DECISIONAL FACTORS AFFECTING CUSTOMERS' INTENTION TO ADOPT DIGITAL FINANCIAL SERVICES FOR BANKS IN MALAWI'S URBAN AREAS

MASTER OF BUSINESS ADMINISTRATION DISSERTATION

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UNIVERSITY OF MALAWI
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MASTER OF BUSINESS ADMINISTRATION DISSERTATION

By

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(BAC)

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DECLARATION

I, Chikumbutso Chiluzi, declare that this MBA Dissertation, submitted for the award of Master of Business Administration at University of Malawi, the Polytechnic, is wholly my work unless otherwise referenced or acknowledged. Further, no part of this dissertation has been submitted anywhere for an award of any other degree or examination to any other university or college.

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CERTIFICATE OF APPROVAL

We, the undersigned, hereby certify that we have read and approve for examination by the University of Malawi, Polytechnic this dissertation entitled "*Decisional Factors Affecting Customers' Intention to Adopt Digital Financial Services for Banks in Malawi's Urban Areas*".

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DEDICATION

This dissertation is dedicated to my wife Ndindase Chiluzi and my two daughters Uwemi Chiluzi and Uthando Chiluzi. Their presence in my life has been the driving force and motivation to see me complete this course.

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I would like to thank the Almighty God for granting me the wisdom and strength to pursue this academic course. Without His help and mercy, it would have been difficult to undertake and finish this research project. May His name be forever glorified, in Jesus' name. Amen.

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My indebtedness also goes to my mother for all her encouragements and sacrifices of prayer which have anchored me from the day I started studying for this course to the day that I completed it. May God bless her for me. Lastly, I thank my wife Ndindase Chiluzi for her continued support and patience through all the sleepless nights doing school. Her levels of understanding cannot go unnoticed. I am forever grateful for standing with me every step of the way.

ABSTRACT

Over the past 10 years, commercial banks in Malawi have strived to provide innovative banking platforms that encourage the adoption of digital financial services aimed at reducing operational inefficiencies resulting from queuing and prolonged customer waiting times inside urban banking halls. However, there is still low adoption of digital financial services in Malawi with prior studies focusing on the benefits of digital banking to customers and financial institutions rather than its determinants. The aim of this study was therefore to assess decisional factors that affect customers' intention to adopt and use digital financial services for bank service centres operating in urban areas of Malawi. Technology acceptance model was the main theoretical framework that underpinned this study. A total of 384 questionnaires were administered across the four major cities of Malawi. However, 345 questionnaires were received out of the distributed 384 yielding a response rate of 89.8%. Data collected was entered into Stata statistical software and analysed using logistic regression analysis. The study revealed and concluded that convenience and trust are the major factors influencing customers' intention to adopt and use digital financial services. The study, however, concluded that subjective norms have little influence on customers' intention to adopt digital banking services despite a relative section of respondents between the ages of 55 – 60 years revealing that opinions of people influential to them mattered on their decision to use digital banking in performing transactions of higher values. Respondents within this category admitted that people's perception on the vulnerabilities of digital banking services enhanced their decision to physically visit banking halls for certain important transactions or payments. However, this age group only accounted for 7% of the respondents, hence deemed not significant to form a reasonable inference that subjective norms had an influence on digital banking adoption. The study, therefore, recommends that commercial banks should enhance security of digital banking platforms to safeguard customer funds and personal information which will in turn increase trust towards digital banking services. Furthermore, financial institutions must also improve on user experience especially on the time taken to assist customers for failed transactions as increased instances force customers to use traditional banking models of physically visiting banking halls for services duly accessible on digital banking platforms. Further study areas should include in-depth research on challenges that commercial banks face in their efforts towards full adoption of digital banking in Malawi including the effectiveness of awareness campaigns used.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS AND ACRONYMS

APA	American Psychological Association
ATM	Automated Teller Machine
COVID 19	Corona Virus Disease
DFS/DBS	Digital Financial Services/Digital Banking Services
DOI	Diffusion of Innovation
E-CARD	Electronic Card Service
E.G.	Exempli Gratia (For Example/ For Instance)
E-PAYMENT	Electronic Payment System
E-SERVICE	Electronic Service
FINTECH	Financial Technology
ICT	Information and Communication Technology
M-BANKING	Mobile Banking
NSO	National Statistical Office
OIBM	Opportunity International Bank of Malawi
PEOU	Perceived Ease of Use
PLC	Public Limited Company
PIN	Personal Identification Number
PU	Perceived Usefulness
POS	Point of Sale
RBM	Reserve Bank of Malawi
SIM	Subscriber Identity Module
SMS	Short Message Service
SN	Subjective Norms
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TV	Television
USD	United States of America Dollar
USSD	Unstructured Supplementary Service Data
VIF	Variance Inflation Factor

DEFINITION OF TERMS

Customer

A customer, in this context, is defined as a consumer or user of digital financial services in Malawi. A consumer or user here means a real human being with the intellectual capacity to perform a transaction on any digital banking platform as defined by Chindudzi et al. (2020).

Digital financial services

Digital Financial Services refer to all banking services which can be accessed by customers electronically without the need of any human intervention or physical aid of a bank representative (Rivai, 2021). They include the use of all electronic banking platforms which enable customers have access to their bank accounts through mobile phone enabled USSDs, SMSs and smart phone applications (mobile banking), internet banking and the automated teller machines for remote and seamless interaction with a financial institution.

Intention to adopt

Intention to adopt, in respect of digital financial services, implies customer's ability and willingness to accept and start using the available digital banking services for purposes of enhancing customer satisfaction and improving operational efficiencies of commercial banks.

Similarly, Chindudzi et al. (2020) defined intention to adopt as a process that involves not only the willingness but also the desire to utilise digital banking technologies with the purpose of enhancing customer experiences, streamlining operations and improving the overall efficiency within the banking sector.

Operational efficiency

Operational efficiency in financial institutions refers to the process of enhancing operations of commercial banks by delivering the desired banking services to customers with minimal waiting time, speed of service delivery and increased customer satisfaction which would in turn enhance customer loyalty towards banking services (Sharma, 2016). Service delivery in banks therefore tends to be personal as customers are either served immediately or join a queue if the system is busy (Kasum et al., 2006). To achieve sustained competitive advantage over each other, banks are now offering various digital banking platforms to ensure that customers get basic financial services speedily while at the same time maintaining operational efficiency (Sarel & Marmorstein, 2003).

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The emergence of new technologies across the globe has compelled many organisations within the financial services sector to embrace the possibility of incorporating innovative and mordenised ways of delivering seamless digital banking services with the aim of meeting the demands of customers and stay relevant in the ever-changing digital environments. The global economic landscape has forced financial institutions to stay abreast with changes in consumer tastes with regard to advancements required to develop more simplified but robust digital platforms that enable both individual and corporate customers to perform various financial related transactions electronically without the need for physical contact with providers of such services (Sojobi et al., 2021). The fierce competition within the financial services industry has also left service providers with no choice but to come up with innovative solutions that allow for better and satisfactory digital customer experience. Globally, financial institutions have since identified key performance indicators for satisfied customer service management which include the reduction in customer waiting times (speed) and the availability of services irrespective of time and place throughout a 24-hour period (Zhang et al., 2018).

Locally, financial institutions have also been striving to meet performance and regulatory requirements set by other well established international financial service organisations. This has placed a duty on commercial banks in the country to invest in new and modern technologies allowing them to be in tandem with global standards on digital banking services. Until early 2000s, most of the financial institutions in Malawi were still operating using traditional banking models of having to physically visit banking halls to perform even the basic of financial transactions with Automated Teller Machines (ATMs) as the only identifiable technology that customers would use without requiring their physical presence inside a banking hall. However, according to Sojobi et al. (2021), even the use of an ATM has always been considered as a semi-digital means of connecting to one's bank account as a customer would still need to physically walk to a near bank building or service station to perform a financial related transaction such as cash withdrawal, balance inquiry or PIN change.

1.1.1 Decisional factors affecting customers' intention to adopt digital financial services

There are a number of factors which influence a customer to make a decision on whether to adopt certain technological inventions or not. Normally, a customer is influenced to make a decision regarding their intention to accept new technologies based on a number of factors such as one's levels of education, peer pressure (social influence or subjective norms), trust issues associated with the technology in question as well as how convenient the technological services are (Malaquias et al., 2018). The level of education helps one to make an informed decision regarding the intention to accept or adopt digital advancements based on previously acquired knowledge and understanding which may be different from a decision made by someone who is unlearned.

Similarly, social influences and subjective norms do impact how one decides to accept or reject new technologies relative to the perceptions of people who are influential or valuable to them. This is also known as peer pressure (Taylor & Todd, 1995). On the other hand, a customers' intention to use certain technological inventions is affected by three trust issues which include privacy associated with the technology, reliability of the technological platform and the security or robustness of the said platform. All these influence how much a customer intents to trust and use a digital service for the foreseeable future (Alalwan et al., 2017).

Finally, any rational person considers perceived usefulness as well as the ease of use before deciding if he or she intends to adopt or use a digital financial service. According to Davis's technology acceptance model (TAM), both perceived usefulness and ease of use bring about convenience of use which in turn influences a customer's intention to accept or refuse new technologies (Foroughi et al., 2019).

Factors of subjective norms, trust and convenience are therefore some of the major influences of customers' intention to adopt new technologies in which have since been investigated in this study.

1.1.2 The scope of digital financial services adoption

In broad terms, digital financial services comprise a range of financial services such as bill payments, funds transfer, savings and remittances delivered through various electronic channels like mobile phones, tablets, and computers. They involve use of mobile banking and online banking platforms, as well as e-card services (credit and debit cards) accessed through the Unstructured Supplementary Service Data (USSD) short codes and internet as means of remotely connecting one's bank account to perform various financial-related transactions (Asante & Baafi, 2022). Despite

the argument on ATMs being semi-digital infrastructures, they are still considered a form of digital banking as they enable customers to complete basic electronic transactions without the physical aid of a bank representative.

According to the National Statistical Office (2019), the 2018 population census revealed that out of the 4 million households in Malawi, only 2.1 million had access to mobile phones (52 percent) whereas only 1.1 million households (28 percent) had access to tablets and computers. This paints a gloomy picture that just a little over half of the total households in the country have the capability to execute financial related transactions using cell phones. Apparently, the use of mobile banking platforms does not require technical knowledge as long as one has a mobile phone and is able to read and recognise numbers. On the other hand, internet banking methods involving standing order initiations, online loan applications and self-bulk payments for employee salaries and wages require technical know-how and the use of smart phones, tablets or computers to execute such transactions.

Advancements in the technological infrastructures in western countries have led to many institutions, both public and private, to embrace the use of digital banking services to perform various financial-related transactions easily with the touch of a button. The status is, however, different in many developing countries like Africa. Most countries in Africa are yet to fully embrace digital financial solutions as means of improving service delivery and providing seamless financial inclusion for the many unbanked and under-banked masses within the continent. Demirgüç-Kunt et al. (2020) concur that about 1.7 billion adults fail to access digital financial services in their simplest form as they do not possess any kind of digital account with almost all of them living in developing countries that have poor bank infrastructures.

1.2 Digital financial services in Malawi's banking industry

Currently, Malawi has eight commercial banks registered by the Reserve Bank of Malawi. Since 2009 when the then Opportunity International Bank of Malawi pioneered the first ever mobile banking services, the banking industry has seen a considerable increase in digital financial services. Customers across the country can transact digitally when accessing a number of banking services without the need to enter into banking halls. Mudiri (2019) highlighted that the adoption of mobile handsets to provide online and other digital banking services has changed the dynamics of the banking industry, bringing financial services nearer to customers through existing technological landscape within local communities. For the past decade, financial institutions in the country have

strived to ensure that they develop mobile banking platforms that give customers the ability to use basic banking services without their physical presence in service centres. Consequently, the role of technological advancements and the implementation of digital financial services could be an opportunity for banks to improve competitiveness within the banking industry through increased speed of service delivery to the customer (Rivai, 2021). However, notwithstanding the deployment of technologically driven services in the banking sector, the adoption of digital banking in developing countries like Malawi is still in its infancy, even in urban areas (Tarhini et al., 2019). Nevertheless, all eight commercial banks in the country developed digital financial platforms that customers can use at any time throughout the day.

A study by Asante and Baafi (2022) asserted that increased dynamism in the operational environment has led to business organisations becoming more adaptive. Financial institutions in the country now understand that unless they elevate customer banking experience through digital platforms, it will be difficult for them to survive and maintain their presence in the current dynamic business environment. Accordingly, the sustenance of many institutions around the globe relies on their ability to get closer to clients and to understand both their needs and desires including technological considerations. The survival of any business, therefore, depends on the organisation's ability to engage with its customers irrespective of their physical presence. Similarly, Abdennebi (2023) argued that for the banking industry to succeed, it should intensify its efforts on satisfying consumer needs by organising itself to meet the desires of the targeted customers more efficiently. Commercial banks in the country have come to the realisation that performing transactions using digital platforms allows for financial inclusion to a section of customers who reside in areas where physical banking infrastructures are not available.

Despite the high costs of investment required to develop safe and robust digital banking platforms, the Malawian banking industry has endeavored to ensure that such investments are made available to all citizenry across the country without having to pass on the investment costs to the customers. Lee (2020) in FinTech publication on Euromoney calculated that banks across the globe are spending over USD 114 million in developing basic digital banking platforms alone. The robustness of these platforms is of paramount importance as well. Even though customers enjoy transacting remotely through the available digital banking platforms, behind the scenes these platforms are always prone to cyber-attacks. Eneji et al. (2017) emphasised that it is pertinent for electronic banking applications to have some levels of security intelligence so that they can defend themselves

against external attacks. Customers would, therefore, need to be sure that their monies are safe and secured before they start using these services.

Other than the financial institutions themselves ensuring that their systems are robust, the RBM, being regulator of financial institutions in the country, came up with five core objectives governing supervision of the banking industry in Malawi (Financial Services Act, 2019). Two of the five supervisory objectives specifically relate to promoting and safeguarding the interest of customers in relation to digital platforms usage which include (a) promoting innovative platforms and regulation that supports inclusive finance, to allow for higher access and usage of financial services to a larger population and (b) reducing and deterring cyber financial crimes in financial institutions.

These two objectives were instituted with the aim of encouraging customer usage of digital financial services in Malawi whilst at the same time ensuring that privacy and security vulnerabilities associated with online banking platforms are properly addressed by commercial banks in the country to safeguard customer deposits within the financial ecosystem. For instance, Section 16(1) of the Reserve Bank of Malawi Payment Systems Act (2017) directs that financial institutions must implement and operate a digital banking system that promotes secure, efficient, effective, and coordinated financial and payment services to ensure that accessibility to digital banking platforms is made easy for all types of customers irrespective of location.

Additionally, the Reserve Bank of Malawi also undertakes a periodic stress-testing exercise for all the commercial banks in the country to gain reasonable assurance regarding the robustness of digital banking platforms that customers use. Furthermore, banks are required to notify RBM about any changes made to digital banking platforms to ensure that updates made to the systems do not negatively impact the customer in respect of perceived usefulness and their ease of use. Accordingly, Section 17 of Reserve Bank of Malawi Payment Systems Act (2017) stipulates that a financial institution shall seek prior approval of the Reserve Bank before making any changes to its digital banking system operations and any other changes as may be determined by the regulator.

It is through this oversight that customers using digital financial services across the country ought to have confidence that their interests are protected and that RBM provides platforms through which any grievances on digital banking services can be channeled to with ease. The Central Bank is also responsible for approving any changes or upgrades made to digital banking platforms which may have a direct impact on customer experience to ensure that their interests are diligently safeguarded.

1.3 Problem statement

There has been an outcry for low levels of bank penetration in Malawi which makes it impossible for banking services to be available to all the population across the country (Jalani, 2018). Only one bank has its footprint in every district of the country. This is not enough to sustain the demand for banking services in Malawi. In some cases, an entire district would have less than five service centres serving thousands of Malawians daily. In such areas, customers are usually inconvenienced as they walk relatively long distances to access banking services. Similarly in urban areas, the number of service centres is not enough to serve most customers with many of them having to walk some distance to physically enter a banking hall in order access even the basic of financial services. Apparently, there have been suggestions that the adoption of digital financial services may help address issues that customers usually face when accessing basic banking services in urban areas.

However, most prior studies have focused on the advantages and benefits that customers would mostly enjoy for adopting digital financial services which include speed of service delivery as well as the reduction in customer waiting times inside banking halls. Again, other studies have highlighted cost savings that commercial banks stand to benefit if customers fully embrace the available digital financial services on offer. Nevertheless, despite the availability of various digital financial services in Malawi, long lines of waiting customers are a common sight in most service centres within the major cities of the country.

This study, therefore, intended to take a full consideration of factors that influence customers' low uptake of digital financial services for service centres resident in urban areas. The three variables of convenience, trust and subjective norms were henceforth keenly investigated in order to help the researcher make full assessment of customers' views regarding their intention to adopt and use the available digital financial services having taken into account the reasons why most banking halls continue to be congested especially during end of month when most of the services accessible inside a banking halls can also be accessed using the existing digital banking platforms.

1.4 Aim of the study

The aim of the study was to assess decisional factors which affect customers' intention to adopt digital financial services for service centres in urban areas of Malawi.

1.5 Objectives of the study

Specific objectives of the study were to:

(a)   Examine the effects of convenience on customers' intention to adopt digital financial services.

(b)   Examine the effects of trust on customers' intention to adopt digital financial services.

(c)   Analyse the extent to which subjective norms affect customers' intention to adopt digital financial services.

