

**CROSS-NETWORK MOBILE MONEY TRANSFER ADOPTION DETERMINANTS
AND PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN MURANG'A
MUNICIPALITY**

STANLEY OUKO MOMANYI

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**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT
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OF TECHNOLOGY**

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DECLARATION

Declaration by the candidate

This thesis is my original work and has not been presented for a degree in any other university or any other award.

Signature.....

Date:.....

Stanley Ouko Momanyi

BE401/5140/2017

Supervisors' declarations

We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

Signature.....

Date:.....

Prof. Clifford Machogu (Ph.D.)

Department of Commerce

School of Business and Economics

Murang'a University of Technology

Signature.....

Date:.....

Dr. Richard Juma (Ph.D.)

Department of Commerce

School of Business and Economics

Murang'a University of Technology

DEDICATION

I dedicate this work to my family and friends for being supportive throughout my studies. God bless you all in your daily endeavors.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANT-The Actor-Network Theory

ATM-Automated Teller Machine

ATU - Attitude towards Usage

CBK-Central Bank of Kenya

CGAP-Consultative Group to Assist the Poor

GDP- Gross Domestic Product

GSMA- Global Service Mobile Association

IDT - Innovation Diffusion Theory

NACOSTI-National Commission for Science Technology and Innovation

PEOU -Perceived Ease of Use

PU-Perceived Usefulness

SIM-Subscriber Identity Module

SMEs-Small and Medium Enterprises

SPSS-Statistical Packages for Social Sciences

TAM -Technology Acceptance Model

TRA-Theory of Reasoned Action

DEFINITION OF KEY TERMS

Compliance	This is what you do when you try to fit standards set down by someone else that is having enough flexibility to follow directives from other individuals especially those with power (Cialdini & Goldstein 2004).
Conformity	This is a situation in which a person changes his/her behavior to agree with the attitudes, beliefs, and behaviors of the peers (Cialdini & Goldstein 2004).
Diffusion	The spread of information and new technologies in societies more widely (Rogers 2003).
Interoperability	The capability of different mobile money providers to function with others mutually (Hoernig & Bourreau 2017).
Mobile money agent-	Is a shop registered by a person who deals exclusively with mobile money transactions? It mainly deals with cash withdrawals and deposits (Muthiora 2015).
M-payments	Payments are done via mobile phones (Kshetri & Acharya 2012)
Persuasion	This is convincing individuals in a friendly manner to accept certain products or services so that it is beneficial to all the parties involved in the chain (Wood 2000).
SMEs	Small and medium enterprises (SMEs) are non-subsidiary, independent firms that employ less than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees (Toromo, 2020).

ABSTRACT

The goal of this study was to establish cross-network mobile money transfer adoption determinants and performance of small and medium enterprises in Murang'a municipality. Specifically, the study sought to assess how the government legal framework, individual attributes, technological characteristics, and perceived social influence affects the adoption of cross-network mobile money transfer service and establishing the association between the use of cross-network mobile money transfer service and SMEs' performance in Murang'a municipality. Three theories namely; Technology Acceptance Model, Actor-Network Theory, and Innovation Diffusion Theory were employed in this study. Descriptive survey design was used to conduct this research. Primary data was obtained through questionnaires from a sample size of 250 participants using purposeful sampling design. Descriptive and inferential statistics with the aid of SPSS were used to analyze data. The results found out that the adoption rate of cross-network mobile money transfer service was very low as only 36 % of the respondents had adopted the service at the time of the survey. Respondents strongly agreed that Individual attributes as shown by the mean of 14.904, Perceived social influence (15.145), Technological characteristics (14.904), and legal framework (14.747) influenced their decision to adopt the service. The study also established that the adoption of cross-network mobile money transfer service had escalated the performance of the businesses as revealed by a majority of respondents (71%) of those who had adopted the service. The study recommends that SMEs traders adopt cross-network mobile money transfer service because of its positive impact on business performance. The study also recommends that policymakers introduce interoperability at the agent level and conduct aggressive marketing to increase the adoption rate of the service. To increase financial inclusivity in the country the study recommends that the service providers raise transaction limits of mobile money to attract more users in Kenya. There is a need to conduct further follow-up studies on the same topic in later years to assess the extent of adoption and also to assess the effect on financial performance of large organizations.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Mobile money sector is revolutionizing the financial sector in Kenya due to its efficiency and accessibility to both the rural and urban populations unlike banks which mostly caters to the people in urban centers. The service has become more attractive to many users than mainstream banks and other formal financial institutions (Marc &Steffen 2016). Throughout the world, the mobile money sector has seen continued growth and expansion because it has improved ways to do business as most people are currently transacting using the service as opposed to relying entirely on formal banking systems (Desai, 2012).

The expansion and spread of cashless services due to mobile phones have brought positive results to SMEs because mainstream banks are not very friendly to this sector which handles small amounts of money. The SMEs traders have also adopted mobile financial services because one can still access selected bank processes and facilities through mobile phones. The mobile money sector has also seen increased growth because it has improved its infrastructure by adding more features that were only possible through commercial banks or agency banking. This has been achieved by the fact that an individual who makes payment and the receiving party are mutually connected with the technological infrastructure in existence both locally and in foreign mobile money transactions (Söderberg & Bångens, 2011).

Kenya has four main mobile network operators namely Safaricom, Airtel, Telecom, and Equitel which have accelerated accessibility of mobile financial services within the population. These mobile operators offer mobile money services to their subscribers through their official names

which are Equitel (Equity), M-Pesa (Safaricom), Airtel Money (Airtel), and T-Kash (Telecom) (Communications Authority of Kenya, 2016).

Kenyan economic environment is very suitable for cashless transactions and has promoted the adoption and usage of mobile money services in the country. This is due to increased competition among the four mobile money operators which has also seen a partnership with savings and credit cooperatives, insurance companies, commercial banks, and microfinance institutions (Jenkins, 2008).

Despite the growth of the mobile money industry in Kenya, Airtel, Telecom, Safaricom and Equitel clients have been experiencing challenges transacting directly with each other from the onset of mobile money technology in the nation. These has compelled the introduction of cross-network mobile money transfer service a strategy that enables users of different networks to transact directly with each other more readily, at low cost, and in a secure environment. Initially, people could send and receive cash but it was an expensive and time-consuming process because the systems were not interoperable. This service is aimed at laying a fairground in the market (Central Bank of Kenya, 2018).

On a global scale, interoperability of mobile financial services are not well established and are in early stages in a few regions where they have been introduced an example in East Africa being Tanzania which was launched in the year 2014 and now accounts for about 30% of the person-to-person transactions (Global Service Mobile Association, 2016).

Cross-network mobile money transfer facility is meant to improve the way people transact their day to day business activities because the economic environment has been affected by rapid technological improvements, many studies prove that innovation is an important factor that businesses need to embrace to enable them to adjust because customers' tastes, preferences, and designs keep on changing (Zailani, Iranmanesh, Nfikbin, & Jumadi, 2014).

Kenyan SMEs are likely to reap many benefits that will come with the service; however, there are limited studies about cross-network mobile money in Murang'a County because this program was recently introduced particularly in Kenya. This study, therefore, will bring more understanding of the new technology. Related studies mostly on mobile banking and mobile money services and products have been carried out in several regions globally but little is known on the effect of cross-network mobile money transfer service in economies because it is a new product that is slowly gaining acceptance in many countries.

1.1.1 Cross- Network Mobile Money Transfer facility

Cross-network mobile money transfer is a strategy that enables the clients or subscribers of a given mobile money network provider to enter into a transaction that is sending or receiving money directly between two or more accounts through technological facilitation at reduced costs and time. It is also defined as the ability of multiple clients of a unique or different network operator of mobile financial services to conduct money transfer mutually with immediacy as a result of reduced technical complexities (Hoernig & Bourreau 2017).

A report by the Global Service Mobile Association indicates that 67% of markets where mobile money is functional and well established, there exist more than two service providers and this has necessitated the introduction of the Interoperability of mobile financial systems. The report also reveals that the service was successfully introduced and adopted between the years 2012 and 2015 in the following countries Tanzania, Nigeria, Rwanda, Indonesia, Pakistan, Thailand, Sri-Lanka, and Madagascar (Sotir, 2015).

In Kenya, Airtel, Telecom and Safaricom clients have managed to transact directly with each other as a result of interventions that led to the emergence of cross-network mobile money transfer facilities in the year 2018. The main reason which compelled the introduction of this

Service in Kenya was the persistent complaints from other operators of unfair competition from Safaricom M-Pesa which controls more than 80% of the market (Central Bank of Kenya, 2018).

In the absence of interoperability, completion of money transfers between parties was through many agents from different networks with high transaction fees. The interconnection of the networks is likely to lower trading fees, make transactions faster, and attract more people which will greatly promote financial inclusion (McKee, Kaffenberger & Zimmerman, 2015).

Advancing cross-network mobile money transactions are aimed at ensuring that most people have access to formal financial service including those initially excluded mostly the poor population, particularly in the developing world. This is because most people are accessing mobile phones and their services more readily than banks. The interconnection of the network will improve the net value of mobile cash by reducing the time and cost of getting to the population not yet accessing banking and other financial services from formal institutions (Marc& Steffen, 2016).

Sharing of agents among mobile money providers is likely to face difficulties because of liability brought about by misconduct or fraud. This is because all the parties involved in a transaction will be engaged in the supervision of the agents. There is a necessity for the introduction of guidelines and a dispute resolution mechanism (Andiva, 2015).

The regulatory environment plays a key role in the adoption of mobile money transfer facilities in a given country. The mobile network operator-led model, which is used in Kenya, has resulted in a higher rate of adoption of mobile money facilities in the country over the years. Each country has its own model which has contributed to massive adoption (Suarez, 2016).

1.1.2 Cross-Network Mobile Money Transfer Adoption Determinants

Rogers (2003), states that adoption is a process in which people accept the use of innovation after it is spread in the environment or society within a given period. This process includes an

assessment by the organizations and individuals to determine whether the innovation is sustainable and can meet all the set expectations.

Mobile payment services are likely to grow when operators make good use of marketing by having qualified personnel to communicate and advertise new products, concepts, or services in the market. It is very important to consult users of a product to know what their need is for the new products to meet their desires and expectations. People have different wants but the service provider can try to develop a product having features which are more popular and in a given region or society and this will compel the small part of the population which is skeptical about the innovation to accept due to pressure from the society (Chen, Shing & Chien 2008).

A study conducted in the year 2009 by Financial Sector Deepening Kenya revealed that most of the new technologies follow a standard or common procedure in adoption which involves very low uptake at conception and increased usage of the product at maturity stages which leads to high growth.

Regulatory frameworks play a key role in Implementation patterns for Mobile Money in Africa. The diffusion of mobile money can take different twists and turns depending on the banking regulations that exist in a jurisdiction. One would say that in the Kenyan case, which is a Mobile Network Operator led Mobile money service; Safaricom was able to convince the bank of Kenya, that they were not delivering a banking service. This gave Safaricom the opportunity to develop the network and be innovative in service delivery and pricing in order to extend the Service to the rural poor. This private sector initiative has led to tremendous growth in the delivery of mobile money in Kenya (Williams, 2013).

