEARCH LETTER



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Kibogora, December 28, 2022



Approved & Received
[Signature]

Dear Sir/ Madam,

RE: Research for Dissertation Paper

In view to accomplish the academic requirements, Kibogora Polytechnic (KP) has students in the last year ending the Bachelor studies in Economics and Management, that's why we recommend the named *UWIMUKYE Françoise & UWICYERA YVERA wa Reme Mowe* to conduct a research for dissertation paper in the institution under your responsibility.

This exercise will be carried out in one month, from from January or February or March 2023; and the student will accomplish the data collection relating to the research topic from different stakeholders and partners of your institution such as administration staff, Managers, Unit Support, Cross cutting staff, Local Leaders, Farmers, Communities and other relevant key informants. Then after, student will compile findings reports which will be shared with all stakeholders and researchers from academic and surrounding communities.

We, therefore, request your usual collaboration and facilitation towards completion of this research. Any assistance rendered to the student in data collection to accomplish the dissertation paper will be highly appreciated by Kibogora Polytechnic.

Dr. Mukamusoni Dariya, PhD

The Vice Chancellor, KP