1.6 Research questions

To address the research objectives of the study, the following questions formulated:

(a)   What are the effects of convenience on customers' intention to adopt digital financial services for service centres in urban areas?

(b)   How does trust affect customers' decision to adopt digital financial services?

(c)   To what extent do subjective norms affect customers' perception towards the decision to adopt digital financial services in urban areas?

1.7 Significance of study

Over the past ten years, commercial banks in Malawi have been promoting the adoption of digital financial services. The banks' position was enhanced with the emergence of the Covid-19 pandemic which brought with it government restrictions on physical gatherings and the need for social distancing. The banks made efforts to ensure that customers got seamless banking experience using the available digital banking platforms without the need to visit the service centres. However, long lines of customers were still visible outside the banking halls waiting to be assisted by the tellers despite the availability of alternative digital financial services. Interestingly, Abifarin (2017) observed that while service centres and branches in urban areas are often filled with customers eagerly using their phones to text, chat, browse and shop online as they wait to be assisted, most of them have never contemplated using that same device to avoid the banking hall altogether.

While there have been several studies on customer care management in banks as well as the benefits that would accrue to customers for adopting digital financial services, not much has been researched on the factors that affect customers' low adoption of digital financial services for service centres resident in urban areas of Malawi.

This study was, therefore, worth academic investigation because of the following reasons:

a. It provides basis for future researchers regarding the acceptance and adoption of digital financial services in the country with a broad understanding of factors influencing customers' decisions to use the various digital banking services at hand. Instead of them having to reinventing the wheel altogether, they will just have to investigate the findings of this study to determine their validity and reliability.

b. It provides insights to commercial banks on decisional factors which affect customers' intention to adopt digital banking services in Malawi and hence come up with initiatives which will help improve their adoption for seamless digital financial experience.

c. It provides guidelines for the formulation of policies aimed at enhancing the uptake of digital financial services in Malawi having considered the extent to which convenience, trust and subjective norms affect customers' decision to adopt DFS platforms.

d. It provides ways of reducing customer waiting times and eventual queuing inside banking halls which may in turn save valuable time for customers and bring about client satisfaction on services rendered.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter springs from issues in chapter one and looks at previous research done in relation to this study. It reviews past literature on factors influencing the adoption and usage of digital banking services around the globe. The chapter also provides theoretical basis guiding the research study as well as outlining empirical studies on various factors which impact customers' intention to accept and adopt the available digital financial services platforms. A conceptual framework is also illustrated portraying the relationship between the dependent variable (DFS adoption) and independent variables (convenience, trust and subjective norms). There are also definitions of key concepts as informed by previous empirical studies that help give context of the importance of literature review in respect of the adoption and usage of digital financial services around the globe.

2.2 Theoretical framework

This study considered three relevant theories which help underpin the uptake of digital financial services as well as essential factors that need consideration when evaluating customer attitude and behavioural intention to adopt and use digital banking platforms. Technology acceptance model was the main theory which anchored the study and the other two were theory of planned behaviour and the diffusion of innovation theory.

2.2.1 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM), as advocated by Davis (1989), is one of the theories that helps analyse factors which influence people's intentions to accept and adopt new technologies. The model focuses on factors influencing behavioural intention to utilise new technologies from the end user's point of view. TAM consists of fundamental determinants of end user motivation such as perceived usefulness, perceived ease of use and attitudes toward technology adoption. Of these elements, perceived usefulness (PU) and perceived ease of use (PEOU) are deemed as primary factors that directly or indirectly influence the behavioural intention to adopt ("accept") new technologies such as the digital banking services. The theory hence claims that convenient factors such as PEOU and PU determine the intention to use new technologies. Further to that, it also makes claims that trust issues emerging from security and privacy concerns determine the

intention to adopt new technologies. This theory was therefore adapted to examine the effects of convenience and trust on consumer intention to adopt and use available digital financial services in Malawi's urban areas.

The figure below conceptualises decision factors that help explain adoption and acceptability of digital banking services by customers.

Figure 1: Theoretical framework on decision factors for the adoption of digital banking services by customers (adapted from Davis, 1989)
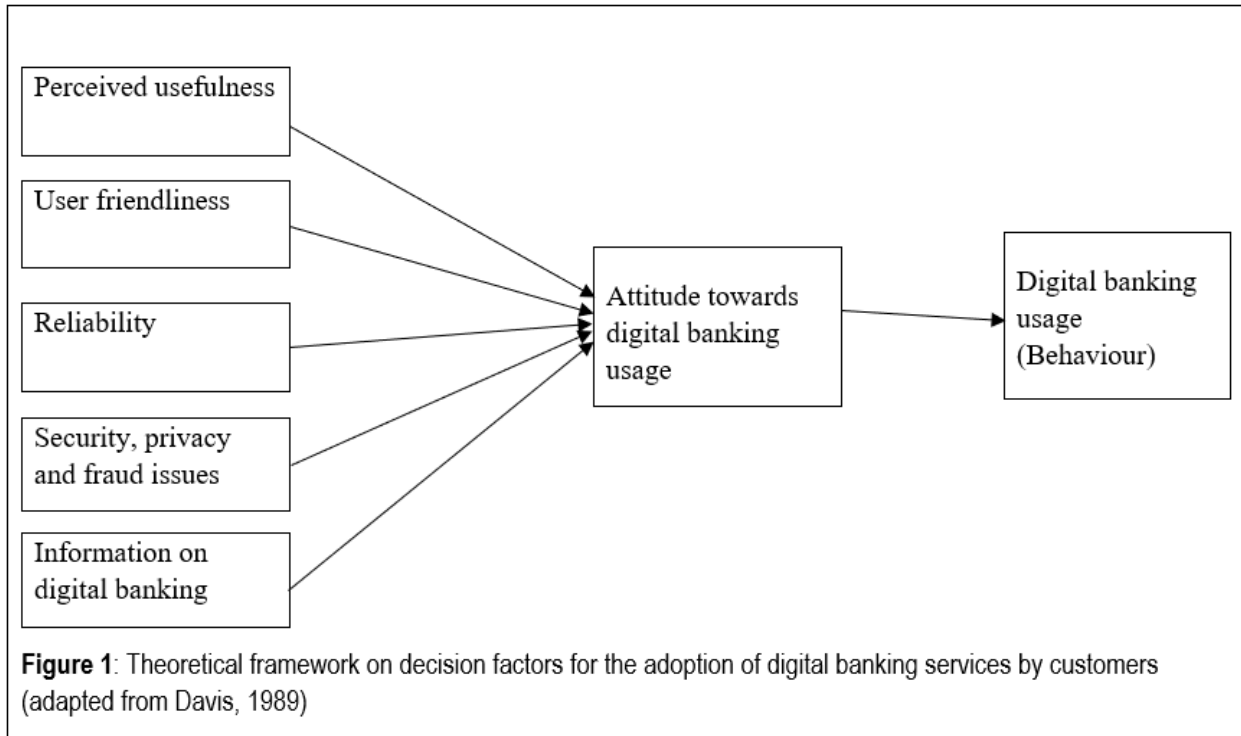
The above theoretical framework relates to current study as it provides structural foundations of relevant variables which influence the uptake of digital banking services in Malawi's urban areas.

2.2.1.1 Perceived usefulness

Davis (1989) defined perceived usefulness as the degree to which an individual considers the use of a particular technology to be valuable to him or her which in turn leads to improvement in his or her job performance. Perceived usefulness has been found to have a direct effect on the intention to use (Lu et al., 2003). According to Lin (2011), when customers perceive clear usefulness or advantages offered by digital financial services, they are more likely to have a positive attitude towards their adoption. Prior studies found that perceived usefulness (PU) has substantial and positive correlation with intention to use digital services. Jeyaraj et al. (2006) reviewed twenty-nine technology adoption studies from 1992 to 2003 and concluded that perceived usefulness was

the main catalyst for the adoption ("acceptance") of technology in twenty-six out of the twenty-nine studies. Additionally, studies by Pikkarainen et al. (2004) and Çelik (2008) on digital financial services in Finland and Turkey respectively, confirmed that perceived usefulness was the most important predictor of technology adoption and acceptance in such countries.

2.2.1.2 User friendliness (Perceived ease of use)

Perceived ease of use (PEOU) was defined as the level to which an individual understands a new technology and finds it simple to use (Davis, 1989). Similarly, Lin (2011) defines perceived ease of use as the extent to which electronic banking services are perceived as easy to use and understand. Venkatesh et al. (2003) stated that consumers may find it challenging to adopt mobile banking services when the platform is difficult to learn and use. Further to that, Guriting and Ndubisi (2006) observed that perceived ease of use had a substantial positive impact on attitude and behavioral intention to use m-banking in Malaysia - Borneo. Consequently, it is more probable than not for consumers to embrace digital financial services when they are simple to use and operate.

2.2.1.3 Reliability

Unreliable digital banking platforms may cause customers to distrust the systems and eventually results in their discontinued use. A publication by Loonam and O'Loughlin (2008) stated that poor digital banking platforms often do not lead to customers switching from traditional to digital banking, which generally takes place in undependable e-service settings. When customers find digital banking services to be reliable, it becomes much easier to embrace the technology and lobby their colleagues adopt as well. The reputation of service providers is usually at risk if customers find their digital banking services less reliable or unavailable when most needed.

2.2.1.4 Security, privacy, and fraud concerns

Security and privacy threats refer to the likelihood of passing on of private information to the third parties without the awareness and/or consent of the customer (Sathye, 1999). Where fraud issues occur due to breach in security and privacy of the customer data such as passwords and unauthorised SIM swaps, users tend to have no confidence to continue using digital banking systems. With the modern world beleaguered of continued occurrences of phishing and social engineering from cyber criminals, financial institutions have a very important role to play in

developing robust digital banking systems that have the capabilities of withstanding attempts by these fraudsters to gain access of customer data which will in turn help increase trust and eventual usage of digital financial services among customers in urban areas of Malawi.

2.2.1.5 Information on digital banking

According to Hanudin et al. (2007), the public needs information on digital banking to increase their understanding on how the system operates and how it is useful for their financial transactions. Absence of information on mobile and digital banking can hold back a person's capability to make effective decisions on how best to utilise the available digital financial services at hand. It is therefore imperative for the public to have adequate information on digital financial services which may affect the adoption of such services. The role of financial institutions is, therefore, to ensure that targeted promotional campaigns are made on digital financial services with the hope of reducing the knowledge gap on the importance and benefits accruing to customers for adopting the available digital banking services instead of having to physically visit the service centres for even the basic of financial transactions like balance enquiry and account statement.

2.2.2   Theory of Planned Behaviour (TPB)

The theory of planned behaviour as developed by Ajzen (1991) affirms that human behaviour is influenced by intentions to adopt or undertake certain actions based on three underlining factors which include attitudes, subjective norms, and perceived behavioural control. He argued that a person's attitude towards adoption of any technological invention is influenced by the degree to which his or her opinions affect the evaluation of behaviour of interest, be it in a favourable or unfavourable manner. Similarly, subjective norms were defined as societal pressures that influence an individual to act or behave in a certain way as a conformance to patterns of behaviour exhibited by people who are regarded as being important or respected by the individual. On the other hand, perceived behavioural control looks at the individual's confidence or capacity to execute certain behaviours required to yield desired performance accomplishments. The theory thus claims that individuals act rationally when deciding to adopt certain inventions based on their attitudes, subjective norms, and perceived behavioural control. It was for this basis that the theory was adapted in order to examine the effects of convenience and trust on customers' intention to adopt and use digital financial services in Malawi's urban areas.

However, the theory encountered criticisms from Sheppard and Hartwick (1993) who contended on two issues which in their views made the theory somehow difficult to use. Firstly, they contested that to use the theory one would need to correctly distinguish behaviour from intention. Secondly, they argued that the theory did not have any considerations or provisions on whether an individual's failure to perform a certain reasoned action would be due to his or her perceived behaviour control or attitude and intentions.

Nonetheless, several scholars like Taylor and Todd (1995), Venkatesh and Davis (2000) and Marinković et al. (2020) have all backed the theory insisting that behaviour intention has always been an important factor in predicting an individual's attitude and actual behaviour towards the adoption and usage of new technologies as well as the undertaking of certain behavioural-induced actions.
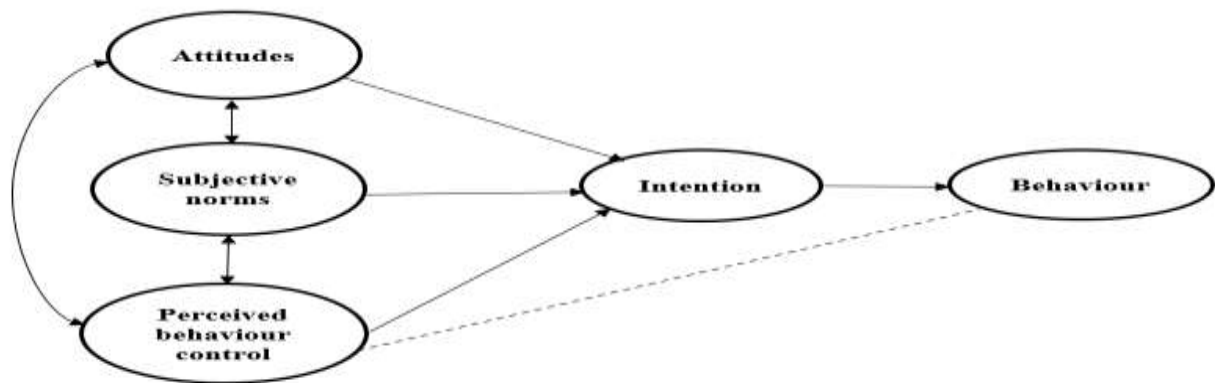
Figure 2. The Theory of Planned Behaviour model (adapted from Ajzen, 1991)

In relation to the figure above, the theory stipulates that customers' attitudes towards adoption of technological advancements can be determined by the notion of whether people endorse or disapprove certain behaviours (subjective norms) which in turn affect a person's perception (attitude) as well as the self-efficacy and easiness of undertaking certain behaviours of interest (perceived behavioural control).

2.2.3 Diffusion of Innovation (DOI) Theory

As advanced by Rogers (1962), diffusion of innovation theory elucidates how new innovations are accepted and adopted by customers. His theory first defined innovation as any idea that is new to either an individual or persons within a group set up while diffusion was described as a process where new inventions are transported through designated conduits of communication among

persons who willingly desire to use new information technology systems. DOI, therefore, is characterised by five categorical aspects of innovations which include compatibility, trialability, complexity, observability, and relative advantage. Even though these variables appear different and unconnected to one another, they are related to each other in terms of how customer receive new technological inventions and disseminate the same to others within their localities and communities.

According to Kombe and Wafula (2015), irrespective of how good an innovation is, it may still take a long time before it is adopted by the intended customers. Customers' reluctance to change will slow down diffusion of innovation even though it may not stop the innovation altogether. The rate of adoption of new innovations, therefore, is contingent on whether customers perceive its comparative benefit in respect of compatibility and ease of use (Chindudzi et al., 2020). Other scholars like Medlin (2001) have also argued that diffusion of innovation theory is typically suitable and applicable in examining adoption of technologies in urban and higher education environmental settings.

2.3   Empirical review

2.3.1   Influence of convenience on intention to adopt digital financial services

Previous empirical studies have tried to explore the relationship between convenience and customer intention to adopt and use digital financial services. Naruetharadhol et al. (2021) defined convenience as the suitability of a customer performing an action by reducing the amount of work or time required. Their study established that customers considered a mobile banking platforms as being convenient when they perceived them as useful and easy to use. Based on a sample size of 688, the researchers concluded that convenience of digital banking platforms as derived by perceived usefulness and perceived ease of use was a significant predictive factor that influenced customers' intention to adopt mobile banking services in Thailand and confirmed the existence of a positive relationship between convenience and mobile banking adoption in Thailand. The findings of Naruetharadhol et al. (2021) concurred with earlier study done by Balinto et al. (2020) who also defined convenience in respect of customers' perceived ease of use and the usefulness of mobile banking services in Ghana. They too, established that there is strong positive relationship between convenience and the intention to adopt mobile banking services in Ghana. The study

concluded that both perceived usefulness and perceived ease of use predicted the adoption of mobile banking among Ghanaians working in informal sector.

Similarly, Ezeh and Nwankwo (2017) investigated on the factors influencing the acceptance of mobile banking in Nigeria. Data was collected from 314 bank customers resident in eastern part of Nigeria and analysed using the partial least square structural equation modelling technique. Results of the hypotheses testing revealed that perceived ease of use made customers to find mobile banking more convenient to use and was therefore the most important factor in determining the intentions to accept mobile banking in Nigeria.

A recent study by Mamun et al. (2023) also examined factors affecting the adoption of digital banking services in Bangladesh. Convenience sampling technique was used to collect primary data from 630 respondents which was then analysed using explanatory factor analysis method. The findings of the study revealed that perceived risk, ease of access, cost, convenience of use and comparative advantage were the main factors that influenced digital banking adoption and usage in Bangladesh. The researchers emphasised convenience and perceived risk as the significant factors affecting the presence of digital banking among customers in Bangladesh. Most customers stated that prompt menu steps were too many before completing a single financial transaction making not convenient enough in terms of ease of use. The study recommended commercial banks and regulatory authority (central bank) in Bangladesh to work hand in hand in developing ease to use command menus on digital banking while at the same time safeguard the interest of customers considering vulnerabilities associated with digital banking in the modern world.