There are still individual attributes holding back customers from acceptance of mobile money. These attributes includes awareness, relative advantage or perceived benefit and ease of use. Service providers should consider affordability and availability of the financial services for the

low-income segment in the society. These results can be extended to any developing country (Abdinoor & Mbamba 2017).

Mobile money technical attributes has also over the years influenced quick or slow uptake of mobile money in Kenya. The decision to adopt or reject an innovation is subject to a wide variety of factors some of which relate to characteristics of the technology itself. Such attributes of innovations are particularly influential in any innovation usage and adoption decisions. The five characteristics of innovations that significantly influence consumer attitudes are relative advantage, compatibility, complexity, observability and trialability (Wamuyu, 2014).

Social influences significantly impact individual perceptions about usefulness of a given technology. Therefore, policy makers and industry actors who want rapid uptake of mobile money technologies would need to focus on social networks for broadcasting the message. Perceived social influence has continued to influence how people tend to react whenever new technologies are introduced in the market. (Sathye, Prasad, Sharma,& Sathye, 2018).

Studies on the uptake and usage of other concepts of mobile cash can be related to the uptake and utilization of cross-network mobile money transfer facilities by arguing that the factors influencing uptake of other mobile products can affect the uptake of the interoperability of mobile money. This is because the new product is also within the framework of mobile money infrastructure as such is expected to receive some attention in the market just like other cashless financial products (Heyer & Mas, 2011).

1.1.3 Small and Medium Enterprise (SMEs)

A standard definition on the absolute meaning of small and medium enterprises across the globe does not exist because of many bases of classifications which can be viewed from size as big or small depending on financial strength or a given minimum number of employees. According to

the proper way of defining SMEs is numerical consideration by comparing the number of workers in different firms (Nyangori, 2012).

Small and medium enterprises (SMEs) are also defined as non-subsiary, independent firms which employ less than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees (Toromo, 2020).

The term micro and small enterprises (MSEs) or micro, small and medium enterprises (MSMEs), is used to refer to SMEs in Kenya. Under the Micro and Small Enterprise Act of 2012, micro enterprises have a maximum annual turnover of KES 500,000 and employ less than 10 people. Small enterprises have between KES 500, 000 and 5 million annual turnovers and employ 10-49 people. Medium enterprises are not covered under the act, but have been reported as comprising of enterprises with a turnover of between KES 5 million and 800 million and employing 50-99 employees (Wanjeri, Kathenya & Obimbo, 2017).

SMEs are increasingly making use of mobile cash facilities and services to enhance their financial interactions with the customers because they are readily accessible than mainstream financial institutions. Though SMEs are reporting increased performance, there are more mobile money infrastructures to be adopted to increase efficiency and effectiveness (Wamuyu& Maharaj, 2011).

SMEs sector has seen consistent growth due to new technologies and this has made it a very important source of jobs to the Kenyan youth because 98% of trading activities in Kenya are done by SMEs as such it has managed to recruit a high number of young men and women who have completed their tertiary education (Ngugi, McOrege, &Muiru, 2013).

SMEs have continued to create new jobs in Kenya; in the year 2005, above 50 % of new employment opportunities emerged from this sector making the sector the main source of job creation (Bowen, Morara&Muriithi 2009). Dahlberg (2011) observes that expansion in economic potential and development of a country plus innovations is greatly advanced by SMEs through increased prosperity of the population. Mobile financial facilities have addressed many challenges faced by SMEs particularly in handling small transactions that require timely attention (Aron, 2017).

The SME sector is of great benefit because of its big contribution in the growth, expansion, development, and progress of Kenyan economy hence it needs much attention from the Policymakers by introducing policies which will support the sector to continue promoting and enhancing the productivity of the general economy of the country. There is, therefore, market confirmation that SMEs should embrace digital operations in their activities and processes to be more efficient and effective by reducing costs and time involved in performing an activity (Kiveu & Ofafa, 2013).

1.1.4 Small and Medium Enterprise performance

According to Sun *et.al* (2019), financial performance and growth of a firm is the process of increasing revenues, expanding volumes of sales and profits as well as an increased capital base at all levels of an enterprise. This also includes improved methods of carrying out various organizational processes in a more efficient cost-cutting manner. All organized efforts and energy meant to earn more profits and advance economic results by offering goods or services to clients is known as enterprise growth.

According to Meredith *et.al* (2001) and Muchiri (2018), Firms having less than two hundred and fifty workers are classified as small or medium enterprises. In distinguishing between the two kinds of firms, the enterprise served by less than fifty workers called a small enterprise and one

above 50 but less than 250 workers are seen as a medium enterprise. These kinds of businesses are normally under the management of the owner who employs few people to enable him to run the enterprise.

According to Subhan, Brooksbank, Garland & Rader (2015), the management and ownership of a small and medium enterprise are under one person also known as a sole trader. This person faces all risks and enjoys profits alone. The business and the owner are viewed as the same person hence the liability of the business is normally unlimited. The Sole trader entirely relies on his skills and knowledge in starting and managing a business.

There is an agreement among policymakers and professionals in the business field that SMEs are an important engine in the economic growth of developing nations as they promote the creation of new jobs, increases a country's production activities, maintaining a suitable balance of trade and acting as a catalyst of inventions and promoting an entrepreneurial environment in a given nation (Fida, 2008).

Across the globe the SMEs sector is increasingly viewed as an important engine for job creation employment creation and economic growth. This has been necessitated by the increasing awareness within the government that large projects in the industrial sector are less likely to generate the requisite employment opportunities, given the high capital-intensity of output in the sector (Kinyua, 2013).

The increased penetration of mobile money and related services has allowed the Kenyan SMEs to benefit from efficient communication, payments and marketing systems which were only available to the large profit making organization in the early years. The increase in the number of users of mobile money facility has been supported by the expansion of cellular networks which impact positively on economic growth through emergence of new services and applications for

mobile cellular services. This makes mobile telephony services the most affordable facility to Kenyan the SMEs (Mutua, 2013).

Most SMEs are measuring their performance in an informal manner the process is usually unplanned and not based on a predefined technique. Performance measurement is introduced to solve specific problems and the performance measurement system grows out of this process rather than as a result of planning. As such performance measurement in SMEs is characterized by a poor alignment between strategies and measures. Modern money technologies can help SMEs track their business performance more efficiently (Guenther & Heinicke, 2019).

Money transfer for either payment of salaries, settlement of business transactions, payment of school fees, or for family support is a common phenomenon for both businesses and individuals. It requires efficient, reliable and affordable money transfer services whereby money can be deposited in one location and withdrawn in another in both urban and rural areas. The cost of transfer, usually charged as a percent of the amount sent, is considered expensive for small amounts for both local and international transfers (Iman, 2018).

1.2 Statement of the problem

A study by Anurang, Tragic and Radii (2009) revealed that Mobile cash services have grown and brought a lot of contributions to the economic growth of many countries Kenya included especially to SMEs which have created jobs too many people over the years. Arena & Kahoka (2007) observed that sole proprietorship businesses in Kenya were very successful as a result of mobile financial services technology because it enabled them to get access to many customers more readily at lower costs than other traditional methods of carrying out a transaction. The emergence of mobile financial transactions in Kenya has seen Safaricom M-Pesa dominate the mobile money market for a long time making competition difficult for other network providers namely, Airtel, Equitel, and Telecom (Donovan 2012, Camner, & Sjöblom, 2009). The launch of

the interoperability of mobile money operations in Kenya is a great milestone towards reducing Safaricom M-Pesa dominance and increasing financial inclusivity in the country. Data shows that there has been little uptake of the service in the Kenyan market as Safaricom M-Pesa has remained dominant to date as its share stands at 81.6% as of 30th September 2018 (Communication Authority of Kenya 2018). Studies on the effect of mobile money adoption on the performance of SMEs in Kenya have been conducted but

Little is known on the impact of cross-network mobile money adoption on the performance of SMEs because the service was recently introduced in Kenya. A lot of studies on other products offered by mobile money technology have been conducted in various regions and different conclusions are drawn, including their effects on the performance of firms. However, studies on the impact of cross-network mobile money transfer on economies are limited this is mainly because the service was recently introduced in many economies, and its slowly gaining acceptance. This study, therefore, sought to analyze cross-network mobile money transfer adoption determinants and performance of small and medium enterprises in Murang'a municipality.

1.3 Objectives of the study

1.3.1 General objective

The general objective of the study was to determine cross-network mobile money transfer adoption determinants and performance of small and medium enterprises in Murang'a municipality.

1.3.2 Specific objectives.

Specifically, the study sought to:

- i. Assess how individual attributes affects the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality.

- ii. Establish how perceived social influence affects the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality.
- iii. Determine how technological characteristics affect the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality.
- iv. Assess how the government legal framework affects the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality.
- v. Establish the association between the adoption determinants of cross-network mobile money transfer service and SMEs' performance.

1.4 Research questions

- i. What are the individual attributes affecting the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality?
- ii. How does the perceived social influence affects the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality?
- iii. What are the technological characteristics affecting the usage of cross-network mobile money transfer by SMEs in Murang'a municipality?
- iv. How does the government legal framework affect the adoption of cross-network mobile money transfer by SMEs in Murang'a municipality?
- v. What is the association between the adoption determinants of cross-network mobile money transfer service and SMEs' performance?

1.5 Significance of the Study

This study was of great benefit to SMEs traders because it took into consideration the perceptions and beliefs of sellers and the buyers hence shading more light on some of the factors affecting the usage of cross-network money transfer by most of the SMEs in the Kenyan market.

The research also opened a platform to future researchers on customers' perception of the new technology which includes attitudes and inherent fears towards new technology adoption and added important concepts to the already existing knowledge.

Policymakers involved in electronic money transactions and various mobile money companies greatly benefited from this research in that they understood how to improve the product to increase levels of adoption in the future.

The government also benefited from this research in that it understood how to improve on mobile money facilities to increase financial inclusivity in Kenya, as the country moves towards middle-level income as envisaged in the vision 2030.

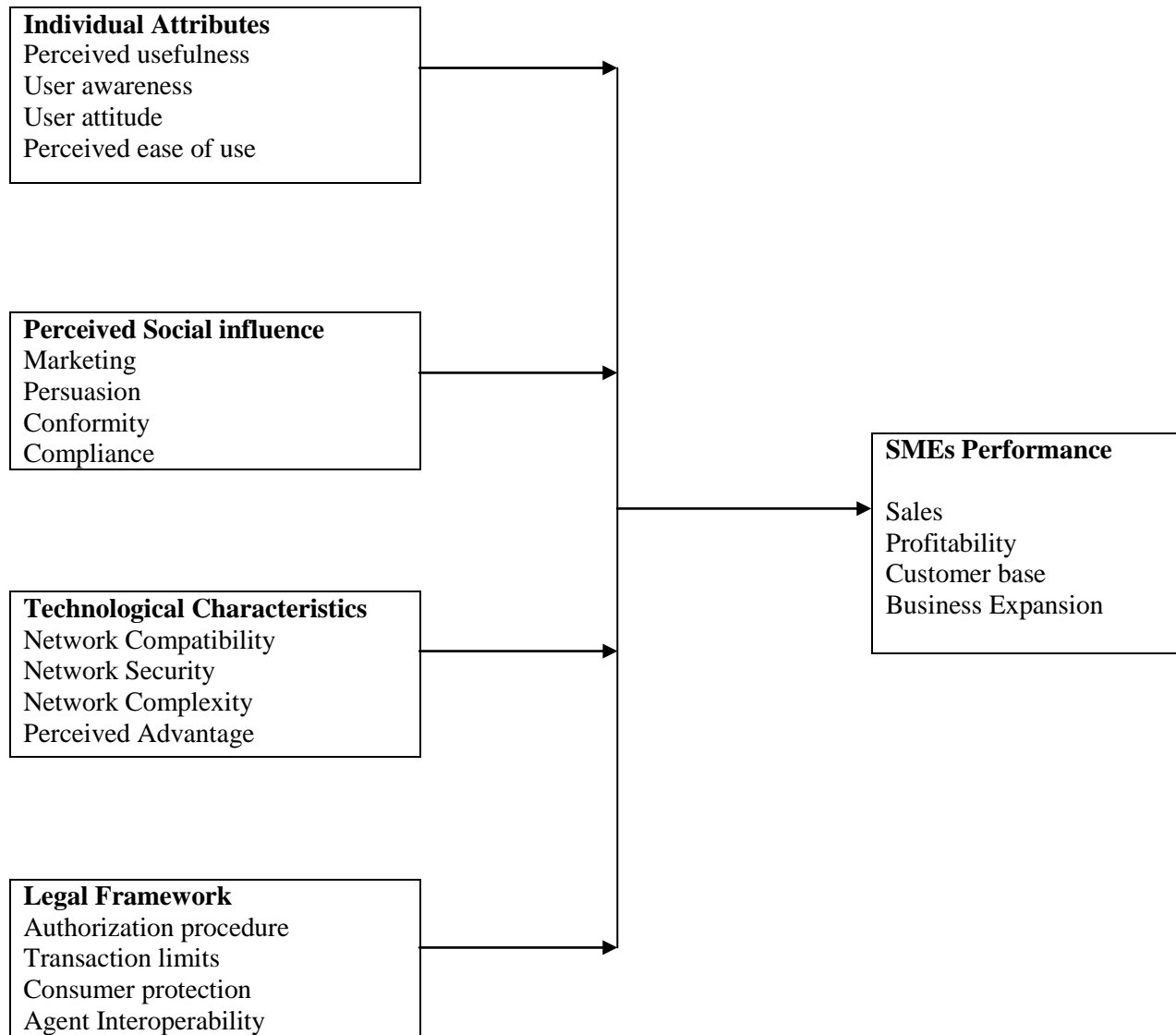
1.6 Assumptions

It was assumed that the sample population could accept to take part in this research voluntarily and correctly answer all the questions in the questionnaire and that they had enough knowledge to enable the acquisition of relevant and accurate information.

1.7 limitations and scope of the study

This research was limited to SMEs in Murang'a municipality; there was limited time to collect data from all the SMEs sampled by the study. Data collection from SME was private and confidential for the business owners because of the nature of the privacy of the industry. This research was carried out in the year 2020 and data was gathered from SMEs operating in Murang'a municipality which was scientifically analyzed to determine cross-network mobile money transfer adoption determinants and performance of SMEs.

1.8 Conceptual Framework



Independent Variables

Dependent Variable

Figure 1: Conceptual Model

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Theories related to the topic of study are well discussed in this section including a detailed examination of empirical literature of scholarly work on various factors influencing mobile payment innovations adoption by Small and Medium Enterprises.

2.2 Theoretical Background

Theories that guided the study were reviewed in this section. Three theories that supported this research namely, Diffusion of Innovation Theory, Technology Acceptance Model, and Actor-Network Theory were examined below.

2.2.1 Technology acceptance model (TAM)

This model was introduced by Fred Davis in 1985 in his dissertation at Massachusetts Institute of Technology, who stated that the acceptance and usage of a new system by individuals is motivated by an external environment that is composed of the capabilities and the exact traits of the innovation in question. To date, this model has been applied by many scholars in their studies. The widespread application of TAM is due to its strong theoretical and practical implications (Chuttur, 2009).

Alwahaishi & Snásel (2013) confirms that TAM has been supported empirically by many researchers because it has successfully managed to predict how new technology will be accepted and used in society. Clients' behavior towards inventions has been repeatedly and consistently explained by TAM by giving very logical and effective results.

According to Shroff, Christopher & Mee (2011) the theoretical establishment of TAM relies on the assumptions that when people are informed about the existence of technology, their readiness to accept the use of that technology will be influenced by the expected benefits of the innovation

which is the degree to which one believes that using a particular system will enhance their results. As this belief arises, the clients' possibility of using cross-network mobile money transfer services will be deemed to increase. In consumer behavior analysis PU has been well tested as a determinant for a consumer's intention to use mobile services. This determinant was used in this study to determine whether the customers were influenced by the expected usefulness of cross-network mobile money transfer service before they made their choice of the service.

Perceived Ease of Use which is the thinking that utilization of new technology is easy and free of complications influences the acceptance behavior of consumers because if people believe that using a new system calls for extensive efforts, they may not readily accept it. Attitude towards usage (ATU) which is the user's willingness or lack of it to use a system will also influence the adoption of new development. A positive attitude will lead to mass adoption and a negative attitude will lead to mass rejection.

Contributing to the model, Chen (2011) argued that perceived usefulness and ease of use had positive effects on the usage of new technology. In the current study, the technology acceptance model and its determinants will be used to explain cross-network mobile money transfer adoption by SMEs operating in Murang'a municipality and thereafter determine the effect on their performance.

This theory was employed because it made it possible for the researcher to explain the individual factors and partially technological factors that influenced the adoption of cross-network mobile money transfer services. Although TAM is widely applied it has received criticism because of focusing mostly on individual factors connected to technology adoption (Bouwman, 2009).

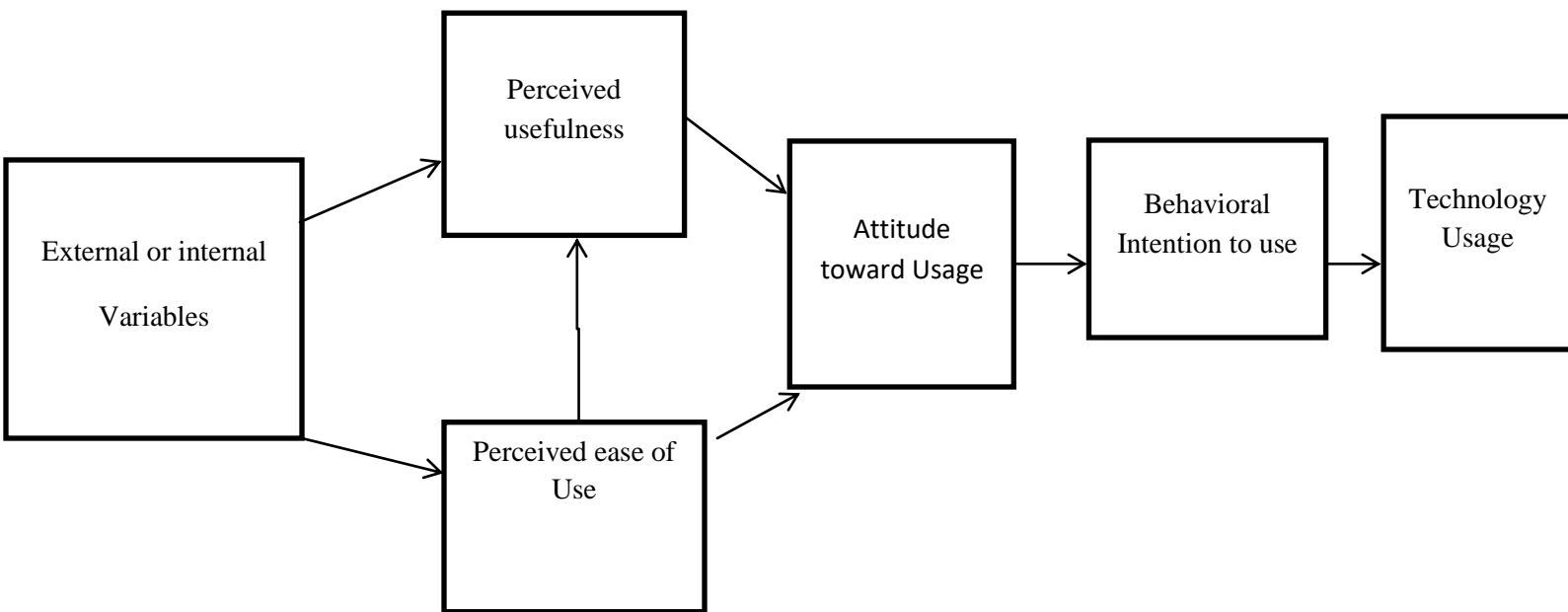


Figure 2: Technology Acceptance Model

Source: Davis, et al., (1989)

2.2.2. Innovation Diffusion Theory (IDT)

Diffusion of innovations is another model describing the process followed by new ideas and technologies as they spread across society. Diffusion is the process by which an innovation is advertised and spread over time among members of a given social environment and accepting the use of innovation or rejecting an innovation is referred to as adoption (Rogers, 2003).

The following are the features of an innovation: Relative Advantage which is the extent to which the innovation is believed to be better than the existing technologies, Compatibility the degree to which accepting to use new technology is commensurate with what people do on daily basis, Complexity which is the perception that technology is seemingly difficult to understand and use, trialability is testing an innovation so that one decides to accept or reject it and finally observability the degree to which the results of an innovation are visible to other members in the society (Rogers 2003).

Rogers also described the decision-making process followed by consumers when they are subjected to a new concept. This model describes five consecutive stages namely information, persuasion, decision, implementation, and confirmation. Information or Knowledge is the stage when individuals receive awareness and start to comprehend how a discovery functions. Persuasion is a step where individuals form their attitudes either positive or negative toward new technology. After perspective is made, choices are going to be created on whether or not to adopt the innovation. This is followed by the implementation stage; in this stage, individuals test the innovation (Rogers, 2003).

The final step is confirmation in which individuals agree to make use of discovery. The diffusion of Innovation looks at the rate at which innovation is spreading, how the innovation is spreading and why it is spreading to investigate the factors affecting the adoption of new information technology innovation at SME levels (Rogers, 2003)..

Diffusion of Innovation Theory draws its assumptions from individual perceptions influencing the adoption of cross-network mobile money transfer service, but it falls short on explaining the effects of other participants who play a key role in adoption. Specifically, this theory does not discuss the government's legal framework effect on the adoption of cross-network mobile money transfer service hence the addition of the actor-network theory.

2.2.3 The Actor-Network Theory (ANT)

This theory was first introduced by sociologists from France in 1987 whose main intention was to explain and bring more understanding concerning the spread and acceptability of scientific theories within scientific communities. The theory was further improved by Latour, Callon, and Law in 2001 who observed that the success of technology uptake and usage in an organization also depends on both the social and technical actions involved in the innovation.

This model proposes that technology adoption is influenced by relationships formed between human beings and non-human aspects in actor- networks. The theory explains how all actors and individuals ranging from the innovation, mobile money operators, mobile money agents, government policymakers, SMEs traders and other users form a virtual relationship which leads to successful adoption of the technology in all sectors in the Kenyan economy.