In contrast, a study was conducted by Foroughi et al. (2019) who wanted to understand the determinant factors of continuance intention to use mobile banking in Malaysia. Based on a population sample of 369 respondents and using the Technology Continuance Theory (TCT), the researchers ruled out perceived ease of use as a determinant factor towards customers' intention to continue using mobile banking services in Malaysia.

2.3.2   Influence of trust on intention to adopt digital financial services

Trust is another variable that could positively or negatively affect customers' intention to adopt and use the available digital financial service platforms. Scholarly studies have been conducted to envisage the impact of trust on DFSs adoption. According to Asante and Baafi (2022), trust is defined as the ability of the customer to reliably use mobile and digital banking services without

fear of experiencing financial loss resulting from service provider's failure to provide robust mechanisms that safeguard both the privacy and security of customer's financial data. The two conducted a study on how trust influenced the adoption of digital banking platforms in various Ghanaian commercial banks. Their study identified three variables of service reliability, privacy of customer data and the security of digital banking platforms as the main factors that influence customers to trust the available digital banking services in Ghana. Primary data was collected through questionnaire surveys and analysed using simple linear regression model. Based on the results from 150 participants, the study revealed that customers' knowledge of privacy and security of personal financial data (duped knowledge-based trust) had significantly positive influence on the adoption of digital banking services in Ghana. Knowledge based trust was largely determined by participants' level of education, age and area of residence (whether urban or rural). Similarly, the study found that system reliability and frequency of downtimes (duped institution-based trust) also had a positive effect or relationship with customers' propensity to adopt the available digital banking platforms.

Fadila et al. (2021), based on a sample population of 100 participants, studied the factors affecting customer adoption of digital banking services in Indonesia. The researchers adopted a quantitative approach and used the multiple linear regression model to analyse the data collected. The study also employed the theoretical frameworks of Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI). Their study revealed that elements of trust like perceived security and service reliability had significant influence on customers' intention to adopt mobile banking services in Indonesia. However, perceived ease of use was found to have a negative effect on the adoption of digital banking services as most of the respondents still found platforms complicated and not easy to understand. They recommended that commercial banks in Indonesia should explore all necessary measures to build trust with their customers and civic-educate them on the usefulness of using digital banking as well as develop easy to understand prompt menus which would help increase the adoption rate. Their findings concurred with those of Srivastava and Vishnani (2021) who, with a sample size of 258, studied on the factors that influence the uptake of mobile banking in North India. The research established that system security and service quality were fundamental in enhancing customer trust towards m-banking services which in turn increased their adoption.

A similar study was conducted by Malaquias et al. (2018) to get a comprehensive understanding of key determinants of mobile banking adoption in Brazil. The study established that perceived

reliability and system security enabled customers to trust the mobile banking services and hence played a significant role in determining the adoption of mobile banking in Brazil.

In contrast, Abdennebi (2023) examined factors influencing mobile banking adoption in developing countries like Tunisia. Using partial least square structural equation modeling, the researcher analysed data from a population sample of 202 respondents. The results of the study indicated that while perceived usefulness and perceived ease of use had significant influence on customers' intention to adopt mobile banking in Tunisia, perceived security, trust, and satisfaction were statistically not significant in determining customers' intention to adopt m-banking services. Accordingly, the study highlighted individual variables such as gender, age, and academic qualifications to have an influence in determining the adoption rate of mobile banking in Tunisia. Norng (2022) also observed that trust did not have a significant influence on customers' behavioural intention to adopt and use mobile banking in Cambodia. This reiterated the perspective shared by Hassan and Wood (2020) that what may influence the adoption of digital banking services in one country may be different from another due to the various demographic factors at play having studied mobile banking services in Egypt and the United States of America.

2.3.3 Influence of subjective norms on intention to adopt digital financial services

Subjective norms refer to the belief that an important person or group of people will approve and support a particular behaviour as determined by the perceived social pressure for an individual to behave in a certain manner (Ham et al., 2015). These often spiral from influences of close family and friends to cause one to conform to their views. Norng (2022) analysed factors influencing mobile banking adoption in Cambodia. The researcher employed Technology Acceptance Model (TAM), Diffusion of Innovation Theory (DOI) and Theory of Planned Behaviour (TPB) to best understand factors affecting intention to adopt the available mobile banking services. Using a sample size of 385 respondents, confirmatory factor analysis and path models were used to analyse the data collected. The results of the study showed that subjective norms, perceived compatibility, and observability had a positive impact on behavioural intention to adopt and use mobile banking services in Cambodia.

Again, Malaquias et al. (2018) upon investigating determinants of digital banking services in Brazil established social influence as one of the major factors that played a significant role in determining the intention to adopt digital banking services among customers in Brazil. Similarly, Chitungo and

17

Munongo (2013) examined factors that determine the uptake of mobile banking in the rural areas of Zimbabwe using the technology acceptance model (TAM). Their research observed that factors like subjective (social) norms, relative advantage and personal innovativeness induced customers' acceptance and adoption of mobile banking usage in Zimbabwean rural areas. Again, the researchers found that demographic factors like age, gender, ethnicity, and level of education had substantial effect in determining customers' intentions to adopt and use mobile banking services in rural Zimbabwe. The study recommended the need for continued awareness campaigns to the less educated customers who mostly abandoned usage of mobile banking platforms despite previously having adopted the same. It also stressed on the importance of commercial banks incorporating the major local languages in the prompt menus of mobile banking platforms to enhance the perceived ease of using the service.

Sabi (2014) examined the diffusion of internet banking services for several commercial banks in developing countries. His study included a review of 188 journal articles focusing on how internet banking was adopted, spread, and integrated across the developing countries using a content analysis of already existing literature. The results of the study indicated that the diffusion of internet banking was predominant in Asian countries. On the contrary, developing countries in Africa, the Caribbean and South America were found to be way behind in terms of research studies on internet banking. This made the diffusion and spread of online banking services in such countries to be at a slow rate which in turn affected customers' adoption of internet banking. Some of the contributing factors for the low diffusion and adoption rate in African counties included subjective norms, language, ethnicity, and education status where internet and computer literacy levels were noted to be at below 19%. Apparently, these factors were crucial in determining the acceptance and adoption of internet banking in Africa. The study recommended the need for increased awareness among customers of the benefits and importance of internet banking.

Ramdhony and Munien (2013) investigated factors affecting the adoption and usage of mobile banking in Mauritius. Their study concluded that age, gender, and income had no effect on the adoption of mobile banking services. However, issues of social norms, compatibility and perceived risk were highlighted as the major factors which influenced customers' decision to accept and use mobile banking in Mauritius. An earlier study by Koening-Lewis et al. (2010) in Germany warned that despite the benefits associated with digital banking, financial institutions are not likely to increase investment in digital financial services if social influences and norms continue to play a

significantly negative role making customers not to see advantages associated with digital financial services adoption and usage. Nevertheless, the researchers recommended that continuous customer engagements and awareness campaigns would have a positive influence in reducing issues of subjective norms thereby increasing the adoption of digital banking services. For studies conducted within the African region, most of the researchers (Ezeh & Nwankwo, 2017; Sabi, 2014; Chitungo & Munongo, 2013) cited that subjective (social) norms were mostly because of demographic factors such as age, income and literacy levels (education) which played significant roles in determining the rate at which consumers would buy in the idea of adopting digital financial services.

2.4 Knowledge gaps

Based on the above theoretical frameworks and the empirical reviews, the researcher identified knowledge gaps that form the emphasis of the study. Examples of them have been presented in the table below.

Table 1: Conceptual and knowledge gaps.

Researcher(s)	Focus of the study	Study findings	Knowledge gap areas
Naruetharadhol et al. (2021)	Factors affecting mobile banking adoption in Thailand	The study revealed that convenience factors of perceived usefulness and ease of use were significant factors for mobile banking adoption.	The study only focused on mobile banking adoption and made no mention of other digital banking platforms such as internet banking or e-card services to see if such factors would have similar impact on adoption.
Abdennebi (2023)	Influences of digital banking adoption in Tunisa	The study found that trust did not have significant impact on digital banking adoption.	The study did not investigate whether issues of trust were affected by customers' level of education or subjective norms as majority of respondents were from rural and semi-urban areas.
Chitungo and Munongo (2013)	Examined factors determining uptake of mobile banking in rural Zimbabwe	The research found that subjective (social) norms induced customers' acceptance of mobile banking services in Zimbabwean rural areas.	Contextual gap exists as the research delved on rural setting only. Such factors may have not applied in an urban setting.

Source: R*esearcher's own compilation*.

2.5 Conceptual review

The study attempts to establish the relationship between the independent variables of convenience, trust, and subjective norms against the dependent variable, which is customers' intention to adopt digital financial services. The assumption is that convenience, trust, and good subjective norms have a positive influence on intention to adopt digital banking services. With several studies highlighting client dissatisfaction in respect of slow customer service (reduced speed of delivery) and the increased waiting times in banking halls, financial institutions have strived to come up with technological innovations that allow customers transact remotely irrespective of where they may be using various digital banking platforms. Their aim is to reduce queuing and use the time spent inside banking halls for other profitable means. To date, a great deal of literature has identified key dimensions of customer service quality, customer satisfaction and customer loyalty in the setting of traditional banking where human interactions between customers and bank employees are dominant (Asante & Baafi, 2022; Foroughi et al., 2019). However, few studies have addressed the problems in the banking ecosystem where non-human interaction is a main service delivery and communication channel whenever customers' intention to adopt digital banking platforms are discussed with facilitating variables such as convenience, trust, demographic factors as well as other elements like subjective norms (Billy et al., 2018).
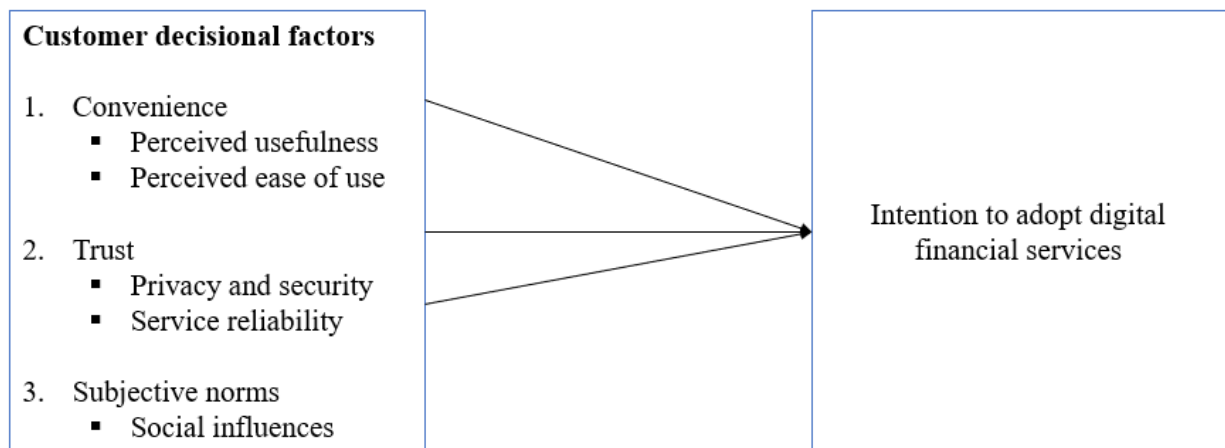
Figure 3: Conceptual framework on the relationship between dependent and independent variables on customers' intention to adopt digital financial services. **Source**: Researcher's own compilation.

Based on figure 3 above, the intention to adopt digital financial services was measured in three folds. Firstly, respondents were asked to state the extent to which the agreed or disagreed that the available digital financial services were useful and easy to use as well as whether such factors influenced their decision to adopt and use DFSs. Those who strongly agreed or just agreed were deemed to have had a positive intention to adopt digital financial services. Similarly, user perception in respect of service reliability, security or privacy of digital banking applications was also weighed on a five-point likert scale to determine the degree to which trust influenced consumer intention adopt digital banking services. With many scholarly literature identifying privacy and security of digital platforms as important antecedents of trust, the extent to which customers agree or disagreed to the reliability of these platforms was considered an indication of their intention to use digital banking services or not. Finally, respondents were also asked to agree, disagree, or indicate neutrality on how social influences played a part in their decision to embrace digital banking platforms. Again, responses of strongly agreed or just agreed were interpreted as having a positive indication of one's intention to adopt and use digital financial services.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter illustrates how the research philosophy was chosen. It also explains the research approach, target population, sample size and the ethical considerations underpinning this study. The final part of the chapter details data collection instruments and analysis techniques as well as the measurement constructs in respect of the variables being investigated.

3.2 Research paradigm

The study adopted a positivism research paradigm to help deduce and explain existence of relationship between the three independent variables (convenience, trust, and subjective norms) and the dependent variable (digital financial services adoption), using the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) theory and the Theory of Planned Behaviour (TPB). This means that in this research study, the goal was not to develop a new theory but rather develop these theories using hypothesis testing. This is called a deductive approach (Saunders et al, 2012).

3.3 Research design

The research project adopted a descriptive research design and was quantitative in nature which enabled the generation numerical data to test the three sets of theories mentioned above. The research techniques involved the use of questionnaires to collect primary data from respondents to help form reasonable conclusions on factors that influence customers' intention to adopt digital financial services for service centres domiciled in urban areas of Malawi. The questionnaire was first pre-tested with the aim of identifying certain areas needing improvement or removal.

Saunders et al. (2012) asserted that survey questionnaires are the most suitable method of collecting quantitative data as they can generate large volumes of data in an economical manner. The survey questionnaire, therefore, consisted of closed questions and was administered in English language since the target group were respondents resident within the four major cities of Malawi on the assumption that they were all literate enough to understand the basic English vocabulary. Further to that, the research was done on a cross-sectional study approach due to time constraints facing the student researcher.

3.4 Population and sampling methods

As per Saunders et al. (2012), population is defined as a full set of groups out of which sample items can be selected. The unit of analysis was any individual resident within the four major cities of Malawi (Blantyre, Lilongwe, Zomba and Mzuzu) between the ages of 20 and 60 who hold a bank account with any of the eight financial institutions in the country. The specified age limit implied the period within which respondents at least independently own a bank account and actively have the capacity to use various digital financial service (DFS) platforms. A random sampling method was used in conducting the research study to ensure that there was no bias in selecting participants for the project.

3.5 Sample size

Sample size was calculated using Cochran (1977) formula for determining the sample size of an unknown population as shown by the formula below.

$$S = \frac{(Z\text{-score})2 * \text{Standard deviation} *(1 - \text{Standard deviation})}{(\text{Margin of error})2}$$

Where S = The size of the sample for unknown population,

Z-score = Confidence interval (95%, so Z-value is 1.96)

Standard deviation = Population proportion, assumed to be 50%=0.5

Margin of error = 0.05 (5%)

The sample size was 384. 384 questionnaires were therefore evenly distributed between male and female respondents to avoid bringing in elements of biasness. The cities of Lilongwe and Blantyre were allocated 110 questionnaires each whereas Zomba city and Mzuzu city each had 82 questionnaires administered to them to bring the total of expected questionnaires to 384 as planned.

3.6 Data collection technique

The study mainly used primary data which was collected through self-administered questionnaires. The questionnaire was first pre-tested by undertaking a random mock interview with five respondents from the city of Blantyre. This helped in verifying the understandability of questions contained in the survey. The pre-test also enabled the researcher to modify and alter certain sections of the questionnaire in respect of the following points: ease or difficulty of questions, perceptions and assumptions of interviewees, responsiveness of respondents, level of discomfort and social

desirability. Revisions were, therefore, done based on the issues which evolved from the pilot-testing.

The revised questionnaires were then distributed to consented participants across the four major cities of Blantyre, Lilongwe, Zomba and Mzuzu. However, before distributing each questionnaire, the researcher took some little time explaining the main objective of the study with the intention of helping them understand questions as well as other statements contained in the questionnaire. All this was done to encourage participation from respondents.

3.7 Data validity and reliability

3.7.1 Validity

Validity refers to the capability of a measuring instrument to perform what it is envisioned to do. According to Saunders et al. (2012), the model of validity establishes whether the outcomes in the research study are genuinely about what they appear to be and confirm any relationships between variables. Validity of research instruments was determined through convergent validity as it resonated with the research topic as well as the research objectives. The questionnaire was pre-tested to augment the validity of data collected. Through pilot testing, it helped ensure that items in the questionnaire were clear and well understood by the respondents.

3.7.2 Reliability

Reliability underscores the extent to which tests used dependably generate correct and consistent results because they are free from errors. Hair et al. (2010) defined reliability as the degree of consistency between multiple measurements of a variable. Cronbach's Alpha Coefficient was utilised to determine the reliability of the research methods (questionnaires) used. Cronbach's Alpha Coefficient is a measure of internal consistency or reliability of a set of survey items and was used to help establish whether a group of items dependably assesses the same characteristic.

3.8 Data analysis

The study employed both descriptive and inferential statistics to analyse the data collected. Descriptive techniques such as variance analysis, mean, standard deviation and percentages were used to quantitatively summarise certain features and characteristics of the data sets. Similarly,

visual expressions of the data collected were also presented and summarised using pie charts and bar graphs.

Inferentially, data was analysed by means of logistic regression analysis using the proportional odds model. The proportional odds model, being an extension of the logistic regression, is a statistical technique that analyses and predicts the relationship between an ordinal dependent variable against two or more independent variables. The proportional odds equation is given as follows:

Logit $(P (Y \leq j)) = \alpha j + \beta 1 X 1 + \beta 2 X 2 + ... + \beta k * X k + \epsilon$

Where

$P (Y \leq j)$ = the cumulative probability that dependent variable Y is less than or equal to j

αj =   the intercept for the jth cumulative probability level

x =   the independent variable

b =   the slope (coefficient of the independent variables)

ϵ =   the error term

Using the proportional odds model, the research study attempted to predict whether convenience (perceived usefulness and perceived ease of use), trust (reliability and security of platforms) and subjective norms have an influence on customers' intention to adopt digital financial services for service centres resident in urban areas. Statistical tools used to analyse the data collected included Stata Software Package and Microsoft Excel data analytical models.