The use of ANT complements other theories by providing more explanations of how technology is accepted by individuals, groups, communities, and organizations. Technology being an outcome of social construction depends on both its technological features and social aspects of the individuals adopting it. According to Latour (1987), Technological appropriateness does not mean that the technology will be readily accepted but other factors such as individual's perception of the technology, wide marketing, persuasions on importance of adoption, conformity and compliance to society demands, and the presence of a ready market influence its acceptability.

2.3 Determinants of mobile money technology adoption

Mobile money technology has come with many benefits and despite all these opportunities many factors influence its adoption. Generally there is low adoption of mobile money in Africa especially in rural areas. Given that not all persons, particularly in rural areas, use mobile money, there is a need to understand the drivers of adoption of mobile money because many people are still excluded from formal financial systems (Ngugi & Ogembo, 2010).

The adoption of digital financial channels like the mobile money services can greatly improve access to formal financial services in payments, savings, withdrawals and access to loans by SMEs, which make their operations more economical by empowering them to generate higher incomes, increase assets, smoothen consumption and manage risk(Okello& Munene, 2019). Access to important and key information plays a role in the adoption of mobile money services

previous studies using technology acceptance theory observe that the adoption process begins exclusively with knowledge of specific technology and subsequently by the decision to either reject or adopt the technology. The connection between inventors and adopters enhances the flow of information (Pagani, 2004).

The main factors that have been found to affect SMEs adoption of mobile payments include perceived ease of use, usefulness, relative advantage, compatibility, trust, perceived risk, attitude, and cost, of Mobile payment service. Many mobile money technologies have received same attention in the market and as such they are expected to affect any new technology but in a different manner (Arvidsson, 2014).

2.4 Review of literature on variables

2.4.1 Legal framework

Transactions related to mobile cash come with a lot of challenges as far as the regulation process is concerned in Kenya and this prevents the realization of maximum benefits. Authorization exercise of mobile money agents and operators involves complex processes done in various government ministries and agencies which sometimes lead to overlap of roles and this discourages many people from implementing an innovation (Competition Authority of Kenya, 2019).

The Kenya National Payment System Regulations act of 2014 states that mobile operators should ensure that their systems are interoperable with other payment systems operating nationally and internationally, however, the interoperability of mobile money agents does not exist in Kenya (Marc & Steffen, 2016).

Kenya has only implemented interoperability at platform level which allows one to send and receive money across networks leaving out interoperability of agents which permits agents of one service provider to serve customers of another service and customer-level interoperability,

which allows the customer access to their account through SIM cards of different operators (Central Bank of Kenya 2018).

Despite many benefits for all parties involved in cross-network mobile money transfer, agent-level interoperability has not yet been achieved in Kenya. Though regulatory bodies are capable of making interoperability compulsory for all operators, this may not yield many results because they are expected to play a critical role to ensure full interoperability is achieved without compulsion (Mazer& Rowan, 2014).

Another aspect of the legal framework affecting the uptake of cross-network mobile cash transfer is consumer protection especially concerning transaction costs where a lot of transparency is called for. The laws of Kenya provide that a client is allowed to access relevant information about all costs charged by service providers before deciding on engaging in any transaction. Failure to disclose all the terms and conditions of products and services provided will hurt the levels of competition in the market (Andiva, 2015).

Customers' lack of alternatives in the market means that sellers will set prices without putting into consideration the forces of demand and supply due to little regard of competition and this means the firm will exploit market power at the expense of the buyers. Failure by clients to identify better offers from different suppliers means they will remain loyal to the existing provider of a service and this can prevent new firms' ability to compete with well-established and dominant organizations (Competition Authority of Kenya, 2019).

Mobile money transfer service is very popular especially among the population which was initially not accessible to bank services. Many business traders and persons now use mobile phone accounts as the main platform for cash transactions. The increased usage of mobile money cash facilities has revived calls for transaction limits to be revised upwards. Presently, in Kenya, a person can send not more than KSh70, 000 in one transaction and ensure the account balance is

maintained maximally at KSh100, 000 with daily transaction limited at Sh140, 000. The growth is a result of increased usage of mobile payments by many parts of the economy namely monetary services, retail and wholesale trade, agriculture, transport, and health. Kenyans conduct many cash transactions in a day, leading to more calls to escalate the limits to accommodate increased population which is using the electronic money (Safaricom, 2018).

2.4.2 Individual attributes

According to Davis (1989), PEOU is the magnitude to which a person thinks that the use of a certain system will not be complicated by avoiding putting a lot of effort into its usage. This can be achieved by making the registration process and payment procedure as easy as possible.

According to Luarn& Lin (2005), learning and subsequent use of M-payments must be very easy to attract a high usage rate; clients need to have access to mobile phones with the latest technologies and software package. Early studies inferred that PEOU is a major determinant of customer's behavioral intentions to accept the usage of a given invention (VenkateshDavis& Morris, 2000, Pousttchi and Wiedemann, 2005, Carlsson, 2005).

According to Davis (1989), PU is the extent to which a person believes using a particular system will improve their results. Concerning the usage of mobile cash service, PU is seen in a broader Context in which consumers believe mobile services can form part of their daily transactions in all aspects (Dickinger, Arami& Meyer2008). From a mobile payment perspective, perceived usefulness can be defined as the extent to which the consumer believes that the Mobile Money transfer will improve their daily electronic transactions. In customer behavior assessments, PU has been validated by many studies as a major driver for a consumer's willingness to use mobile money services (Chen *et.al*, 2008).

The degree to which a client finds a mobile cash transfer mode of payment useful may also depend on the Relative advantage (RA) of the service because the ultimate reason why people exploit Mobile Money transfer is that they find them useful (Ang,Chong & Li, 2005).

According to Carol (2012), the initial point of introducing a new product in the market is building user awareness by releasing advertisements targeting potential clients informing them that the service has been officially launched, how it is used, and the exact features it contains. Extensive brand awareness is not enough because customers also need detailed information on the usefulness of the new product in the market.

2.4.3 Technological characteristics

The key technological drivers toward acceptance and usage of innovation by individuals are compatibility, perceived advantage, complexity, and trialability (Rogers, 2003). Perceived image, relative advantage, and compatibility are attributes having a positive influence on user's possibility of accepting a new technology (Carter & Bélanger, 2005).

According to Kent (2004), relative advantage, ease of use and technology compatibility has the highest influence on the adoption decision of a customer. The study also concludes that the use of new technology increases as long as the customers have a positive belief that applying it will be beneficial.

A study by Kaddachi *et.al* (2017) revealed that relative advantage, level of risk, time frame, cultural aspects, and difficulties involved while embracing a new development also influences the acceleration rate at which new technology is adopted.

Rogers (2003), defines Compatibility as the degree to which an innovation is perceived to be cognizant of culture, values, experiences, and expectations of new and early adopters of a product. Innovations that are believed to be consistent with the company's vision, values,

missions, and objectives have a higher chance of adoption as observed by Derrick and West (2003).

Lack of security and data privacy also has an impact on the speed at which innovation will be adopted as confirmed by the following studies (Saeed *et al.* 2011& Kraemer 2006). Security concern arises when people believe using a particular system will be insecure by violating data privacy in storing or transmitting information and in conducting financial transactions (Chang *et al.* 2007).

2.4.4 Social influence

Most people adopt new technologies because their close friends, relatives, and other familiar individuals are using innovation. The social interactions between individuals have an impact on whether to accept or reject an innovation (Risselada, 2014). Individuals tend to see what other people are doing and they emulate them to conform or fit in the social system (Venkatesh& Davis 2000).

The usage of mobile cash products is made possible when people's intentions are affected by perceptions of other members of the society about the new product or service. Areas of Social influence such as marketing, persuasions, conformity, compliance, advice from parents, and close friends in most cases influence a customer's decision of whether to reject or accept an innovation (Rogers, 2003).

A study by Sayid, Echchabi & Aziz (2012), conducted in Somalia which targeted about 100 respondents revealed that social influence was a significant factor determining customers' willingness to adopt innovations. Another study by Hamza & Shah (2014), done in the republic of Nigeria discovered that people's daily activities and social patterns greatly contributed to the decision of accepting and making use of new technology.

According to Yu (2012), who conducted a study in Taiwan, borrowing from Unified Theory of Acceptance and Use of Technology assumptions concluded that social influence was the greatest determinant of the adoption of mobile banking.

Studies by Dass (2011) and Yan (2013) all found out that social influence was a primary factor influencing the adoption of mobile financial services in their respective jurisdiction. The studies revealed that the social interactions of people in their daily lives and business activities greatly triggered the willingness of people whether to adopt or disapprove the use of an innovation.

2.4.5 SMEs performance

Studies have revealed that a number of factors affect performance of SMEs in Kenya. These include lack of capital and financial resources. As such there is a need for adopting latest innovations and improve on creativity to address such challenges. Difficulties in accessing commercial credit from main stream bank have continued to derail the success of SMEs in significant manner .This can be partly solved by the mobile money industry because meeting the requirements for commercial loans is expensive (Kinyua, 2013).

Poor management skills and administrative problems have been cited as a major cause of business failure. Many SMEs have a poor record keeping. The people in this sector many not have relevant knowledge needed to conduct activities such as market research or to have an access to consultants who can assist them grow their businesses. There is a need to improve skills of people in this sector (Kamunge, Njeru & Tirimba, 2014).

SMEs access to latest business information affects their performance to great extent .This information is can be readily accessed if the SMEs sector adopts the latest technologies especially mobile phones which are increasingly replacing the traditional methods of financial intermediation. The mobile phones are facilitating communication with both the supplier and

customers, by easing the transportation of goods and by easing the marketing of the products (Kabanda, & Brown, 2017).

Mobile banking technology allows consumers to access financial services in a more convenient, lower cost of bills and save time in managing their finances. This has led to increased mobile money products each time they are introduced because traders are assured that the transactions will be conducted more effectively and efficiently. Most mobile money facilities have been very beneficial to SMEs sector (Nyaga, 2017).

2.5 Empirical Background

The empirical background will be based on experience the traders have on mobile money transactions based on the findings of other scholars who have applied the above theories.

According to Jidenma (2011), the leading mobile money service in Kenya Mpesa does more transactions within Kenya than Western Union which operates in the domestic as well as international market, currently; M-Pesa provides mobile banking facilities to more than 80 percent of the country's population using electronic money. This is not very healthy in the economy as established by Wakoba (2012) who found out that dominant players like Mpesa will always drive the sector for their gains as opposed to growth and therefore proper regulation is needed to end this kind of competitions.

Nyathira, (2012) revealed that 47 percent of trading activities in money transfer services offered within Kenya is predominantly done through cell phones replacing other modes of trading such as clearinghouses, commercial banks and global financial providers such as Western Union. The study concludes that interoperable systems are a solution to financial exclusion because it allows customers to transact freely across networks of various operators. Allowing customers to use the

infrastructure of multiple service providers has shown that interoperability would be part of the solution to that problem (Killian, 2012).

The most important factor to consider before accepting the use of any new product is trust in the product or service. This trust needs to be high because issues of cash are highly sensitive and most traders are ever skeptical when dealing with cash transactions. If a product comes from a well-established organization, thorough marketing done, honest, and middlemen will be built trust and attract more clients (Loretta, 2011).

A study done by Kabir (2012), found out that implementing interoperability is complex due to many technical aspects in interconnecting various networks. Nation with a small number of mobile operators will more readily implement interoperability either within or outside the country than the one with many operators. In such a situation national payment switch initiated by the government can help address the problem when implementing interoperability.

The pattern of mobile cash usage was done on 865 SME businesses located in both urban and semi-urban areas in Kenya. The study found out that mobile money is used in all financial transactions by the business traders who were interviewed. Settling bills, paying suppliers, and employees were done using cell phones. The data also revealed that 99.5% of the traders used mobile money services for their daily trading activities as well as own personal use, another 67% used the service exclusively for the business reason (Higgins, Kendall & Lyon 2012).

Factors that successfully lead to the rapid uptake of mobile payments by SME traders were studied and it was noted that accessibility to the product, suitability, price, benefits to be accrued and safety issues had a positive correlation in decisions relating to the acceptability and usage of cell payment modes by small business traders. The same study revealed that the use of mobile money greatly improved entrepreneurship skills among the traders (Moog 2010).

A study by Muchiri (2018), on mobile banking adoption effect on the performance of SMEs in Nairobi County, established that mobile money had contributed greatly to the growth of the SME sector. This study concluded that when SMEs adopt mobile financial infrastructures in their businesses, they are likely to accrue more benefits which will lead to the growth of the sector.

A study by Huang (2008) about the impact of mobile phones on SME performance conducted in Auckland, New Zealand confirmed that a big number of SMEs applied cell phone technology in running their daily business transactions. The study also found out those businesses which made Use of new mobile technologies had high net profits due to increased customer base as a result of virtual networking and interaction with customers.

According to Carole, (2012) the consensus within the scholars on mobile money interoperability is that regulation should aim at giving the market a chance to mature. If operators feel that their interests are compromised by heavy regulation, they are unlikely to commit the investment needed to achieve growth.

SMEs in the developing world cannot assess whether they need the use of IT in their daily undertakings. Identifying areas that may need the use of innovations to reduce costs and increase revenue has remained a challenge to most SMEs. Many business traders are reluctant to adopt new technologies because of great resistance to change fearing that installation and eventual uptake of new technology are time-consuming and a costly procedure (Awa et.al, 2011 &, Manochehriet, 2012).

Research by Niece (2012) and Awa (2011) concluded that most SMEs comply with engineering procedures before adopting any other IT process yet these two should go hand in hand. All the decisions concerning the uptake of new technology were mostly done by top managers without the input of employees and other interested groups and this made implementation exercise a bit difficult because employees are not adequately informed.

Rosales (2019), conducted a study on the benefits of ICT to SMEs various countries and found out that accessibility of computers gadgets by most employees in the firm, availability of technicians to do maintenance to the computers and installation of internet services and an increasing population which is embracing cashless transactions has led to the increased usage of ICT by SMEs.

A study was done using TAM variables namely, PEOU and PU to establish the usage of mobile financial services among SMEs in Makassar City and the results showed the two variables were having a positive impact on the acceptance of innovations, however, PU having more influence on the adoption behavior than PEOU (Munir&Idrus 2013).

A study by John &Msemwa (2018) analyzed the association between financial risk and mobile cash usage by SMEs functions and found out that financial risk had a negative and significant influence on the uptake of mobile money services by SMEs in their business orientation this is largely supported by the presence of increased theft in mobile cash sector.

2.6 Research Gaps

A research gap is defined as a topic or area for which missing or insufficient information limits the ability to reach a conclusion for a question. That is a gap that limits the ability of decision-makers such policy-makers, patients, practitioners from making important and informed decisions (Klingner & Boardman, 2011).

Little research has been carried out on the adoption of the interoperability of mobile money, especially in Kenya. The level of the adoption of this innovation is not very clear as well as its influence on the performance of SMEs in Murang'a municipality and Kenya at large. The available literature on this concept is still limited because the product is at its initial stages in many countries and regions. This study seeks to add more information to fill the gap in research

by explaining the impact the service has on SMEs' performance and growth as well as revealing the rate at which it is being accepted and used by the customers.

The empirical studies analyzed above generally have not been conducted in the period when this innovation was being introduced in various countries across the world; hence this study will use DOI, ANT AND TAM variables including more others such as persives social influence to determine customers' willingness and lack of it to adopt cross-network mobile money transactions in Murang'a Municipality.

CHAPTER THREE

RESEARCH METHODOLOGY

3. 1: Introduction

This chapter reviews the methodology which was used in conducting the study. It explains the research design employed and its significance. Target population and how sampling design was done to get sample size as well as methods of collecting primary data. The chapter also elaborates on data analysis, presentation of findings, and ethics which were observed by the researcher.

3.2: Research Design

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement, and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data (Kothari, 2004).

Research design is also a guideline for choosing research participants, sites, and suitable techniques for collecting relevant data to facilitate the achievement of specific objectives and answering research questions. The design is a very important part of any research endeavor because it gives the researcher the necessary procedures to be strictly followed to attain set objectives (Okiro & Ndungu, 2013).

The descriptive design was used to conduct this research because it enabled the researcher to explain the status of the variables without influencing them in any way. Participants answered the questionnaires on their own without influencing their judgments so that they could give true

and unbiased opinions about the various parameters under investigation. This enabled the acquisition of original information about the status of an independent and dependent variable and aided in establishing the relationship between the two variables (Jackson, 2009).

3.3: Study Area

This research was conducted in Murang'a Municipality. The Municipality, which is the administrative capital of Murang'a County borders Embu, Kirinyaga, and Nyeri Counties and covers an area of 300.7 sq. Km (Murang'a Municipality, 2019). The area is endowed with many SMEs and was readily accessible by the researcher. The mobile money network is also well established in the Municipality hence was suitable for this study.

3.4: Target population

Asiamah, Mensah, & Oteng-Abayie (2017), defined the target population as a group of participants chosen by the researcher because they possess common features relevant to a study in question. The population of the study is also referred to like all the elements or individuals possessing uniform traits the researcher plans to investigate draw conclusions and give recommendations that will apply to the entire population (Coopers and Schindler, 2008).

A report by Murang'a county entitled 'County integrated development plan 2019' indicated that most of the licensed businesses in the county fall under the category of SMEs and are about 16,829 as of the year 2018 (Murang'a County,2018). Another report by Murang'a municipality released in 2019 shows that there are about 2500 SMEs in the municipality most of which are sole businesses that are owned and run by family members. The 2500 registered SMEs in Murang'a municipality in various sectors such as hair-dressing, transport services, carpentry, retailing, wholesale, tailoring, hotel, and catering services formed the target population of this research.

3.5: Sampling procedures and sample size determination

Sampling deals with the identification and choosing of a particular group or sample to represent the entire population (Ritchie, Lewis, & Elam, 2003). The purposeful sampling design was used to identify individuals who participated in the study. The researchers targeted those individuals who could offer reliable and accurate information also referred to as key informants. This technique is applicable when Proportionate sampling is not relevant in a study but the researcher needs to get feedback from a specific group of participants who the researcher believes possess useful data to research. In this study, the respondents were SMEs traders operating in Murang'a Municipality, who were purposefully selected. The study also heavily relied on expert opinion by seeking the views of various agents based in the municipality to acquire more data.

The sample size was 250 traders. This decision is supported by Blanche, Durrheim, and Painter (2008) who pointed out that for populations of less than 1,000 a sample size of 30% is enough, for populations between 1,000 and 10,000 a sample size of 10% is significant and 150,000 population can be studied using a sample of 1%. Populations exceeding 1 million require a sample of 0.025%. 10% a sample size of 2500 participants was suitable for this research work.

3.6: Data collection

Questionnaires that were divided into three parts were used to collect primary data. The first part collected the participants' demographic details. The second section had questions on the independent variables and the third section collected information about the dependent variable. The questionnaire contained both open and closed-ended questions. Closed-ended questions restricted the respondents to give particular answers within a relevant scale while open-ended questions gave room for more explanation by the research participants. The questionnaires were self-administered because they were designed specifically to be completed by a respondent without the intervention of the researchers.

3.7: Instruments validity and reliability

According to Zohrabi (2013), Validity is a measurement quality that reflects the extent to which an instrument in research is capable of giving correct measurement as is intended. To determine the strength of instruments in this research, face, and content validity were tested. Pretesting through a pilot study was done to test face validity which helped the researcher identify questions that could be misunderstood or misinterpreted by the participants. Content validity is used to examine if the research instrument is exhaustive enough to cover the topic under study, this is normally tested by seeking opinions from experts. To improve on content validity, the researcher sought expert opinions from faculty members, immediate supervisors, and mobile money agents who are believed to be endowed with more information (Khan & Woosley, 2011). Reliability is achieved if the respondents can give the same answers to the same questions administered to them repeatedly. The questionnaires in this research were framed in a way that achieved uniformity and consistency (Sh & Wang, 2019).

3.8: Analysis and Presentation of Data

Data analysis describes and summarizes observations in a meaningful way using statistical methods (Cooper and Schindler, 2008). Descriptive as well as Inferential statistics were employed in analyzing data collected in this study. Descriptive statistics broke large data into small units that were simple to understand. Inferential statistics, on the other hand, enabled the researcher to make conclusions on the relationship between variables. With inferential statistics, data from samples were taken and generalizations about the target population were made.

Data collected was checked in detail to ensure it was complete, reliable, and consistent by going through all the Questionnaires to ensure the correct information was collected. Illegible, inconsistent, and ambiguous responses were faced out. Tables, percentages, mean and standard deviations were adopted to summarize the respondent answers. Multiple regressions analysis was

done to bring out the relationship between cross-network mobile money transfer adoption determinants and SMEs' performance in Murang'a municipality.

The regression equation was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby: Y = Performance of SMEs, X1= legal framework, X2= individual attributes, X3= technological characteristics, X4= social influence. β_0 = Constant, β_1 , β_2 , β_3 , β_4 are coefficients for the determinants, and ε is the error term.

According to Mugenda and Mugenda, (2003) Distribution of responses is well shown using frequency tables for the variables under investigation. In this research, therefore, tables such as histograms, frequency polygons, and pie charts were used to show the responses.

3.9: Research Ethics

The researcher first requested permission to conduct data collection from the sampled population through a cover letter that captured all the relevant information including the objectives of the study as well as informing respondents that participation in the study was voluntary. The respondent's identity was handled with the utmost confidentiality due to the sensitive nature of the SME sector. The researcher also sought permission from NACOSTI and Murang'a University of Technology's board of postgraduate studies to proceed to data collection. Finally, the researcher gave the true and correct position of the findings of the study without any manipulation.

CHAPTER FOUR

DATA ANALYSIS, RESULTS, AND DISCUSSION

4.1 Introduction

The analysis and findings of the research are systematically presented in this chapter. Thorough analysis, explanations, presentations, and discussions of results obtained from the field are comprehensively covered in this chapter.

4.2 Rate of Response

Table 4. 1: Rate of Response

Response	Frequency	%
Responded	230	92
No Response	20	8
Total issued	250	100

This research targeted 250 SME traders out of which 230 respondents which were 92% of traders agreed to fill the questionnaire and gave correct information as requested. This rate of response was above the 50% recommended one by scholars such as Mugenda and Mugenda (2003) and was appropriate for this study.