3.9 Development of measurement scales and instruments

To best analyse the data collected, the scale of measurement involved the use of a five-point Likert scale as advocated by previous researchers like Davis (1989) and Ajzen (1991). Each independent variable was subjected to several measurement constructs using the questionnaire which was administered to respondents with a purpose of establishing their position in respect of the related variable.

3.9.1 Measures of convenience

Convenience was measured using two factors of perceived usefulness and perceived ease of use. These were the main factors in determining customers' intention to adopt digital banking services.

For a customer to use any service, it is presumed that he or she will consider issues of usefulness and the ease of use of the service under consideration. A customer will usually consider simplicity of using the service, time saved, productivity achieved and the easiness to understand prompt menus on digital platforms. A total of ten variables with a five-point Likert scales adapted from David (1989) were employed to measure variables influencing respondents' intentions to adopt and use digital financial services as indicated in Table 1 below.

Table 2: Scale of convenience.

Perceived usefulness and Perceived ease of use (1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree)		
Measurement Construct	Coding Used	Issues Considered
Convenience	C1	DFS saves time spent on queues inside banking halls
	C2	DFS adoption increases speed of service delivery
	C3	Digital banking increases productivity
	C4	DFS has 24/7 availability than traditional banking
	C5	Simplicity due to few menu items
	C6	Understandability of language and prompt menus
	C7	User friendliness of DFS interface
	C20	Information availability on DFS
	C21	Power of sensitisation tools used
	C22	Full knowledge of services on DFS platforms

Source: Researcher's own compilation.

3.9.2 Measures of trust

Trust focused on three areas of service reliability, security, and privacy of customer information in respect of vulnerabilities associated with digital banking platforms. The table below summarises measures of trust.

Table 3: Scale of trust

Service security, customer privacy and service reliability (1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree)		
Measurement Construct	Coding Used	Issues Considered
Trust	T8	Trustworthy of platforms
	T9	Identity theft and social engineering
	T10	Security risks
	T11	Availability of controls
	T16	Reliability of DFS platforms
	T17	Service down times
	T18	Increase in one-legged transactions
	T19	Turnaround times

Source: R*esearcher's own compilation*.

3.9.3 Measures of subjective norms

On subjective norms, the research study considered behaviour of customers on adoption and usage of digital financial services as influenced by views of respectable people within their social circles or family members.

Table 4: Scale of subjective norms

Societal views and perception of close friends (1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree)		
Measurement Construct	Coding Used	Items Considered
Subjective norms	SN12	Reservations to adopt – views of respectable people
	SN13	Negative reviews of DFS platforms
	SN14	Societal beliefs on traditional banking models
	SN15	Perceptions of others on DFS vulnerabilities for high valued transactions

Source: R*esearcher's own compilation*.

3.9.4 Measures of questionnaire variables

The table below elucidates data coding used during the research study for all useful items that were presented in the survey questionnaire.

Table 5: Data coding table for questionnaire variables.

Variable	Questions	Codes and labels	Measurement type	Measurement scale
Demographic factors	i	Gender	Nominal	0=Male 1=Female
	ii	Age group	Ordinal	1=20-25 years, 2=26-35 years, 3=36-45 years, 4=46-55 years, 5=55-60 years
	iii	Level of education	Ordinal	1= Primary school 2= Secondary school 3=Tertiary (university/college/technical) 4=None
	iv	DFS platform adopted	Nominal	1=Mobile banking 2=Internet banking 3=e-Card services 4=None
	v	Years of using DFS	Ordinal	1=1-6 months 2=6-12 months 3=1-5 years 4=5-10 years 5=over 10 years
	vi	Frequency of DFS use	Ordinal	1=Over once a week 2=Once a month 3=10 times in 6 months 4=Over 20 times a year
	vii	Preferred mode of DFS sensitisation	Nominal	1=Radio adverts 2=TV commercials 3=Print (e.g., billboards) 4=Push messages (pop-up notifications on phones/mobile apps.)
Independent variables	Q1-Q22	Convenience, trust & SN	Ordinal	5-Point Likert Scale
Dependent variable	-	DFS adoption	Ordinal	5-Point Likert Scale

Source: *Researcher's own compilation.*

3.10 Convergent validity testing

Convergent validity as a sub-type of construct validity is used to test the degree to which two or more measures that should theoretically be related are in fact related and that they are indeed measuring same constructs. As advanced by Fornell and Larcker (1981), convergent validity is measured using both Average Variance Extracted (AVE) and Composite Reliability (CR). For AVE, values above 0.7 are considered very good whereas an AVE of 0.5 is regarded as acceptable as well. On the other hand, composite reliability of 0.7 and above is considered acceptable.

AVE is calculated using the formula below.

$$AVE\xi_j = \frac{\sum_{k-1}^{K_j} \lambda_{j_k}^2}{\left(\sum_{k-1}^{K_j} \lambda_{j_k}^2\right) + \Theta_{j_k}}$$

Where

K_j = represents number of pointers of construct ξ_j

Λ_{jk} = represents factor loadings

Θ_{jk} = represents error variance of the kth indicator (k = 1, ..., K_j) of constuct ξ_j

The table below shows results of the convergent validity testing of survey items in respect of the three independent variables.

Table 6: Results of convergent validity test using average variance extracted and composite reliability.

Variable	Composite Reliability (CR)	Average Variance Extracted (AVE)
Convenience (PU & PEOU)	0.8463	0.7110
Trust (Security, Privacy & Reliability)	0.8387	0.6905
Subjective Norms	0.7692	0.5843

Source: R*esearcher's own compilation*.

Based on the results above, the measurement constructs do appear to affirm and pass the validity tests. All the variables under investigation have a CR of above 0.7 and an AVE of above 0.5 as well.

3.11 Cronbach's Alpha Coefficient reliability testing

To affirm the consistency of the measurement scales used, the three independent variables were subjected to reliability testing using the Cronbach's Alpha Coefficient analysis. Cronbach's Alpha quantifies scores on a standardised scale of $0 - 1$. The rule of thumb for interpreting results of Cronbach's Alpha Coefficient with dichotomous variables stipulates that a score of greater than 0.7 is usually considered acceptable and confirms internal consistency of the data being tested. Any score below 0.7 is considered inconsistent and questionable to be relied upon. The reliability of the internal consistency was, therefore, measured using the following Cronbach's Alpha formula:

$$\alpha = \frac{N * \bar{c}}{\bar{v} + (N - 1) * \bar{c}}$$

Where

N = represents the number of items

$\bar{c}$ = represents the mean covariance between items

$\bar{v}$ = mean item variance and inter-item covariance

The table below shows results of the Cronbach's Alpha Coefficient reliability testing of survey items in respect of the three independent variables.

Table 7: Results of reliability test using Cronbach's Alpha Coefficient.

Variable	Average Inter-item Covariance	Number of Items	Alpha Coefficient
Convenience (PU & PEOU)	.3967584	10	0.8868
Trust (Security, Privacy & Reliability)	.3736487	8	0.8472
Subjective Norms	.3609917	4	0.7944

Source: R*esearcher's own compilation*.

Table 7 above demonstrates measures of consistency for three variables namely convenience, trust and subjective norms. The internal consistency test for Convenience had ten (10) questionnaire items with an Alpha Coefficient scale of 0.8868. This is considered 'good' as per Cronbach's

Coefficient range prompting the researcher to conclude that survey questions on Convenience (perceived usefulness and perceived ease of use) can be relied upon.

Similarly, Trust (security and reliability) comprised eight questions and the results of reliability test was 0.8472 confirming that the questionnaire items dependably measured similar characteristics within the given data set.

The reliability test for Subjective Norms was made up on four questionnaire items producing a coefficient score of 0.7944. Under the Alpha Coefficient range, this is regarded as 'acceptable' making it reasonable for the researcher to conclude that questions relating to Subjective Norms were reliable enough and consistent with the research objectives.

To gain maximum assurance that indeed the survey items passed the reliability test. All the 22 questionnaire items were combined and subjected to a single Cronbach's Alpha Coefficient testing in Stata software. The test results produced an overall score of 0.7632 as shown below which is interpreted as 'acceptable' according to the Alpha Coefficient scale. The researcher, therefore, concludes that all the survey items dependably passed the reliability test and are consistent with the objectives of the research study.

Table 8: Overall results of Cronbach's Alpha Coefficient testing for all the 22 survey items.

Average inter-item covariance	.0659254
Number of items in the scale	22
Scale reliability coefficient	0.7632

Source: R*esearcher's own compilation through Stata software.*

3.12 Ethical considerations

In addition to selecting an appropriate research methodology, it was of paramount importance to consider ethical issues surrounding the data collection process. For instance, no customer was interviewed without obtaining his/her consent first. In summary, based on the guidance of Bryman and Bell (2007) and Saunders et al. (2012), there were a number of ethical considerations which were adhered to in administering the survey questionnaire throughout the data collection process. For instance, there was voluntary participation of respondents. Every participant was, therefore,

allowed to withdraw from the study at any point in time. This means that no one was coerced to take in the research study.

Secondly, respondents participated based on knowledgeable and informed consent. The principle of informed consent involved the researcher furnishing them with adequate information and reasonable assurances throughout the interview process to allow participants understand the implications of taking part in the survey and doing so without them feeling any sense of coercion. Thirdly, no customer name and identity were made public or revealed before, during or after the research study.

Fourthly, the use of discriminatory, unacceptable language or offensive words were wholly avoided in the preparation of questionnaire or survey forms. Lastly, the researcher acknowledged the works of others (previous researchers, authors, interviewees) used in the research project and that every referencing was done in accordance with the seventh edition of the APA referencing system using the Mendeley reference management software.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results of the study that attempted to underscore factors that influence the adoption and usage of digital financial services in Malawi. The study specifically targeted customers resident in the four major urban areas of Malawi; namely Blantyre, Lilongwe, Zomba and Mzuzu. A sample size of 384 customers was used and the study managed to achieve a response rate of 89.8% (345 respondents).

Results of the demographic factors and the three independent variables (convenience, trust and subjective norms) have also been presented in this chapter to determine their influence on consumer intention to adopt and use the available digital financial services across the four major cities of Malawi.

4.2 Demographic characteristics of respondents

A total of 384 questionnaires were administered based on the calculated sample size of 384 in line with Cochran (1977) formula for determining the sample size of an unknown population. These were evenly distributed between male and female respondents with the aim of achieving 50-50 representation from both genders to avoid bias.

The cities of Lilongwe and Blantyre were allocated 110 questionnaires each whereas Zomba and Mzuzu cities each had 82 questionnaires allotted to them which would bring the total of received questionnaires to 384 as planned. However, 345 questionnaires were received out of the distributed 384 yielding a response rate of 89.8%. A summary of the demographic characteristics as presented in sections 4.1.1 to 4.1.3 have been provided in the table below.

Table 9: Demographic characteristics of respondents

Item	Categories (N = 345)	Frequency	Percentage
Gender	Male	173	50.14%
	Female	172	49.86%
Age Group	20 to 25 years old	59	17.10%
	26 to 35 years old	134	38.84%
	36 to 45 years old	80	23.19%
	46 to 55 years old	47	13.62%
	56 to 60 years old	25	7.25%
Level of Education	Tertiary (university/college/technical)	223	64.64%
	Secondary education	108	31.30%
	Primary education	13	3.77%
	No formal education at all	1	0.29%

Source: R*esearcher's own compilation*.

4.2.1 Gender composition of respondents

From the actual sample size of 384 participants, 345 questionnaires were received out of which 173 questionnaires were received from male respondents representing a 50.1% of total received questionnaires. Female respondents amassed 172 questionnaires which contributed to 49.9% of the total questionnaires received. Figure 4 below depict how the research attempted to achieve a 50-50 gender equality on the response rate of questionnaires administered.
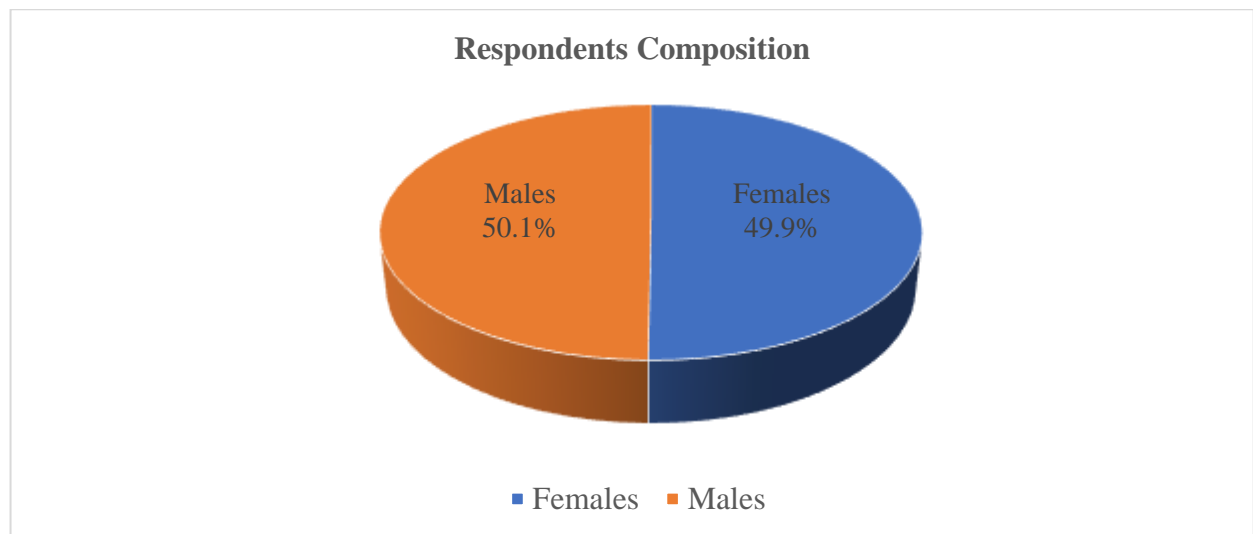
Figure 4: Gender composition of study participants. (**Source**: *Researcher's own compilation*).

4.2.2 Age group of respondents

The research study grouped participants into five age categories. It targeted Malawians living in four major cities of the country (Blantyre, Lilongwe, Zomba and Mzuzu) between the ages of 20 and 60 who hold a bank account with any of the eight financial institutions in the country. The specified age limit implied the period within which respondents at least independently own a bank account and actively have the capacity to use various digital financial services platforms.

The study revealed that respondents between the age bracket of 26 and 35 amassed a majority representation with 134 participants out of the 345, representing a 39% response rate. This was seconded by the 36 and 45 years age group which contributed a response rate of 23% followed by the 20 and 25 age group with 17% response rate. The 46 and 55 years age bracket had a 14% response rate while the lowest age group was the 55 to 60 years age bracket which only contributed a response rate of 7%. The graph below elucidates the spread of respondents on the questionnaire forms that were administered across the four major cities of the country.
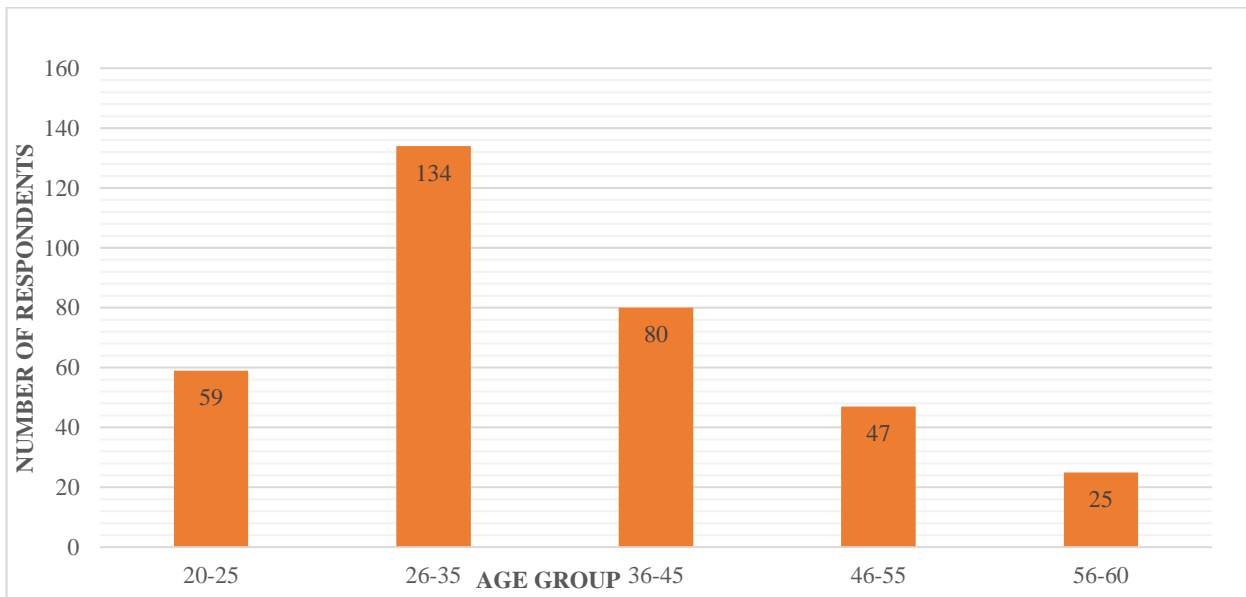
Figure 5: Frequency of responded questionnaires based on age group of participants. (**Source**: *Researcher's own compilation*).