4.3 Analysis of Respondent's profile

Table 4.2 summarizes the respondent's demographic information. The items discussed in this section include; gender, age, marital status, Marital status of the respondents' education level, and Number of years in business. This information was important in discussing how the different categories of respondents to cross-network mobile money transfer service in Murang'a Municipality.

Table 4. 2: Profile of respondent

Variable	Frequency	%
1. Gender		
Male	105	46
Female	125	54
Total	230	100
2. Age		
Below 20 years	30	13
21-30 years	132	57
31-40 years	50	22
41-50 years	13	06
Over 50 years	5	02
Total	230	100
3. Marital status of the respondents		
Married	93	40
Single	137	60
Total	230	100
4. Education level		
Doctorate	0	0
Master	3	1
Undergraduate	38	17
Diploma	80	35
Certificate	69	30
K.C.S. E	40	17
Total	230	100
5. Number of years in business		
Below 2 years	52	23
2-6 years	118	51
7-10 years	48	21
Above 11 years	12	05
Total	230	100

4.3.1 Respondents Gender

In this study, the gender balance was greatly observed. From the results, the male gender accounted for 46% and 54 % comprised of female respondents. The adequate representations of both genders ensured that the finding of the study did not suffer from gender bias.

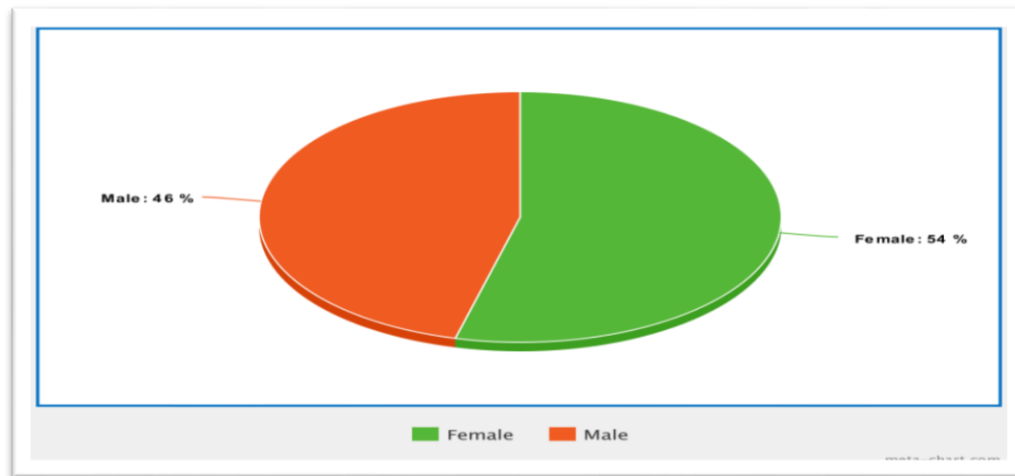


Figure 4. 1: Respondent gender

4.3.2 Age of Respondents

57% of the traders who participated in this study were aged between 21 -30 years. According to Peter (2014), young people are individuals aged between 25 and 35 years. This is an indication that mobile money transactions were popular amongst the youth. 22% were those aged between 31-40 years. Traders aged below 20 years accounted for 13% followed by an age bracket of 41-50 years at 6%. Participants aged above 50 years had the smallest number at 2%. Data shows that 92 % of the respondents were below 40 years, which infers that most of the people working in small and medium enterprises are young. The findings of this study are in line with those of Bosire & Ntale (2018) on the effect of mobile money transfer services on the growth of small and medium enterprises in the informal sector of Nairobi County in Kenya. In that study, 72% of

389 respondents were composed of people between 18-45 years. The study infers that these age groups compromise young people who are involved in small and medium business enterprises and use mobile money services more readily compared to the older age groups.

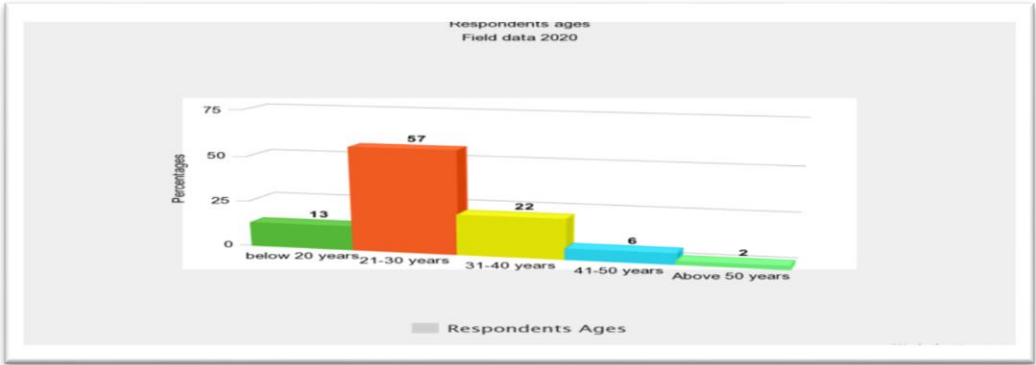


Figure 4. 2: Age of respondents

4.3.3 Marriage status of the respondents

Traders who took part in this research were required to indicate their marital status. The findings revealed that the majority of them at 60% were single and only 40% were married. Most of the individuals who took part in this survey were single. This is supported by the fact that they were young.

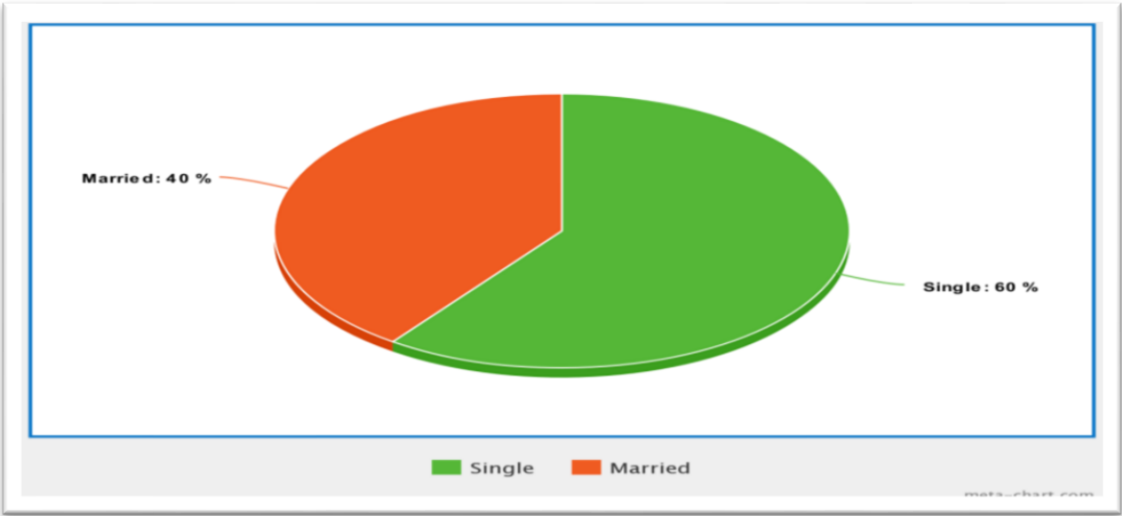


Figure 4. 3: Marital status of respondents

4.3.4 Education levels of respondents

The information on the level of literacy of traders was also collected in this survey to ascertain their level of competency in managing their business by using the new technology on mobile money. According to the results, 35 % of the respondents had diplomas, 30% had certificates, undergraduate and KSCE holders tied at 17%. Master qualification accounted for 1% in this study. No respondent had a doctorate in this survey. This indicates that due to low levels of formal employment in Kenya the majority of traders with secondary qualification and above is working in the informal sector. These results were in agreement with those of Ibrahim & Mahmood (2016) on mediating role of competitive advantage on the relationship between entrepreneurial orientation and the performance of small and medium enterprises in Nigeria, who found out that the majority of the respondent in SMEs, were young people who had formal education.

The findings of this study, therefore, are a clear indication that the SME sector has continued to employ young educated people who cannot secure employment in a formal setting. There have been increased cases of unemployment in Kenya especially among the youth who are now finding a remedy to that problem in the SME sector.

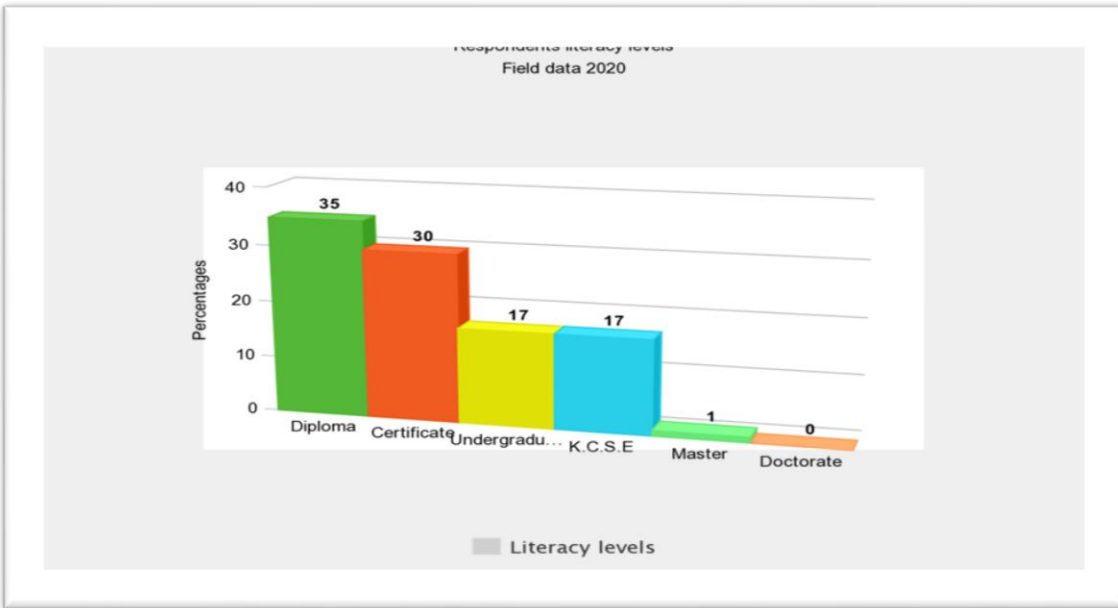


Figure 4. 4: Education levels of the Respondents

4.3.5 Years in the current business

Participants were asked to indicate the number of years they had operated in their current business to know the maturity levels at which traders were ready to adopt new technologies to boost their operations. The majority of the Traders at 74% had operated in less than 6 years, 21% between 7-10 years, and 5% above 11 years. The majority of the business operators had been in their current business in a period between 2-6 years and was ready to adopt new technologies to better their businesses. This was in agreement with the study by Kademeteme& Twinomurinzi (2019) on the ineffectiveness of technology adoption models in SMEs of South Africa, which concludes that most of the people who adopt information communication technologies are usually young.