4.2.3 Respondents' level of education

From the 345 participants, 223 responded to have attained some level of tertiary education (university, college, or technical education certification) representing 65%. Those with secondary school as their highest level of education were totaling 108 representing 31% of the total respondents whilst those with primary school being their highest education status had a representation of just 4% (13 respondents). Only one respondent admitted not to have had any formal education, thus contributing a representation of less than 1%. For those with educational status of primary school and below, the questionnaire was duly interpreted by the researcher to ensure that they understood its contents and avoid any form of biasness.

Figure 6 below gives a graphical representation of how participants were distributed among the four categories in respect of their level of education.
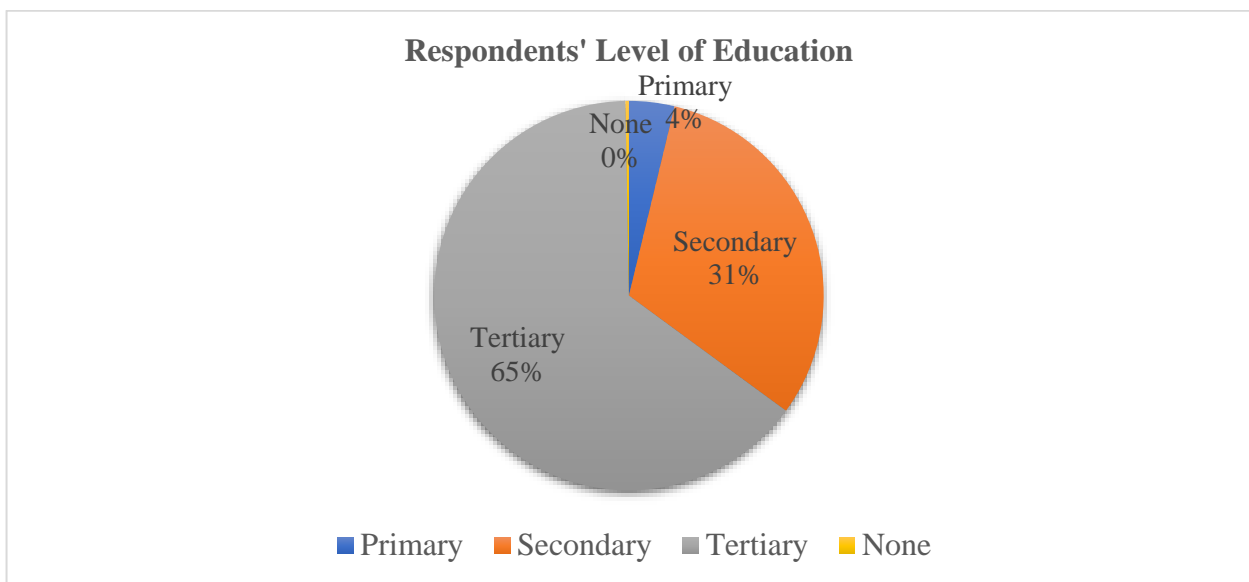
Figure 6: Distribution of respondents' level of education. (**Source**: *Researcher's own compilation*).

4.3 Respondents' adoption and usage of digital financial services

An analysis was also done in order to assess respondents' adoption and usage of three main digital financial services platforms namely mobile banking, internet banking and the electronic card services. This was done to understand which DFS platforms customers found convenient (useful

and easy to use), trustworthy (reliable and secure) and which ones were affected by issues of subjective norms (social influences).

Electronic cards (ATMs) were the most adopted of the three with a 99% adoption rate (341/345) as respondents admitted to usually choosing an option to have an ATM card at the time of opening their bank account. Furthermore, 90% of the respondents (310/345) believed that ATM withdrawals were more useful and easier to use when compared to the other platforms. However, 72% of the respondents (248 out of 345) confirmed that they barely use their ATM cards to pay for goods and services using point of sale (POS) machines with most of them using it mainly to withdraw funds from the ATM machines and then proceed to shop or pay for goods and services using the withdrawn cash. This is a more worrying statistics which shows that 72% of customers in urban areas still prefer to use physical cash to purchase goods and services in convenient stores and shopping malls citing unreliability of the POS machines for multiple failed transactions with their bank accounts being debited without the purchase transaction going through. Others cited perceived fear and lack of trust that the POS purchase transaction may not go through on account of subjective norms from close friends and relatives who may have spoken negatively of the POS machines inside convenient stores and shopping malls. This means that only 28% of the respondents were comfortable using POS machines to purchase goods and services.

The second most adopted platform was the mobile banking service. Only 9% of the respondents (31 out of 345) were yet to subscribe and start using mobile banking services. However, despite the 91% adoption rate (314/345) on mobile banking, over 59% of them (185/314) admitted not to trust the platform and still preferred to visit the banking halls for high valued transactions. Many cited inconveniences faced when a high valued transaction fails while using mobile banking platform due to the time taken by banks to reverse the transaction and reimburse them of their monies for such failed transactions. On average, respondents revealed that it would take a minimum of five working days (weekends automatically unaccounted) to have the monies reimbursed back to their bank accounts. Respondents considered this unacceptable and dissatisfying prompting many of them to physically visit the banking hall for important and time sensitive transactions. Moreover, 59% of respondents cited rising cases of phishing and social engineering as the major factor that made respondents doubt the security and robustness of mobile banking platforms. Further to this, respondents bemoaned increased instances of system down times during end of the month specifically on mobile banking and e-card services (ATM withdrawals and POS machines).

Internet banking was the least adopted of all. The study uncovered that 73% of the total sample size (253 respondents out of 345) were yet to subscribe to the internet banking platform. Most of the respondents had a misconception that internet banking was mainly designed to be used by corporate companies and other organisations. They highlighted the lack of information and awareness campaigns from commercial banks on internet banking as the major reason surrounding the heightened misconception regarding internet banking. Nonetheless, 27% who use the service strongly did believe that internet banking system is the safest, most reliable and robust platform when compared to the other two (mobile banking and e-card services) due to its low down time issues and the two-factor authentication system of One Time Password (OTP), a feature which is not available on mobile banking and e-card services. Moreover, most of them revealed in the additional comment box (survey instrument question 23) that there is a high transaction limit for internet banking service of as much as MK1 million kwacha per transaction or transfer, a feature which is unavailable on mobile banking and ATM withdrawals. However, 73% of the customers who use internet banking admitted that it is not easy to use and navigate as compared to mobile banking platforms. This means that financial institutions in the country must consider matters of privacy, security, and reliability of digital financial services critical as they affect customers' decision to not only adopt them but also continue using them to create a positive representation of DFS platforms in the eyes of consumers.

On subjective norms, 92% of respondents (318/345) disagreed that subjective norms (social influences) played a part in their decision to adopt and use the three digital financial services platforms. The remaining 27 customers who admitted that social influences played a part in their decision to use DFS platforms had secondary school as their maximum level of academic progression. Further to that, 24 out of those 27 respondents confessed to have physically visited banking halls for services which are also available on digital platforms and admitted that their decision was merely based on close friends' perception on the vulnerabilities associated with digital financial services. Apparently, all those 24 respondents were participants between the ages of 55 and 60 years. With digital financial services being in Malawi for just a little over 10 years, it may be thought that this age category represents a group of customers who are conservative and therefore, resistant to embrace new technologies having gotten used to the traditional in-person banking model of physically entering service centres.

Figure 7 below gives a graphical expression of how customers subscribed to the three digital financial services.
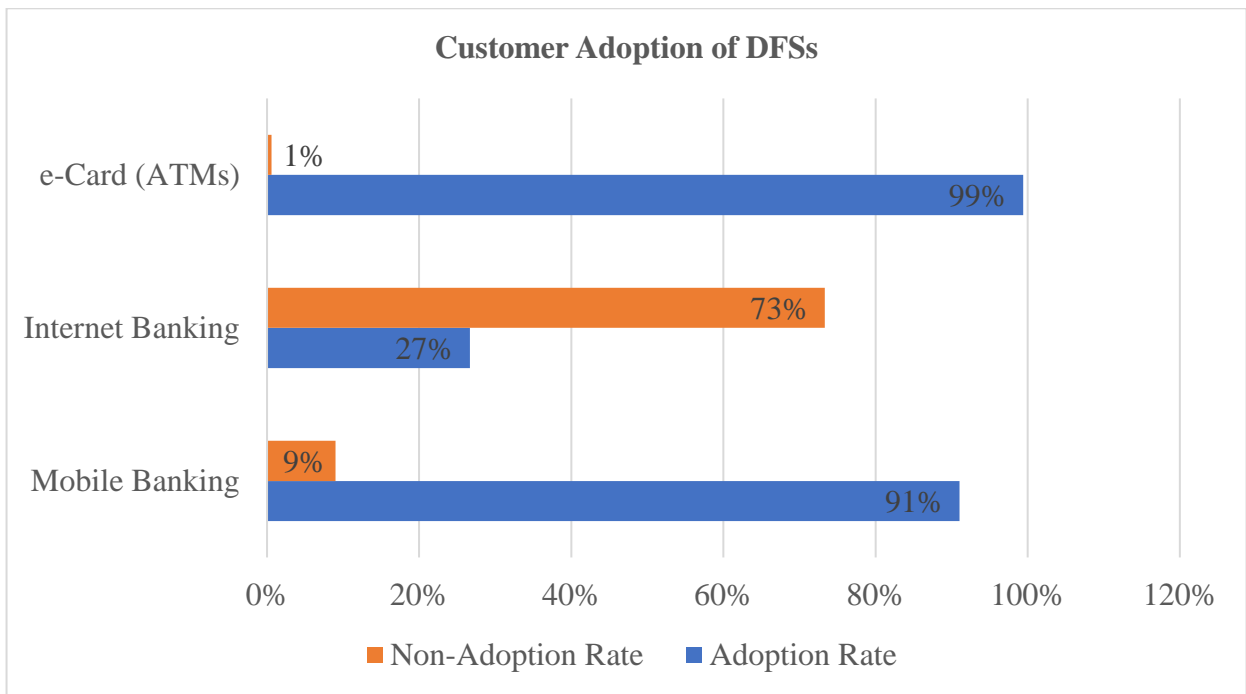
Figure 7: Customers' subscription to Digital Financial Services (DFSs). (**Source**: *Researcher's own compilation*).

4.4 Respondents' frequency of use of digital financial services

Frequency of use relates to the number of times a customer responded to have been using the three digital financial services platforms. The study wished to establish whether respondents use all the DFS platforms for more than once in a week. From the 345 collected questionnaires, the data revealed that ATM withdrawals were the most frequently used service with 48% of the respondents stating that they did ATM withdrawals at least once a week. Mobile banking was the second most frequently used platform with 42% of respondents using it over once a week for services like bill payments, airtime purchases and funds transfers. On the other hand, internet banking was the least frequently used service. Most respondents who use internet banking admitted to not have been using the service for more than once a week. Apparently, most of them used the service once a month rather than on a weekly basis representing a dismal frequency rate of just 10% with 253 participants (73% of total respondents) admitting never to have used internet banking at all. The

figure below gives an assimilation of the number of times respondents used the three digital banking platforms from a purported period of one week to a maximum of 12 months.
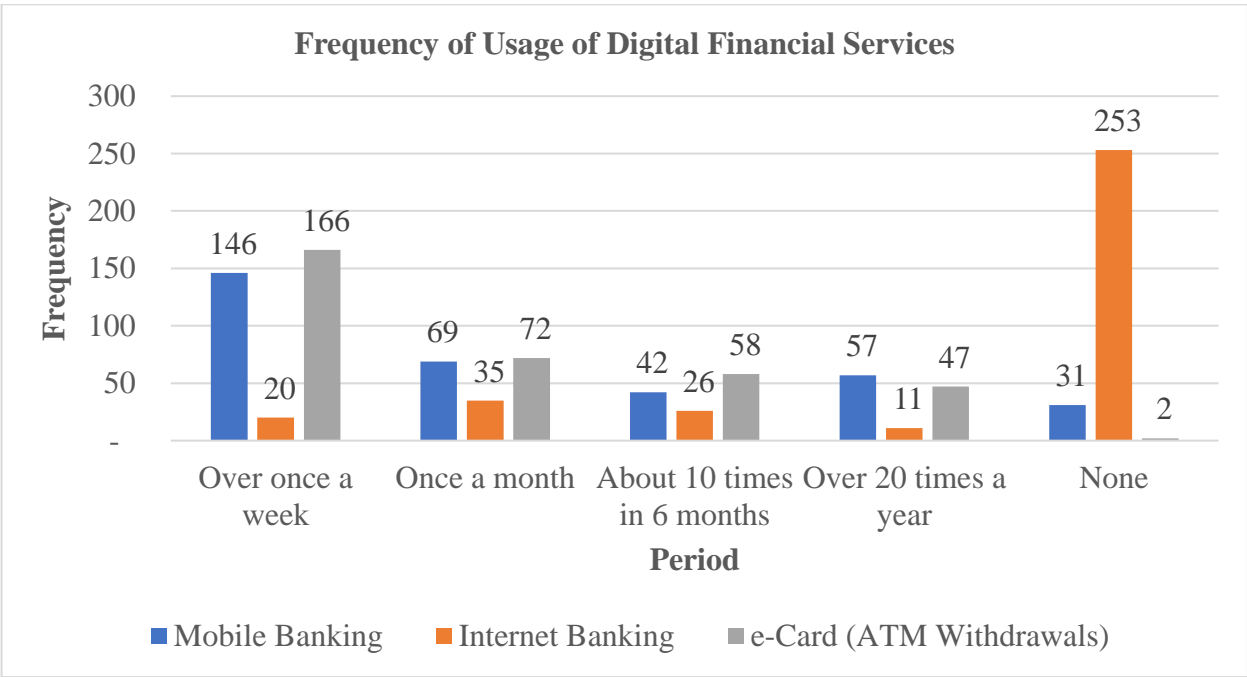
Figure 8: A graphical representation of respondents' frequency of use of Digital Financial Services (DFSs) over a period of 12 months. (**Source**: *Researcher's own compilation*).

4.5 Respondents' preferred channel of communication on DFS

The study also wanted to establish if the available channels of communication on digital financial services were considered acceptable and more appealing to customers resident in urban areas of Malawi. Respondents were asked to choose among the four options of awareness campaigns that banks currently use or those that they can employ in near future to best appeal to the needs and tastes of customers residing in urban areas of the country. This section aimed at discovering whether commercial banks should provide standardised awareness programs for all Malawians or should offer tailor-made awareness campaigns that are desirable to certain sections of customers living in urban areas.

The table below gives details of communication channels that customers preferred banks to be using to best deliver messages and updates on digital financial services which would in turn help improve the adoption and continued usage of various DFS platforms that financial institution in the country offer.

Table 10: Respondents' preferred channels of communication on DFS awareness campaigns.

Channel of Communication	Respondents' Choice	Percentage (%)
Digital push messages (notifications of phones/mobile applications)	137	40%
Print media (billboards, fliers, etc.)	101	29%
Radio adverts and programs	39	11%
Television commercials	68	20%
Total	**345**	**100%**

Source: *Researcher's own compilation*.

As it can be seen from the above table, most customers (40%) preferred to be receiving push messages in form of pop-up alerts or notifications on their phones and mobile banking applications which would easily get their attention to communications or awareness campaigns regarding the available digital financial services including any new technologies or changes made to current DFS platforms. Print media was the second preferred mode of communication with a preference rate of 29% followed by television commercials which amassed a representation of 20%. However, radio adverts were the least preferred medium of communication with a preference rate of just 11%.

Respondents stated that commercial banks mostly use radio adverts and television programs to advocate for the adoption digital banking services. However, most of them felt that customers in urban areas have little time listening to radio programs or watching local TV programs. They claimed this is more appealing to people in rural areas. Their preference was, therefore, on digital push messages and print media usually placed on billboards and buildings along the roads.

Sections 4.1 to 4.4 therefore give demographic characteristics of respondents with the aim of providing a perspective of the behaviours of customers towards the adoption and usage of digital financial services within the four major cities of Malawi.

4.6 Descriptive statistics

Descriptive statistics provide a summary of statistics that quantitatively describe the basic characteristics and features of data collected in a meaningful way by allowing modest interpretation of a collection of data obtained during the research study. Such statistics include measures of central tendency (mean, mode, median, standard deviation), tables, graphs, charts, or ratios. This section therefore descriptively analyses the variables under investigation (convenience, trust, and subjective norms) to show results of the factors influencing the intention to adopt and use digital financial services in Malawi's urban areas.

4.6.1   Descriptive statistics for convenience on intention to adopt digital financial services

The descriptive statistics provided in the table 9 below indicates that most respondents in urban areas of Malawi agreed with statements on perceived usefulness and ease of use (convenience) of the digital banking platforms. A significant number of them agreed that digital banking is useful as it helps save time spent on queues inside banking halls (mean = 1.31, std. dev = 0.66). Again, most respondents confirmed that DFS increases speed of service delivery (mean = 1.31, std. dev = 0.66) as well as their productivity due to quick completion of financial transactions when compared to traditional banking (mean = 1.38, std. dev = 0.74). Many customers also agreed that digital banking is convenient as it allows for remote performance of transactions at any time of the day (24/7 availability) (mean = 1.35, std. dev = 0.58).