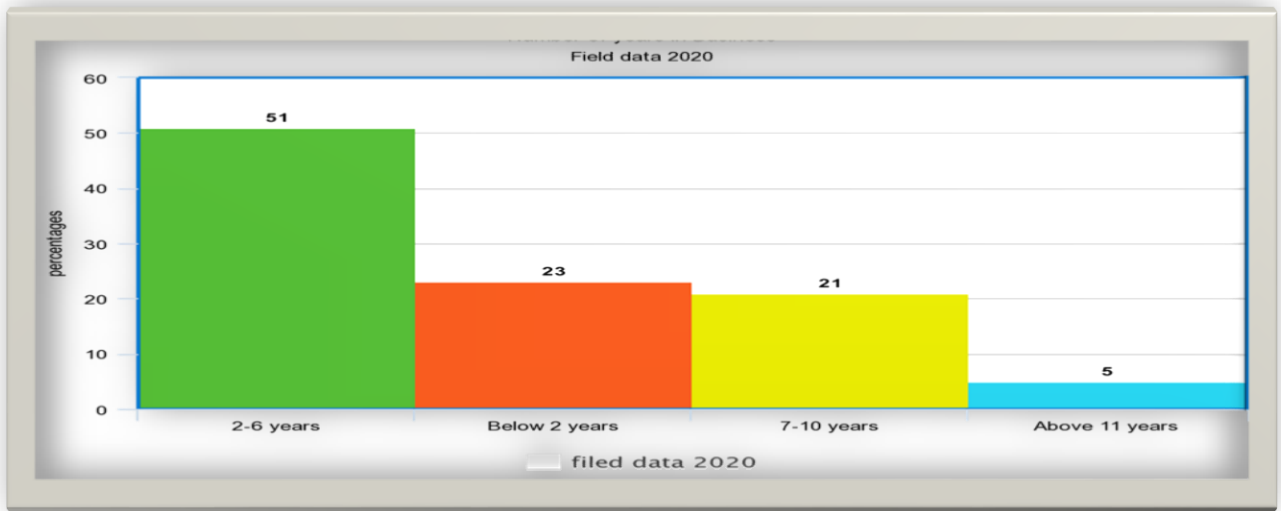


Figure 4. 5: Period in the current business

4.4 Extent to which cross-network mobile money transfer service has been adopted

The second part of the questionnaire sought to establish mobile money usage, mobile money provider, the extent to which cross-network mobile money has been adopted as well as the adoption deterrents.

4.4.1 Mobile money usage

Table 4. 3: usage rate of mobile money

Usage	Frequency	%
Yes	230	100
No	0	0
Total	230	100

Respondents were asked to state whether they were using mobile money services or not, 100% of the respondents who took part in this survey indicated that they used mobile money in their day

to day business activities. This is an indication that mobile money services were an integral part of SMEs' trading activities in Kenya.

4.4.1 Mobile Money Provider

The SMEs traders who took part in this study were required to state the mobile money provider they had adopted in their businesses over time. From the results 81% use MPESA while 11% and 4% were subscribers of Airtel money and Tcash respectively. The remaining 3% had subscribed to Equitel. From the results, it is clear that the majority of the traders at 81% used MPESA as the primary mobile money provider in Kenya. This explains why people were comfortable with Mpesa services.

These findings concur with those of Nyaga (2017) on the impact of mobile money services on the performance of small and medium enterprises in an urban town in Kenya who established that Safaricom Mpesa was the leading mobile money provider in Kenya and was followed by Airtel money in the second position. From these findings its evident that MPESA dominance is still high even after the successful introduction of the interoperability of mobile money in the Kenyan mobile money market.

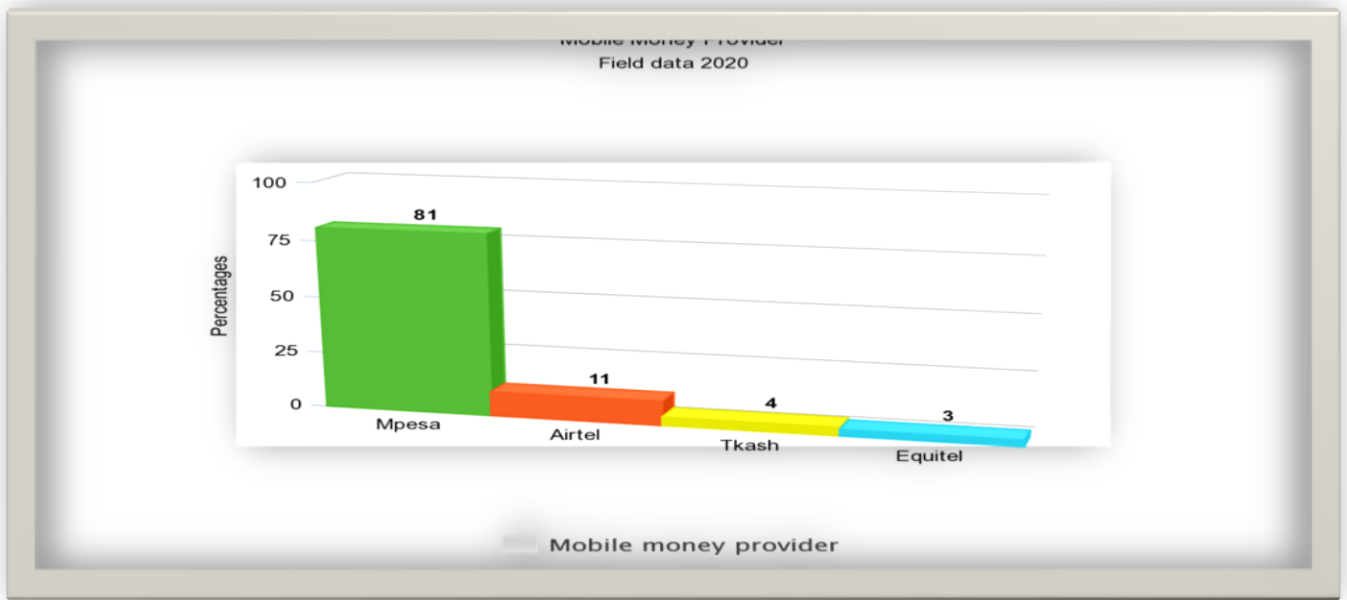


Figure 4. 6: Mobile Money Provider

4.4.2 Usage of cross-network mobile money transfer service

The participants were asked to indicate whether they had utilized the cross-network mobile money transfer service. Only 36 % had adopted the service at the time of the survey while 64 % had not. These results confirm that the adoption rate is still very low and much needs to be done to increase the usage of the service.

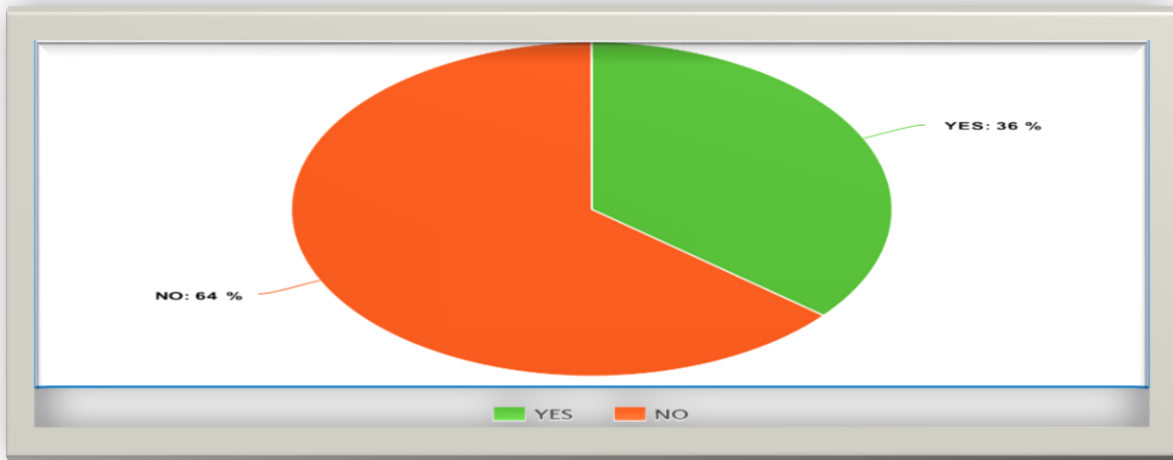


Figure 4. 7: Usage of cross-network mobile money transfer service

4.4.3 Reasons why traders had not adopted cross-network mobile money transfer service

Lack of awareness that cross-network mobile money exists, trust in Mpesa, lack of agent interoperability, Mpesa loyalty, few or limited retail shops of other mobile money operators and network challenges experienced when using other operators were the main reason which hindered the adoption of interoperability of mobile money.

Table 4. 4 : Reasons for low uptake of cross-network mobile money transfer service

Reason for not adopting	Frequency	%
Lack of awareness	75	21
Lack of agent interoperability	70	20
Trust in M-Pesa	65	18
M-Pesa loyalty	61	17
Network challenges	58	16
The limited presence of rival networks	27	8
Total	356	100

The respondents who indicated that they had not adopted cross-network mobile money transfer services were asked to state the reasons why they had not used the service. The traders gave diverse reasons with the majority of them at 21% claiming that they were not aware that such a service was in existence. These findings were in agreement with a study by Islam, Khan, Ramayah, and Hossain (2011) on the adoption of mobile commerce service among employed mobile phone users in Bangladesh, who established that the adoption of Mobile Commerce Service was greatly influenced by user awareness.

Lack of agent interoperability was another reason which made traders at 20% fail to adopt the service and this was consistent with a study by Mazer & Rowan (2014) on, competition in mobile financial services in Kenya, draft brief prepared by CGAP (2011) for competition authority of Kenya who established that full interoperability could only be achieved if agents were interoperable. Platform interoperability was not enough to attract more customers and reduce Mpesa dominance because traders said they had no choice because even after receiving money from a rival network one could only withdraw from their registered network.

More other traders at 18 % had not adopted the new technology due to trust in Mpesa. Traders felt that Mpesa service was handling their financial matters more appropriately and this explains the trust they had in it and were not willing to adopt another service. This was in agreement with the analyzed data of a study by Alsaad, Mohamad & Ismail (2017), which proved that trust had a significant impact when traders had to choose between existing and new technologies.

Traders also failed to adopt due to loyalty in M-pesa at 17%. The trades were more loyal to M-pesa because according to them it had given reliable financial services and we're not ready to shift their loyalty to any other new technology or rival operators in the country. These findings

were in agreement with a study by Deng, Wei & Zhang (2010) who established that user loyalty in one technology harmed the adoption of new technology.

Traders also stated that the service was not friendly to them because the other mobile money providers were having network connectivity challenges, 16 % of the respondents gave this reason. Traders stated that Safaricom was very reliable on network connectivity than the other telecommunication networks in Kenya. They were not willing to shift to new technology due to the belief that they may experience network challenges. These findings were consistent with those of Dube & Gumbo (2016) who established that the adoption and Use of Information Communication Technologies in Zimbabwean Supermarkets was hindered by poor network connectivity resulting in low adoptions.

The little presence of other mobile money service providers was also a hindrance to adoption. This is confirmed by the fact that the majority of mobile money agent shops in many places in the country are owned by M-Pesa agents. This was according to 8 % of the respondents. This has made competition difficult as such agent shops exclusively serve Safaricom subscribers. The other agents have limited presence and negatively affect the adoption of cross-network mobile money. A study by Kingiri & Fu (2019) on diffusion and adoption of digital finance innovation in emerging economies established that Safaricom did not allow their agents to serve any other mobile money service providers and this hindered other networks from adequately competing with Safaricom M-Pesa.