Most respondents also found digital banking platforms simple to use (mean = 1.47, std. dev = 0.80) and were able to understand the language used in the command (prompt) menus (mean =1.27, std. dev = 0.53) as well as the user friendliness of the DFS interface (mean = 1.42, std. dev. = 0.76). Customers also stated that clear and precise information on digital banking is important to enhance their digital banking usage (mean =1.22, std. dev = 0.50) and believed that sensitisation plays a significant role towards the intention to adopt the available DFSs (mean= 1.22, std. dev = 0.50). However, many customers expressed a lack of full knowledge of all services available on DFS platforms (mean = 1.23, std. dev. = 0.54). Overall, respondents cited convenience of digital banking services as a major factor for their decision to adopt the available digital financial services.

Table 11: Descriptive statistics for convenience factor.

Statement	N	Mean	Std. Deviation
Adoption brings about convenience which reduces time spent on queues inside banking halls.	345	1.3158	0.65895
Adoption helps increase speed of service delivery (e.g., online funds transfer, bill payments).	345	1.3158	0.65895
Using digital banking increases productivity	345	1.3789	0.74023
Adoption is enhanced due to 24/7 availability	345	1.3546	0.57674
The simplicity of digital banking platforms influences the decision to start using them.	345	1.4680	0.7993
Language and prompt menus on the digital platforms are easy to understand.	345	1.2728	0.52696
Interface with digital financial services is effortless and easy to navigate (user friendly).	345	1.4167	0.76234
Clear and precise information on digital banking affects the intention to adopt available DFSs	345	1.2250	0.49936
Sensitisation plays a major role in increasing uptake of digital financial services.	345	1.2250	0.49936
Awareness that most services done inside banking halls are available on digital banking platforms too	345	1.2335	0.53712
Valid N (listwise)	345		

Source: *Researcher's own compilation*.

4.6.2 Descriptive statistics for trust on intention to adopt digital financial services

Table 10 below shows that a significant number of respondents agreed that trust (perceived system reliability, security, and privacy) was a major factor under consideration in their decision to adopt digital financial services in Malawi. Most study participants believed that continued instances of fraudulent transactions on digital banking would cause customers not to trust the service resulting in minimal usage of DFS platforms (mean = 2.47, std. dev. = 0.99).

Customers also agreed that increased occurrences of identity theft and social engineering would prevent them from frequently using digital financial services platforms (mean = 2.35, std. dev = 0.91). It was also noted that respondents believed that they could incur financial losses for using digital banking due to security vulnerability associated with DFS platforms (mean = 2.44, std. dev = 0.96). A small number of customers believed that digital banking has robust security features (mean = 2.31, std. dev = 0.87). Most customers agreed that reliability of digital banking platforms affects their intentions and decisions to adopt and continue using them (mean = 1.91, std. dev.= 0.73) whilst at the same that stating that increased service downtime causes loss of trust increases physical visits to banking halls (mean = 2.44, std. dev = 0.96).

Again, a large number of customers admitted to have been deducted (debited) funds in their bank account without receiving the corresponding service required while using digital banking platforms (mean = 2.29, std. dev. = 0.83) and that the time taken to rectify the anomaly was long making them consider physically visiting banking hall the next time they need a similar service (mean = 2.29, std. dev. = 0.83).

Averall, most respondents admitted that issues like security of platforms, service reliability and privacy of personal information influenced how much they trusted the digital banking platforms which in turn affected their decision to adopt and use the available digital financial services.

Table 12: Descriptive statistics for trust factor.

Statement	N	Mean	Std. Deviation
Fraudulent transactions prevent frequent use of DFSs	345	2.4671	0.98935
Identity theft and social engineering (hacking) makes digital banking platforms untrustworthy	345	2.3532	0.91054
Security risks associated with digital banking influence decision to frequently use them.	345	2.4367	0.96143
I do not trust security and privacy controls put in place on digital banking platforms.	345	2.3129	0.86896
Reliability of digital banking platforms affects my decision to adopt and use them.	345	1.9058	0.73311
System down times affect usage of platforms.	345	2.4367	0.96143
Funds have been deducted funds from my bank account without receiving the corresponding service required	345	2.2899	0.83333
The time taken to rectify the erroneous deductions made me consider physically entering the banking hall	345	2.2899	0.83333
Valid N (listwise)	345		

Source: *Researcher's own compilation*.

44

4.6.3 Descriptive statistics for subjective norms on intention to adopt DFSs

From the table 11 below, it indicates that a significant number of respondents did not think that subjective norms had influence on their decision to adopt and use the available digital financial services. Most respondents did not express reservations to use digital banking services just because the people whose views they respected found such services unreliable (mean = 2.59, std. dev. = 1.06).

Similarly, a significant number of customers stated that the views of close friends in respect of security vulnerability associated with digital financial services did not affect their decision to use digital banking (mean = 2.68, std. dev. = 1.15). Again, the beliefs of the society on digital banking did not influence customers decision on whether to use DFS platforms or not (mean = 2.68, std. dev. = 1.15. However, a relative number of customers agreed that for certain high valued and important transactions, they were compelled to visit banking halls despite the availability of such services on digital banking platforms simply because of other people's perceptions based on their previous unpleasant encounter with DFSs (mean = 2.38, std. dev = 0.90).

Table 13: Descriptive statistics for subjective norms factor.

Statement	N	Mean	Std. Deviation
Views of respected people influence the intention to adopt and use digital financial services.	345	2.5886	1.06089
My close friends believe digital banking is prone to fraudulent activities. This influences the intention to adopt.	345	2.6839	1.15212
Societal beliefs on digital banking have led me to enter banking hall for certain services that I can simply access using the available digital banking platforms.	345	2.6839	1.15212
People's perception on the vulnerabilities of digital banking enhances my decision to continue visiting banking halls for certain high valued transactions.	345	2.3765	0.89837
Valid N (listwise)	345		

Source: *Researcher's own compilation*.

4.7 Inferential statistics

This section represents a branch of statistics where data analysis tools were used to draw conclusions or make inferences about the population from a given data sample. These are usually categorised into two groups: hypothesis testing and regression analysis. Hypothesis testing involves the process of testing and establishing a null hypothesis and an alternative hypothesis to undertake a statistical test of significance.

On the other hand, regression analysis involves the process of quantifying how a unit change in one variable will result in a corresponding change of another variable. Examples of regression analysis include simple linear regression, multiple linear regression, logistic regression, and ordinal regression.

In respect of this research study, logistic regression was used to analyse and draw conclusion on the relationship between dependent and independent variables from a sample of 384 questionnaires that were distributed to respondents across Blantyre, Lilongwe, Zomba and Mzuzu.

4.7.1   Correlation analysis

Using chi-square, a test was done to determine the existence of correlation among categorical variables within the datasets. The purpose of using chi-square test is therefore to identify whether a disparity between actual and predicted data is due to chance or to a link (correlation) between the variables under consideration (Biswal, 2023). The variables under investigation (investigation (convenience, trust, and subjective norms) were subjected to a chi-square test in order verify whether the variables are significant at p-values of less than 0.05 (statistically significant at 95% confidence interval) or not and hence accept the null hypotheses. Chi-square is calculated using the below formula:

$$x_c^2 = \frac{\Sigma\,(O_i - E_i)^2}{E_i}$$

Where:

X^2 = chi-square test statistic

C = degrees of freedom

O = observed value

E = expected value

$i =$ "*ith*" position in the contingency table.

The tables below provide results of the chi-square tests computed using Stata statistical package based on the p-value of $P \leq 0.05$.

Table 14: Results of chi-square test for convenience factor.

```
. tabulate       DFSAdoption     Convenience, chi2

          DFS │              Convenience
              │ Strongly                           Strongly
     Adoption │    Agree  Agree  Neutral  Disagree  Disagree │ Total
──────────────┼──────────────────────────────────────────────┼──────
Intention_to_adopt │   100    139        4         3         1 │   247
No_intention_to_adopt │  38     49        1         6         4 │    98
──────────────┼──────────────────────────────────────────────┼──────
        Total │    138    188        5         9         5 │   345

          Pearson chi2(4)        =   69.0561        Pr = 0.000
```

Source: Researcher's own compilation through Stata.

From the above table, the null hypothesis was that there is no relationship between convenience (PU and PEOU) and the intention to adopt digital financial services. However, the results show that a relationship exists causing the researcher to reject the null hypothesis and accept the alternative hypothesis since the p-value is 0.000 meaning that it is statistically significant at 5% significance level.

Table 15: Results of chi-square test for trust factor.

```
. tabulate       DFSAdoption     Trust, chi2

          DFS │                Trust
              │ Strongly                           Strongly
     Adoption │    Agree  Agree  Neutral  Disagree  Disagree │ Total
──────────────┼──────────────────────────────────────────────┼──────
Intention_to_adopt │    90    113        6         5         8 │   222
No_intention_to_adopt │  44     64        2         6         7 │   123
──────────────┼──────────────────────────────────────────────┼──────
        Total │    134    177        8        11        15 │   345

          Pearson chi2(4)        =   57.2372        Pr = 0.003
```

Source: Researcher's own compilation through Stata.

Similarly, the above table shows that the p-value is 0.003 implying that there exists a statistically significant relationship between trust (service security and privacy) and the intention to adopt digital financial services.

Table 16: Results of chi-square test for subjective norms factor.

```
. tabulate      DFSAdoption    SubjectiveNorms, chi2

                   DFS |              SubjectiveNorms
                       | Strongly                          Strongly
              Adoption |   Agree   Agree  Neutral  Disagree  Disagree |     Total
-----------------------+--------------------------------------------- +----------
     Intention_to_adopt|       2       5       14      151        99  |       271
  No_intention_to_adopt|       7       9       19       22        17  |        74
-----------------------+--------------------------------------------- +----------
                 Total |       9      14       33      173       116  |       345


            Pearson chi2(4)        =   5.9884              Pr = 0.618
```

Source: Researcher's own compilation through Stata.

In terms of subjective norms, the null hypothesis is true. With a p-value of 0.618 it means that there is no statistically significant relationship between subjective norms (social influences) and the adoption of digital financial services.

4.7.2 Influence of convenience on intention to adopt digital financial services

The first independent variable which was tested to analyse the existence of any relationship or effect on the adoption of DFSs was convenience. The respondents were requested to state the degree to which they agreed or disagreed with questions and assertions in respect of convenience which were categorised between perceived usefulness (PU) and perceived ease of use (PEOU). A total of ten questionnaire items attempted to establish the probability and odds of convenience influencing customers' behaviour towards the adoption and usage digital banking services.

Those who strongly agreed or just agreed that convenience of platforms was an influencing factor were placed in one category and interpreted as expressing their intention to adopt digital financial services whilst those who were indifferent or strongly disagreed or just disagreed were placed in the category of respondents who did not believe that convenience influenced their decision to adopt and use the available digital banking platforms.

Table 17: Data for computing probability and odds ratio on convenience.

No.	Agree| Strongly Agree	Neutral| Disagree| Strongly Disagree	Total
		Convenience	
C1	332	13	345
C2	322	23	345
C3	327	18	345
C4	252	93	345
C5	189	156	345
C6	229	116	345
C7	178	167	345
C20	241	104	345
C21	193	152	345
C22	159	186	345
Average	**242**	**103**	**345**

Source: *Researcher's own compilation.*

	Agree| Strongly Agree	Neutral| Disagree| Strongly Disagree	
Probability	0.7	0.3	= 1
Odds	2.33333	0.42857	
Odds Ratio	5.44	0.18	

From Table 17 above, the probability of customers agreeing that convenience had a significant influence on the intention to adopt digital financial services was calculated as (242/345) = 0.7 and the probability of customers disagreeing that convenience does not play a significant role in the adoption of digital banking services was (103/345) = 0.3.

Odds were then determined from the probability computed using the formula: Odds = P/(1-P). Odds (Agree| Strongly Agree) = 0.7/(1-0.7) = 2.33333 and Odds (Neutral| Disagree| Strongly Disagree) = 0.3/(1-0.3) = 0.42857.

The proportional odds ratio for Agree| Strongly Agree was calculated as: OR =

$$\frac{\text{Odds (Agree| Strongly Agree)}}{\text{Odds (Neutral| Disagree| Strongly Disagree)}} = \frac{2.33333}{0.42857} = 5.44$$

This meant that the odds of customers who strongly agreed or just agreed that convenience was a determinant factor in their decision to adopt digital financial services were 5.44 times more than

the odds of customers who were indifferent (neutral), strongly disagreed or just disagreed and argued that convenience had no influence in the adoption and continued usage of digital financial services.

Using Stata logistic regression command results of the odds ratio was similar to the 5.44 computed above as indicated in Table 18 below.

Table 18: Results of logistic regression odds ratio analysis for convenience.

. logistic DFSAdoption Convenience

Logistic regression			Number of obs		=	345
			LR chi2(1)		=	2.21
			Prob > chi2		=	0.000
Log likelihood = -238.02978			Pseudo R2		=	0.0046

DFSAdoption	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Convenience	5.444445	5.314243	1.83	0.076	.8040179	38.60726
_cons	3.879526	3.592434	1.46	0.014	.6317824	23.82263

Note: **_cons** estimates baseline odds.

Source: *Researcher's own compilation through Stata*.

The above results show that perceived usefulness and perceived ease of use have a statistically significant positive impact towards the intention to adopt digital financial services for Malawians resident in urban areas. With a p-value of 0.000, it demonstrates that convenience (PU and PEOU) is a major factor that influences the adoption of digital financial services in Malawi's urban areas. The study noted that customers found digital banking to be useful as it gave them the ability to transact at any time and place without the need for physical presence at a banking hall. Similarly, the convenience of customers to pay goods and services (e.g. utility bills, tv subscriptions and rentals) was a major factor that encourage usage of DFS platforms.

The results appeared to be consistent with the findings of Alalwan et al. (2017), Balinto et al. (2020) and Naruetharadhol et al. (2021) who all established that the convenience of mobile and digital

banking services in respect of usefulness and ease of use was the major force driving the intention to adopt among customers. In terms of usefulness and ease of use, Lema (2017) explained that the two brings about convenience due to the time saved in performing the transactions remotely, enhanced productivity because of increased speed of transaction processing and the availability of the platforms throughout a 24-hour period which in turn increases adoption and usage.

Similarly, Ezeh and Nwankwo (2017) buttressed convenience of mobile banking in terms of time and effort saving and the increased simplicity of digital platforms. They stressed that since mobile banking enables customers to remotely transfer funds, pay utility bills and purchase goods and services, it saves a lot of time if they were to queue for the same services inside a banking hall and allows them to use their time for other important things during the day. Such convenience makes customers find mobile banking service to be more useful and easier to use hence increasing its adoption and usage (Ezeh & Nwankwo, 2017).

4.7.3   Influence of trust on intention to adopt digital financial services

Respondents were asked to convey their views on the extent to which they agreed or disagreed with statements regarding the security, privacy and reliability of mobile banking, internet banking and e-card platforms and how it affected their decision to adopt them. The section on trust included eight questionnaire items and the table below gives a summary of the analysis.

Similarly, those who strongly agreed or just agreed that trust (service availability, security of platforms and privacy of personal financial data) was an influencing factor were placed in one category and interpreted as expressing their intention to adopt digital financial services whilst those who were indifferent or strongly disagreed or just disagreed were placed in the category of respondents who did not believe that convenience influenced their decision to adopt and use the available digital banking platforms.

Table 19: Data for computing probability and odds ratio on trust.

No.	Agree| Strongly Agree	Neutral| Disagree| Strongly Disagree	Total
T8	123	222	345
T9	113	232	345
T10	216	129	345
T11	220	125	345
T16	338	7	345
T17	37	308	345
T18	321	24	345
T19	308	37	345
Average	**210**	**135**	**345**

Source: *Researcher's own compilation*.

	Agree| Strongly Agree	Neutral| Disagree| Strongly Disagree	
Probability	0.6	0.4	= 1
Odds	1.54613	0.64678	
Odds Ratio	2.39	0.42	

Similarly, the probability of customers who agreed that trust (system security, privacy and reliability) had influence on their intention to adopt digital financial services was calculated as (210/345) = 0.6 and the probability of customers who disagreed was (136/345) = 0.4.

The odds of (Agree| Strongly Agree) were =0.6/(1-0.6) = 1.54613 and odds of (Neutral| Disagree| Strongly Disagree) were = 0.4/(1-0.4) = 0.64678. Applying the proportional odds ratio formula resulted in an odds ratio of 2.39 which is similar to the results of logistic odds ratio from Stata as shown in Table 13 below.

The results showed that the odds of respondents who admitted that the security, privacy, and reliability of DFS platforms had an influence on their decision to adopt digital banking services were 2.39 times more than the odds of those who were indifferent (neutral), strongly disagreed or just disagreed.

Table 20: Results of logistic regression odds ratio analysis for trust.

. logistic DFSAdoption Trust

Logistic regression				Number of obs		=	345
				LR chi2(1)		=	8.81
				Prob > chi2		=	0.0030
Log likelihood = -234.7281				Pseudo R2		=	0.0184

DFSAdoption	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Trust	2.393423	.2413712	2.93	0.003	1.10679	1.664811
_cons	.3824733	.1312017	-2.80	0.005	.1952582	.7491916

Note: **_cons** estimate baseline odds.

Source: *Researcher's own compilation through Stata*.

From the results above, the effect of trust on adoption of digital financial services was found to be significant as well (p=0.0030). The finding demonstrates that trust is a major factor and plays a very important role in influencing the intention to adopt digital financial services in Malawi's urban areas. The findings on trust indicated that most customers consider issues of privacy, security of platforms and service reliability vital in as far as the decision to adopt digital financial services is concerned. Many of the respondents wanted assurances that none of their personal information would be shared with unauthorised personnel and that funds sitting in their bank accounts would not be stolen by fraudsters due to instances of social engineering or identity theft. Further to that, customers also stressed on how inconsistent availability of digital banking services affect usage and increases physical visits to banking halls. Many of them expressed concerns in the survey instrument's open-ended question number 23 that frequent occurrences of system downtime (service unavailability) and delays in refunding single-sided transactions (e.g. undisbursed funds at an ATM despite debits made in the accounts) made them not to trust or continue using digital financial platforms.

The results are thus comparable to the earlier reviewed literature. For instance, Asante and Baafi (2022) revealed that variables of service reliability, privacy of customer data and the security of

digital banking platforms were the main factors that influenced the intention to adopt and use digital banking services in Ghana. Similarly, the findings of Fadila et al. (2021) established that perceived security and reliability affected customers' uptake of digital banking services in Indonesia. The same was also shared by Srivastava and Vishnani (2021) who concluded that system security and service quality had a significant impact on mobile banking usage in North India. The scholars emphasised that unless trust can be built or restored through the robustness of mobile banking platforms, as well as quality of service offered, the adoption of m-banking services would continue being low in North India.

Contrary to the findings of this study on trust, Abdennebi (2023) found that trust (perceived security and satisfaction) did not have significant influence and therefore, not one of the determining factors for the adoption of mobile banking services in Tunisia. A similar conclusion was made by Norng (2022) who also observed that trust did not fundamentally influence customers' behavioural intention to adopt and use mobile banking in Cambodia. This reiterated the perspective shared by Hassan and Wood (2020) that what may influence the adoption of digital banking services in one country may be different from another due to the various demographic factors at play following their study of mobile banking services in Egypt and the United States of America.

4.7.4 Influence of subjective norms on intention to adopt digital financial services

A total of four survey questions were included under the section of subjective norms. Respondents were again asked to provide answers as to what degree they agreed or disagreed with statements that subjective norms have an impact on customers' intention to adopt and use the three digital banking platforms.

Again, those who strongly agreed or just agreed that subjective norms (social influences) were an influencing factor in their decision to not use digital banking services were placed in one category and interpreted as expressing negative intention to adopt digital financial services whilst those who were indifferent or strongly disagreed or just disagreed were placed in the category of those who believed that their decision to use DFSs was not influenced by the opinions and views of people who are considered important to them or within their society.

Table 21: Data for computing probability and odds ratio on subjective norms.

No.	Agree| Strongly Agree	Neutral| Disagree| Strongly Disagree	Total
	Subjective Norms		
SN12	17	328	345
SN13	20	325	345
SN14	87	258	345
SN15	203	142	345
Average	**82**	**263**	**345**

Source: *Researcher's own compilation*.

	Agree| Strongly Agree	Neutral| Disagree| Strongly Disagree		
Probability	0.2	0.8	=	1
Odds	0.25000	4.00000		
Odds Ratio	0.06	16.00		

Conversely, the probability of customers who agreed that subjective norms had influence on their intention or decision to adopt digital financial services was minimally 0.2 (82/345) as compared to the probability of customers who disagreed which was 0.8 (263/345).

The odds of (Agree| Strongly Agree) were = 0.2/(1-0.2) = 0.25000 and odds of (Neutral| Disagree| Strongly Disagree) were = 0.8/(1-0.8) = 4.00000. This meant that the odds of customers admitting the influence of subjective norms on DFSs adoption were just 1 to 4. Using the proportional odds model, the odds ratio of (Agree| Strongly Agree) was barely 0.06 implying that subjective norms had little impact on customers' decision to adopt and use digital financial services.

The odds ratio of (Neutral| Disagree| Strongly Disagree) was 16 times more than those who agreed which meant that a lot of respondents significantly dismissed the influence of subjective norms on digital banking adoption.

From the study, it appeared that the majority of customers resident in urban areas of Malawi were learned and knowledgeable enough to be easily swayed and influenced by the negative views of others in respect of intention to adopt and use digital financial services and their related platforms.

Results from Stata confirmed the conclusion that subjective norms had little effect on customers' decision to adopt and use the available digital financial services. The table below shows results of

logistic regression odds ratio commands run in Stata statistical package in respect of customers' perceptions towards subjective norms.

Table 22: Results of logistic regression odds ratio analysis for subjective norms.

. logistic DFSAdoption SubjectiveNorms

Logistic regression				Number of obs	=	345
				LR chi2(1)	=	0.25
				Prob > chi2	=	0.6180
Log likelihood = -239.00997				Pseudo R2	=	0.4005

DFSAdoption	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
SubjectiveNorms	.0632583	.0877061	-0.50	0.618	.7979369	1.143597
_cons	1.1474	.3522232	0.45	0.654	.6286623	2.094173

Note: **_cons** estimate baseline odds.

Source: *Researcher's own compilation through Stata*.

The results indicate that subjective norms did not have significant influence on the intention to adopt digital financial services for customers resident in Malawi's urban areas. This is evidenced by the results of the logistic regression odds ratio analysis which gives a p-value of 0.6180 indicating that subjective norms (social influences) were not statistically significant at 5% significance level.

The results follow a similar study by Jouda et al. (2020) who upon investigating factors affecting the adoption of mobile banking services in Palestine concluded that, based on a sample size of 682 participants, subjective norms had insignificant influence on mobile banking adoption in Gaza, Palestine. Another study was conducted by Hong (2019) in Korea with the objective of understanding and predicting customers' behavioural intention to adopt and use mobile banking services. Based on responses from 751 participants, the study concluded that subjective norms were not significantly related to customers' intention to adopt mobile banking in Korea.

However, some studies have found subjective norms to have a significantly positive influence on the adoption or intention to adopt digital banking services (Ramdhony & Munien, 2013; Sabi, 2014; Ham et al., 2015; Norng, 2022). Malaquias et al. (2018) also investigated determinants of digital banking services in Brazil and established social influence as one of the major factors that played a significant role in determining the intention to adopt digital banking services among customers in Brazil. Nevertheless, Chitungo and Munongo (2013) highlighted that despite subjective norms being having an influence on digital banking adoption, it is mostly due to other demographic factors such as people's level of education, place of residence (rural or urban), age and income.

4.7.5   Logistic regression analysis

The aim of this study was to assess decisional factors that influence customers' decision to adopt digital financial services for service centres in urban areas of Malawi. To establish and predict the relationship between dependent variable (DFS adoption) and the independent variables (convenience, trust and subjective norms), a logistic regression model was adopted using the proportion odds model. The proportion odds model, which is an extension of the logistic regression, is a statistical technique that analyses and predicts the relationship between an ordinal dependent variable against two or more independent variables.

The model was, therefore, used to predict whether any variation in convenience (perceived usefulness and perceived ease of use), trust (reliability and security of platforms) and subjective norms would have a positive or negative effect on intention to adopt digital financial services for customers' resident in urban areas of Malawi. Using Stata 15 analytical tool, the table below shows results of regression analysis which tested whether predictor variables of convenience, trust and subjective norms had significant influence on customers' decision to adopt and use the available digital banking services in urban Malawi.

Table 23: Results of logistic regression analysis.

```
. ologit DFSAdoption Convenience Trust SubjectiveNorms

Iteration 0:    log likelihood = -486.39363
Iteration 1:    log likelihood = -446.94417
Iteration 2:    log likelihood = -445.94812
Iteration 3:    log likelihood = -445.94724
Iteration 4:    log likelihood = -445.94724

Ordered logistic regression                    Number of obs    =        345
                                               LR chi2(3)       =      80.89
                                               Prob > chi2      =     0.0000
Log likelihood = -445.94724                    Pseudo R2        =     0.0832
```

DFSAdoption	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Convenience	1.697932	.2169502	7.83	0.000	1.272717	2.123147
Trust	.2283662	.098501	2.32	0.020	.0353078	.4214246
SubjectiveNorms	-.1220024	.0871875	-1.40	0.162	-.2928867	.048882
/cut1	5.255015	1.023004			3.249964	7.260065
/cut2	6.699902	1.033568			4.674147	8.725658
/cut3	8.858143	1.087385			6.726908	10.98938
/cut4	9.243853	1.092281			7.103021	11.38469

Source: *Researcher's own compilation through Stata*.

4.8 Interpretation of results

From a sample of 345 respondents, the LR Chi-square test with a value of 80.89 (p=0.000) showed that the model fitted well with the observed results when compared to the null having Pseudo R=0.0832. As it can been seen from the table above, the study showed that Convenience (p=0.000) and Trust (p=0.020) were statistically significant at 95% confidence intervals. On the other hand, the test results indicated that Subjective Norms (p=0.162) was statistically non-significant meaning that there was no statistical evidence that subjective norms had much impact on DFSs adoption.

The results, therefore, entailed that for a 'unit' increase in convenience (perceived usefulness and perceived ease of use), we expect a 1.70 increase in the log-odds of having an increase in customers' intention to adopt and use the available digital financial services given that all other variables in the model are held constant. Similarly, for a 'unit' increase in trust (improvements in the security, privacy, and reliability) of digital banking platforms, we expect a 0.23 increase in the odds of having an increase in the intention to adopt and usage digital financial services holding all other variables in the model constant. The coefficients in the table represent the values of ordinal logistic regression equation that helped predict relationship between the dependent and independent variables. These are in log-odds measurements or units.

To better interpret results of the logistic regression, the odds ratio was used which took into account the significance of the coefficients for the three independent variables. The odds (probability) of convenience having a positive influence on DFS adoption was first computed as:

$$P = \exp (1.697932)/(1+\exp(1.697932)) = .8453.$$

Odds ratio would therefore be $.845/(1-.845) = 5.4516$.

Similarly, the probability of trust influencing the intention to adopt digital financial services was computed as:

$$P = \exp(0.2283662)/(1+\exp(0.2283662)) = .5995$$

Odds ratio $=.5995/(1-.5995) = 1.4969$.

For subjective norms, the probability of subjective norms influencing customers' decision to adopt digital financial services was computed as:

$$P = \exp(-1.220024)/(1+\exp(-1.220024)) = .2279$$

Odds ratio was therefore $= .2279 /(1-.2279) = 0.2592$.

This means that for a unit change in convenience (ease of use and usefulness) of DFS platforms, the odds that customers agree or strongly agree to adopt digital financial services is 5.45 times more than those who were neutral or disagreed or strongly disagreed. From the above table, this is statistically significant with a p-value of 0.000. Similarly, the odds of trust (service reliability and security of platforms) influencing the intention to adopt digital banking services is 1.50 times as large as the odds of those being neutral or disagreeing. This is also significant with a p-value value of 0.020 from Table 23 above.

However, the odds subjective norms (social influences) influencing the intention to adopt digital financial services in Malawi's urban areas is just 0.26 times the odds of customers disagreeing or strongly disagreeing. This is statistically not significant having a p-value of 0.162 implying that subjective norms have little influence on customers' intention to adopt digital financial services.

Ranking the three independent variables would mean that convenience was the most significant factor that influenced customers' decision to adopt and use digital financial services in Malawi's urban areas (odds ratio = 5.45) followed by trust which also had a positive influence on intention to adopt (odds ratio = 1.50). On the contrary, subjective norms appeared to be the least factor and its influence on customers' decision to adopt digital banking was negligible at an odds ratio of just 0.26.

The overall probability of the influence of the convenience, trust and subjective norms in the adoption of digital financial services based on the results from Stata can also be calculated as:

$$\text{Logit}[P(Y \leq 1)] = 5.255015 - [(1.697932*1) + (0.2283662*2) + (-1.220024*3)] + 0.05$$

$$\text{Logit}[P(Y \leq 1)] = 0.403743$$

$$P(Y \leq 1) = \exp(0.353743)/(1+\exp(0.353743)) = 0.5996$$

$$P(Y \leq 1) = P(Y = 1) = 0.5996$$

Thus 59.96% of respondents believed that improvements in convenience (PU and PEOU), trust (security, privacy, and reliability of digital platforms) and awareness programs on DFS misconceptions (subjective norms) in respect of digital financial services have a positive influence on the intention to adopt and use digital banking platforms in urban areas of Malawi.

4.9 Post-estimation commands of the regression model

One of the most common post-estimation tests used in practice is Linktest. Linktest is usually employed to check whether the regression equation connecting the dependent and the independent variables might suffer from specification problems which may in turn undermine the underlying assumptions as well as the robustness of the model used. In respect of this study, the intention to adopt digital financial services (DFS adoption) as our dependent variable was used to test whether it was influenced by the three independent variables of convenience, trust and subjective norms including if the specifications within the logistic regression equation were correct. The results of the Linktest have been explained in tables 24 and 25 below.

Table 24: Results of post-estimation regression analysis.

. regress DFSAdoption Convenience Trust SubjectiveNorms

Source	SS	df	MS			
Model	114.733565	3	38.2445218			
Residual	412.71571	341	1.21031			
Total	527.449275	344	1.53328278			

				Number of obs	=	345
				F(3, 70)	=	31.60
				Prob > F	=	0.0000
				R-squared	=	0.6175
				Adj R-squared	=	0.6106
				Root MSE	=	3.4004

DFSAdoption	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]	
Convenience	1.025305	.1136228	9.02	0.000	.8018152	1.248795
Trust	.1512012	.0568953	2.66	0.008	.0392912	.2631111
SubjectiveNorms	-.0566244	.0518082	-1.09	0.275	-.1585283	.0452796
_cons	-1.64344	.5693087	-2.89	0.004	-2.763239	-.5236408

Source: *Researcher's own compilation through Stata*.

Based on the R-squared (R2) alone, it would be safe to state that the model specifications fitted well. However, there is still a need to establish whether the model is properly specified by running a post-estimation command in Stata using Linktest. The results of the analysis have been given in Table 25 below.

Table 25: Results of post-estimation Linktest analysis.

. linktest

Source	SS	df	MS		Number of obs	=	345
					F(2, 71)	=	48.31
Model	116.188101	2	58.0940503		Prob > F	=	0.0000
Residual	411.261175	342	1.20251805		R-squared	=	0.6547
					Adj R-squared	=	0.6432
Total	527.449275	344	1.53328278		Root MSE	=	3.228

mpg	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]	
_hat	-.1010567	1.006359	-0.10	0.327	-2.080489	1.878376
_hatsq	.173033	.1573306	1.10	0.872	-.1364245	.4824905
_cons	1.693601	1.576161	1.07	0.883	-1.406589	4.79379

Source: *Researcher's own compilation through Stata*.

From Table 25 above, hat-squared (hatsq) was found to have a p-value of 0.872 meaning that the structural equation (logistic regression) governing this model was not mis-specified and hence free of any specification problems. Thus, the post-estimation analysis above provides evidence that the regression model used was properly specified since the hat-squared is not a statistically significant contributor to the adoption of digital financial services for customers resident in urban areas of Malawi.

4.10   Diagnostic test of the regression model

To ascertain and gain reasonable assurance on the reliability of the results from the regression model used, a diagnostic test of multicollinearity was conducted. Multicollinearity is a statistical phenomenon that occurs when the independent variables in the regression model are highly correlated to each other. When independent variables are highly correlated, it becomes challenging when fitting the model and interpreting results as it is difficult to determine the individual effects of each independent variable on the dependent variable accurately. This creates a problem because the coefficient estimates will not be stable and hence unreliable to interpret the model altogether resulting in incorrect assumptions being made. In effect, multicollinearity decreases the precision of coefficient estimates thereby weakening the statistical power of the regression model whilst at the same time making it difficult to trust the p-values used in identifying independent variable that are statistically significant.

The Variance Inflation Factor (VIF) was therefore used to test multicollinearity among the three independent variables used in the study. VIF helps to analyse correlation between independent

variables as well as the strength of correlation. A VIF of 1 means that the independent variables are not correlated whereas a VIF between 1 and 5 implies that variables are moderately correlated. However, any VIF between 5 and 10 shows that the independent variables are highly or significantly correlated.

The formula for variance inflation factor is given as:

$$VIF_i = \frac{1}{1 - R_i^2}$$

Where: Ri2 = Unadjusted coefficient of determination for regressing the ith independent variable on the remaining variables. Using Stata statistical tool, the results of multicollinearity test have been shown in the table below.

Table 26: Results of diagnostic multicollinearity test using VIF.

```
. regress DFSAdoption Convenience Trust SubjectiveNorms

      Source          SS           df       MS            Number of obs   =      345
                                                          F(3, 341)       =    31.60
       Model     114.733565        3    38.2445218        Prob > F        =   0.0000
    Residual     412.71571        341     1.21031         R-squared       =   0.2175
                                                          Adj R-squared   =   0.2106
       Total     527.449275       344    1.53328278       Root MSE        =   1.1001


     DFSAdoption        Coef.    Std. Err.       t      P>|t|     [95% Conf. Interval]

     Convenience     1.025305    .1136228      9.02    0.000     .8018152     1.248795
           Trust     .1512012    .0568953      2.66    0.008     .0392912      .2631111
 SubjectiveNorms    -.0566244    .0518082     -1.09    0.275    -.1585283      .0452796
           _cons    -1.64344     .5693087     -2.89    0.004    -2.763239     -.5236408


. vif

        Variable        VIF       1/VIF

    Subjective~s       1.05     0.949044
           Trust       1.03     0.967653
     Convenience       1.02     0.977908

        Mean VIF       1.04
```

Source: *Researcher's own compilation through Stata*.

The above table shows that all the three independent variables (convenience – 1.02, trust – 1.03 and subjective norms – 1.05) have a variable inflation factor (VIF) of just slightly above 1 with a mean VIF of 1.04 indicating that there is no presence of multicollinearity in the regression model used in the study.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1   Introduction

This chapter presents a summary of the study findings, conclusion as well as the recommendations on the decisional factors affecting customers' intention to adopt and use digital financial services in Malawi's urban areas.

5.2   Summary of findings

The research study revealed that customers' decision to adopt and use the available digital financial services in Malawi's urban areas was significantly influenced by two variables of convenience (PU and PEOU) and trust (security, privacy, and reliability). Subjective norms, on the other hand, had a little influence on customers' decisions to adopt DFS platforms. A summary of the three variables has been presented below.

5.2.1   Convenience and consumers' adoption of digital financial services

The study results revealed that most respondents believed that the convenience which digital banking platforms comes with plays a significant role in their decision to adopt them. 90% of the respondents perceived ATM withdrawals as being more useful and easier to use while 78% of the respondents indicated that perceived usefulness and ease of use are the major factors which influenced their decision to adopt mobile banking services. However, despite the respondents finding internet banking service useful, 75% of them perceived it not to be easy to use and navigate. The lack of perceived ease of use justified the low adoption rate of 27% on internet banking. Convenience was, therefore, rated to have a significant influence on the customers' adoption of digital financial services in Malawi's urban areas.

5.2.2   Trust and consumers' adoption of digital financial services

The findings of this study show that trust has a significant positive influence on customers' intention towards the adoption and continued usage of digital banking services. Rising cases of phishing and social engineering were the major factors that made respondents doubt the security and robustness of mobile banking platforms. Further to this, respondents bemoaned increased

instances of system down times during end of the month specifically on mobile banking and e-card services (ATM withdrawals and POS machines). The lack of system reliability made customers continue entering banking halls and operate on physical cash instead of adopting and using e-payment systems when making payments in convenient stores and shopping malls.

Despite the low uptake on internet banking, respondents who adopted it considered it the most reliable and secure of the three platforms due to its low down time issues and the two factor authentication system of One Time Password (OTP), a feature which is unavailable on mobile banking and e-card services.

5.2.3 Subjective norms and consumers' adoption of digital financial services

The study established that, subjective norms had no significant effect on intention to adopt digital financial services in Malawi's urban areas. Most of the respondents confirmed that their decision to adopt any new technology or digital service introduced by the commercial banks was not influenced by the views of people close to them or how others perceived the safety and usefulness of such technologies. This is because most of them considered themselves literate enough to understand the basic features of the systems as well as the reporting channels required to lodge and register their issues in cases where a service or system did not perform the expected functionality which would necessitate a refund or reimbursement.

Nonetheless, a relative section of respondents between the ages of 55 – 60 years revealed that opinions of people influential to them mattered on whether they had to use digital banking to perform high valued transactions. Respondents within this category admitted that people's perception on the vulnerabilities of digital banking services enhanced their decision to physically visit banking halls for certain important transactions or payments. However, this age group only accounted for 7% of the respondents and would, therefore, be deemed not to be significant enough to form a reasonable inference that subjective norms had a positive influence on intention to adopt digital banking services among Malawians resident in urban areas.

5.3 Conclusion

The study attempted to provide an understanding of the decisional factors affecting customers' intentions to adopt digital financial services for bank service centres resident in urban areas of Malawi by integrating three independent variables of convenience (PU and PEOU), trust (security of platforms, privacy, and their reliability) and subjective norms. Using logistic regression analysis

to examine the relationship between independent and dependent variables, the study made conclusions for each of the research objectives as per the paragraphs below.

The study concluded that convenience (X1) was the most significant factor in influencing the intention to adopt digital financial services within the four major cities of Malawi. The study revealed that customers would adopt and use DFSs based on their perceived usefulness and perceived ease of use. The study results also confirmed the existence of a strong correlation between convenience and digital financial services adoption. It revealed that an increase in convenience, thus simplicity and valuableness (PEOU and PU) of DFS platforms, would result in a corresponding increase in customers' intention and decision to adopt and use available digital banking services.

Similarly, the study concluded that trust (X2) was also a major contributing factor towards customers' intention to adopt and use digital financial services in Malawi's urban areas. It exposed the existence of a positive relationship between trust and DFS adoption by revealing that an increase in service reliability (reduced service downtimes), privacy and security of DFS platforms would result in a corresponding increase in customers' intention and decision towards the adoption and usage of digital banking services among Malawians living within the four major cities of the country.

On the contrary, the study concluded that subjective norms (X3) did not have a significant effect towards the intention to adopt digital banking services in Malawi's urban areas. The study results indicated that in respect of subjective norms, there was a negative correlation in influencing the intention to adopt digital financial services amongst people living in urban areas of Malawi. Despite the results on subjective norms being contrary to the existing literature of Norng (2022), Liang (2016) and Chitungo and Munongo (2013), it showed that in terms of vulnerabilities associated with digital banking services, the effects of subjective norms would mostly be evident in rural or semi-urban areas where the levels of literacy are moderately low or where elderly customers resident in urban areas are still too conservative to embrace modern technologies and make a decision to adopt digital banking services. The researcher's conclusion on subjective norms was enhanced by the following factors:

The studies of Norng (2022) and Chitungo and Munongo (2013) were both conducted in semi-urban and rural areas of Cambodia and Zimbabwe respectively with most respondents having not

completed tertiary education and hence had little exposure to technological advancements. This study, however, was only conducted among customers living in urban areas of Malawi. Similarly, despite concluding that subjective norms had a significant effect on the adoption of mobile banking in Vietnam Liang (2016) went on to state that in Taiwan, where the levels of literacy are higher than Vietnam, subjective norms had little influence towards the adoption of mobile banking proving that areas where urbanisation and literacy levels are high, subjective norms do not play a big role in influencing the adoption of new technologies.

All 27 respondents who admitted having reservations about adopting some of the digital financial services simply because the people whose views they respected found DFS platforms to be unreliable had secondary school as their maximum level of education.

Seven percent of the total respondents who confessed to have physically visited banking halls for services available on digital platforms admitted that their decision was based on close friends' perception on the vulnerabilities associated with digital financial services. Apparently, all of them were participants with the age category of between 55 and 60 years old. With digital financial services being in Malawi for just a little over 10 years, the researcher concluded that this age category may represent a group of customers who are conservative and, therefore, resistant to embrace new technologies having gotten used to the traditional in-person banking model of physically entering service centres.

Based on the above premise, subjective norms were therefore found to have little impact towards the intention to adopt digital financial services for customers living in urban areas of Malawi.

5.4   Recommendations

This study makes the following recommendations to improve the intention for increased uptake and usage of digital financial services:

i.   There is a need to enhance security of digital banking platforms as well as introducing security awareness programs by the commercial banks in collaboration with their mother body (Bankers Association of Malawi) to safeguard customer funds and information. A handful of respondents complained to have suffered financial loss due to social engineering and phishing practices associated with digital banking. Digital financial services security may be enhanced by having regular updates of the mobile banking and internet banking

systems as well conducting periodic stress or vulnerability testing with results submitted to the Reserve Bank of Malawi for review.

ii. Commercials banks must improve on user experience especially on the time taken to assist customers for failed transactions. Notable complaints were made in respect of turnaround times mainly related to failed inter-bank transactions which were done through the various digital banking platforms such as mobile bank transfers to other banks, ATM withdrawals on other banks and POS purchases on a POS machine belonging to another bank. Respondents bemoaned that it takes around five (5) to seven (7) working days for a refund to be processed. Such bad consumer experience has a negative impact on customers' decision to repeatedly use digital banking platforms. The resultant effect is that customers still prefer to visit banking halls owing to previous unpleasant experiences faced while using digital banking services.

iii. There is a need for extensive awareness drive on digital banking services to encourage their use with biasness on internet banking. The low adoption rate on internet banking is hugely attributed to lack of awareness of the service with many customers having misconceptions that internet banking is ideal for corporate institutions as opposed to individual use. Educating customers on the benefits of adopting and using the various digital financial services will ensure that the level of understanding is increased whilst at the same time making information readily available to customers which will in turn improve both the adoption and usage rate on all platforms including internet banking. The awareness campaigns must also include issues of security and privacy associated with DFS platforms to alleviate fears that customers have due to the increased instances of fraudulent transactions and social engineering when using digital banking services. This should then help reduce queuing and congestion inside urban banking halls with service centres offering only those services which are currently not available on digital banking platforms.

iv. Commercial banks in Malawi should increase their engagement with customers by providing personalised and tailor-made adoption campaigns on digital financial services to better suit the needs of customers resident in urban areas. Currently, most of the promotional and awareness campaigns on DFS adoption are done using print media, radio adverts and television slots through the local media houses. However, many respondents preferred to be getting push messages in form of pop-up alerts and notifications on their phones and mobile banking applications regarding the importance and benefits of DFS

adoption which would easily attract their attention as opposed to the traditional means of listening to a radio advert or TV commercial.

5.5   Uniqueness of study

There are several unique things that have emerged out of this study. Some of them include the following:

The study has managed to reveal the two most significant decisional factors that influence the intention to adopt and use the available digital financial services among customers' resident in urban areas of Malawi. Prior studies have mostly focused on benefits that accrue to both customers and financial institutions on the adoption of digital banking services. However, few studies in Malawi have addressed the prominent factors that affect the intention to adopt and use digital financial services.

Secondly, the study is also unique to policymakers such as commercial banks in Malawi and the regulatory bodies like the Reserve Bank of Malawi as it provides insights on decisional factors affecting customers' intention to adopt digital banking services and hence help them to come up with initiatives that will improve the uptake of DFSs for seamless financial experience.

5.6   Limitations of the study

The study encountered some limitations. For starters, the study only considered three variables of convenience, trust, and subjective norms although there are other factors which can influence the adoption of digital financial services such as relative advantage, perceived risk, gender, regulatory factors, and personal income which were not assessed in this study. If such factors were considered, perhaps the study may have provided different results which would have helped the researcher attain an overall and balanced understanding of factors influencing the intention, among urban customers, to adopt digital banking services in Malawi.

Secondly, the study was cross-sectional and included only a sample size of 384 participants resident in the four major cities of Malawi. It would have been better if it included respondents from other districts across the country. The study was, therefore, limited to residents in urban areas only and, therefore, may not provide an overall perception of Malawians from all spheres of life.

Thirdly, time constraints of the study prevented the researcher from getting views of commercial banks in Malawi in respect of customers' behaviour and perception on adoption of digital banking products or services in Malawi's urban areas. It would have been better to get an understanding of the engagements and initiatives that financial institutions in the country have been undertaking to deal with challenges that customers face when using the various digital banking platforms available on the market which may have an impact on potential adopters and the continued usage of these DFS platforms.

Lastly, since the data collected in this research study relied on self-administered questionnaire forms, some of the respondents declined to take part in the research project for security reasons fearing that the study could expose their identity. Again, some respondents asked for an incentive before they could complete the questionnaire.

To minimise such incidences, the researcher undertook the following steps in administering the questionnaire survey.

i. Sought consent from every respondent before being interviewed or given the questionnaire.
ii. Clearly declared to the respondents that participation did not attract incentive(s) of any kind to avoid further misconceptions.
iii. Guaranteed maximum confidentiality of the respondent's identity as well as the collected data before, during and after the research study.
iv. Adhered to research ethics throughout the research process as expected.

5.7   Areas of further study

This study aimed at understanding decisional factors which impacted customers' intention to adopt digital financial services in urban Malawi. Future research studies could, therefore, consider looking at the following additional research areas:

i. An in-depth study of challenges that commercial banks face in their efforts towards full adoption of digital banking in Malawi including the effectiveness of awareness campaigns used by financial institutions in the country.
ii. A study of demographic factors which were not comprehensively examined in this study such as ethnicity, age, gender, level of education and income could be undertaken to

investigate how such factors may have an influence on adoption of digital banking services in Malawi.

iii. Future research could also look at the effect of social engineering and digital banking fraud on customers' adoption of digital financial services and how financial institutions and regulatory bodies in the country (the Reserve Bank of Malawi and Bankers Association of Malawi) address such DFS vulnerabilities to ensure that customers feel protected enough to adopt them.

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Appendix 1: Letter of consent

This questionnaire has been designed to enable the researcher collect information on decisional factors affecting customers' intention to adopt digital financial services for banks in urban areas of Malawi.

Dear respondent,

My name is Chikumbutso Chiluzi, an MBA student at the Malawi Polytechnic, a constituent college of the University of Malawi (UNIMA) conducting a research study on the "*Decisional Factors Affecting Customers' Intention to Adopt Digital Financial Services (DFSs) for Banks in Malawi's Urban Areas*". Your personal experiences in respect of the adoption and usage of digital banking services in Malawi will be valuable to this study and may provide a basis for future studies.

Please be assured that both your identity and the information provided thereof shall be treated with utmost confidentiality in line with the required ethical standards.

I therefore request you to spare 10-15 minutes of your time to complete the attached questionnaire. Once completed, please submit the questionnaire in person or to the following email address: chiluzic@gmail.com. Thank you for agreeing to take part in provide information for my research study.

Please mark the right option(s).

Appendix 2: Questionnaire

Part I – General information of the respondent

i. Gender
☐ Male ☐ Female

ii. Age group
☐ 20-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-60

iii. Highest level of education (*Please only tick 1 option*).

☐ Primary School ☐ Secondary School ☐ Tertiary (University/College/Technical) ☐ None

iv. Which digital banking methods do you use (*Tick all that are applicable*).

☐ Mobile Banking ☐ Internet Banking ☐ e-Card Services (ATM/POS) ☐ None

v. How long have you been using the selected digital banking platform(s) above?
Mobile Banking

☐ 1-6 months ☐ 6-12 months ☐ 1 – 5 years ☐ 5 -10 years ☐ Over 10 years

Internet Banking

☐ 1-6 months ☐ 6-12 months ☐ 1 – 5 years ☐ 5 -10 years ☐ Over 10 years

e-Card Services (ATM/POS)

☐ 1-6 months ☐ 6-12 months ☐ 1 – 5 years ☐ 5 -10 years ☐ Over 10 years

vi. Approximately, how frequently do you use the platform(s) selected in (3) above?
Mobile Banking

☐ Over once per week ☐ Once a month ☐ 10 times in 6 months ☐ Over 20 times a year

Internet Banking

☐ Over once per week ☐ Once a month ☐ 10 times in 6 months ☐ Over 20 times a year

e-Card Services (ATM/POS)

☐ Over once per week ☐ Once a month ☐ 10 times in 6 months ☐ Over 20 times a year

vii. What would be your preferred way of getting notifications and updates on digital financial services?

☐ Radio adverts ☐ TV commercials ☐ Print (*e.g. billboards*) ☐ Push messages (***pop-up messages/notifications on phone/mobile applications***)

Part II – Decisional factors affecting intention to adopt DFSs

	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
Perceived Usefulness					
1. Adoption of digital banking services brings about convenience which reduces time spent on queues inside banking halls.	1	2	3	4	5
2. Adoption of digital financial services is largely influenced by the increased demand for speed of service delivery (e.g., funds transfer, bill payments).	1	2	3	4	5
3. Using digital banking increases my productivity as it allows me to accomplish desired tasks more quickly.	1	2	3	4	5
4. Usage of digital banking services is enhanced due to their 24/7 availability (anytime throughout the day).	1	2	3	4	5
Perceived Ease of Use					
5. The simplicity of digital banking platforms influences my decision to start using them.	1	2	3	4	5
6. I find the language and prompt menus on the digital platforms easy to understand.	1	2	3	4	5
7. I find the interface with digital financial services effortless and easy to navigate (user friendly).	1	2	3	4	5
Trust (Service Security and Privacy)					
8. Continued instances of fraudulent transactions on digital banking prevents me from using digital financial service platforms.	1	2	3	4	5
9. I am afraid of using digital banking due to possibilities of identity theft and social engineering (hacking).	1	2	3	4	5
10. Security risks (e.g., fear of losing money) associated with digital banking platforms influence my decision to use them.	1	2	3	4	5
11. I do not have trust in the security and privacy controls put in place on digital banking platforms.	1	2	3	4	5
Subjective Norms					
12. I have reservations adopting digital banking because people whose views I respect find them unreliable.	1	2	3	4	5
13. My close friends believe digital banking is prone to fraudulent activities. This influences my adoption.	1	2	3	4	5
14. Societal beliefs on digital banking have led me to enter banking hall for a service I can simply access using the available digital banking platforms.	1	2	3	4	5

	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
Subjective Norms (continued)					
15. People's perception on the vulnerabilities of digital banking services enhances my decision to continue visiting banking halls.					
Service Reliability					
16. Reliability of digital banking platforms affects my decision to adopt and use them.	1	2	3	4	5
17. System down times influence the adoption and usage of digital banking services.	1	2	3	4	5
18. I have ever been deducted funds from my bank account without receiving the corresponding service required while using the digital banking platforms.	1	2	3	4	5
19. The time taken to rectify the erroneous deductions influenced my decision to continue using digital banking service.	1	2	3	4	5
Information on Digital Financial Services					
20. Clear and precise information on digital banking affects customers' decision to adopt DFSs	1	2	3	4	5
21. I believe sensitisation plays a major role in increasing uptake of digital financial services in urban areas.	1	2	3	4	5
22. I am aware that most services done inside banking halls are also available digitally which may save time than physically visiting banking halls.	1	2	3	4	5

23. Please provide any additional issues you may have in respect of your experience with digital financial services (*Optional*).

"THANK YOU SO MUCH FOR COMPLETING THE QUESTIONNAIRE"