4.4.4 Period of Usage of cross-network mobile money transfer service

The study also sought information from the respondents about the period one has used cross-network mobile money. The majority of them had used the service for one year at 64% and the remaining 36% had used the service for less than one year. The service was being implemented

at the initial stages by most of the traders. This affirmed the low rate of adoption of the service as of the date of research.

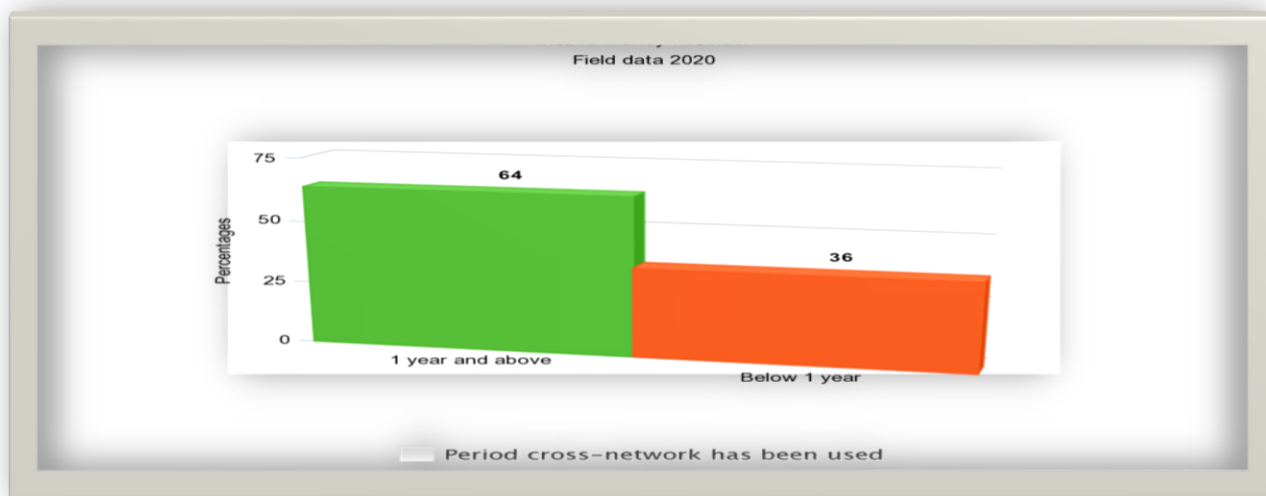


Figure 4. 8: Period of usage of cross-network mobile money transfer service

4.5 Cross-Network Mobile Money Transfer Service Adoption Determinants

The adoption of determinants under investigation was a government legal framework, individual factors, technological characteristics, and perceived social influence. These drivers were analyzed in detail with the help of descriptive statistics in this section.

4.5.1 Individual factors affecting the use of cross-network mobile money transfer service

The first objective of this study was to assess individual attributes influencing the adoption of cross-network mobile money transfer services. The factors which were under investigation included awareness, perceived usefulness, ease of use, and user attitudes. The mean and standard deviation of each factor was determined to aid in the discussion. The findings revealed that traders strongly agreed that individual attributes influenced their decision to adopt the service.

Table 4. 5: Individual factors which affect the adoption of cross-network mobile money transfer service

Individual factors	Mean	Std. deviation
Awareness	3.964	0.723
Perceived usefulness	3.602	0.748
P.E.O. U	3.783	0.781
User attitude	3.554	1.027

From the survey, most of the respondents strongly agreed that awareness of the existence of a new technology strongly influenced their decision to adopt as shown by a mean of 3.964 and a standard deviation of 0.723 which indicates that the data was cluster around the mean, perceived usefulness also had significant influence with a mean of 3.602 and it was supported by a standard deviation of 0.748 which was small enough to conclude that data points were concentrated around the mean.

Perceived ease of use also influenced the decision to adopt the service with a mean of 3. 783. User attitude towards the interoperability of mobile money had a significant effect on adoption by a mean of 3. 554. The standard deviation was also small and indicated that the data was concentrated around the mean.

From this survey, most of the respondents strongly agreed that individual attributes affected the adoption of cross-network mobile money transfer services. This was in agreement with a study by Benson (2017), on drivers of information communication technology adoption by small and medium enterprises which found out that perceived benefits had a significant influence on the adoption of new technologies and innovations.

These findings further concurred with a study conducted by Wambua (2015) on an implementation model for M-payment adoption: a case of lipa through M-Pesa by the mitumba traders in Gikomba market, who established that individual factors on adoption of Lipan through M-Pesa service were positive and statistically significant in influencing the decision of traders to make usage of new technology.

4.5.2 Effect of social influence on the adoption of cross-network mobile money transfer service

Marketing, persuasion, conformity, and compliance were the parameters under investigation on perceived social influence.

Table 4. 6: Social influence effect on adoption of cross-network mobile money transfer service

Perceived social influence	Mean	Std. deviation
Marketing	3.904	0.806
Persuasion	3.892	0.699
Conformity	3.759	0.759
Compliance	3.590	0.870

On the perceived social influence the respondents strongly agreed that marketing contributed heavily to their decision to adopt cross-network mobile money with a mean of 3.904 and a standard deviation of 0.806. Persuasions by friends and family members also influenced the

decision to adopt with a mean of 3.892 and a standard deviation of 0.699. On conformity, the research found out that it was influenced by a mean of 3.759 and a standard deviation of 0.759. Compliance also influenced the traders' decision to adopt and use cross-network mobile money as shown by a mean of 3.590 and a standard deviation of 0.870.

A large standard deviation indicates that the data points are far from the mean, and a small standard deviation indicates that they are clustered closely around the mean. From the above information, the standard deviations are small hence they are close to the mean and relevant to support the data. The findings on perceived social influence in this study agreed with many studies such as Risselada (2014), Venkatesh & Davis (2000), Rogers (2003), who concluded that perceived social influence was the greatest determinant of the adoption of mobile banking.

These findings further agreed with study findings by Schmidhuber, Maresch, & Ginner (2018) on disruptive technologies and abundance in the service sector-toward a refined technology acceptance model and Graf-vlachy & Buhtz (2017) on social influence in technology adoption research: a literature review and research agenda whose results indicated that the intention to use mobile payment services is positively affected by perceived social influence.

4.5.3 Technological characteristics affecting the use of cross-network mobile money transfer service

Perceived advantage, network complexity, network compatibility, and network security were the technological factors under investigation in this study.

Table 4. 7 : Technological characteristics which affect the adoption of cross-network mobile money transfer service

Technological factors	Mean	Std. deviation
Perceived advantage	3.964	0.689
Network complexity	3.590	0.750
Network compatibility	3.843	0.690
Network security	3.506	0.967

Technological characteristics also had a significant effect on the adoption of cross-network mobile money. On the Perceived advantage, respondents strongly agreed that it influenced their decision to use the service as indicated by an average of 3.964. Traders also indicated that network complexity had a significant effect on the adoption of the service with a mean of 3.590. Network compatibility also influenced the decision to adopt the service with a mean of 3.843. Respondents agreed that network Security influenced their decision to adopt the service as shown by a mean of 3. 506. All the standard deviation points were small and clustered around the mean as shown in the above table an indication that the data was significant enough to derive such a conclusion.

The study further found out that technological characteristics had the highest influence which was found to be statistically significant in influencing customers' choice of new technology. This was in agreement with many studies such as Wambua (2015) and Schmidhuber et.al (2018), which found out those technological factors have a positive effect on the adoption of mobile money facilities by customers.

4.5.4 Legal framework Effect on the adoption of cross-network mobile money transfer service

Authorization, transaction limits, consumer protection, and agent interoperability were the government legal framework parameters under investigation in this study.

Table 4. 8: The results of the legal framework effect on adoption of cross-network mobile money transfer service

Legal framework	MEAN	Std. deviation
Authorization	3.759	0.726
Transaction limits	3.723	0.738
Consumer protection	3.626	0.822
Agent interoperability	3.639	0.878

On the existing government legal framework, traders strongly agreed that authorization procedures in place greatly influenced their decision to adopt the new technology as shown by a mean of 3.759 and a standard deviation of 0.726. Transaction limits imposed by the government also had a very strong impact on the decision to adopt cross-network mobile money transfer service as shown by a mean of 3.723 and a standard deviation of 0.738 which supported the fact that traders strongly agreed with the statement. Consumer protection laws also had an impact on the decision to adopt the service by a mean of 3.626 and a standard deviation of 0.822. On agent

interoperability traders strongly agreed that it had a very significant effect on the decision to adopt interoperability of the service as shown by a mean of 3.639 and a standard deviation of 0.878.

The findings of this research were consistent with research by Carole (2012) on mobile money interoperability who established that regulation should aim at giving the market a chance to mature by ensuring the regulations are not disadvantaging the traders.

4. 5 .5 Summary of Cross-Network Mobile Money Transfer Service Adoption Determinants

This section gives a summary of the four determinants that is government legal framework, technological characteristics, perceived social influence, and individual factors that were under investigation in this study. The summary was done using descriptive statistics namely Co-variance Mean and Standard deviation.

Table 4. 9: Summary of cross-network mobile money transfer service adoption determinants

Determinants	Mean	Standard deviation	Co-variance
Individual attributes	14.904	2.314	0.35
Perceived social influence	15.145	1.881	0.83
Technological characteristics	14.904	2.058	1.65
Legal framework	14.747	2.035	0.90

The four variables under investigation were found to have a great influence on the adoption of cross-network mobile money transfer services by SMEs in Murang'a municipality. Traders strongly agreed that individual attributes influenced their choice of the service as shown by a mean of 14.904 and a standard deviation of 2.314. The perceived social influence had a mean of 15.145 and a standard deviation of 1.881 an indication that traders strongly agreed with the statement.

Technological characteristics had a great influence on the adoption of cross-network mobile money transfer service as shown by a mean of 14.904 and a standard deviation of 2.058. Traders strongly agreed that the government legal framework in place strongly influenced their decision to adopt the new technology as shown by a mean of 14.747 and a standard deviation of 2.035.

Further covariance was tested between cross-network mobile money transfer adoption determinants and the performance of small and medium enterprises to establish the movement between the variables. Covariance indicates the relationship between two variables whenever one variable changes. The study found out that, a positive relationship existed between the variables under study.

The individual attributes had a positive covariance of 0.35, perceived social influence of 0.83, technological characteristics of 1.65, and government legal framework 0.90. From these findings, it was evident that technological traits had the highest relationship with the performance of SMEs because it produced a covariance of 1.65 indicating a strong positive relationship between the variables.

4.6 Effect of Cross-network mobile money transfer service Adoption on the performance of SMEs

The fifth objective of this study was to establish the effect of cross-network mobile money transfer adoption determinants and performance of SMEs. This section, therefore, covers the

results obtained from traders on the impact of the Cross-network mobile money transfer service adoption effect on the performance of their businesses.

4.6.1 Rating of the business as a result of cross-network mobile money transfer usage

Respondents were required to gauge their business using the following criteria namely excellent, average, good, very good, and below average.

Table 4. 10: Rating of business performance as a result of cross-network mobile money transfer service adoption

Rating	Frequency	%
Below average	01	4
Average	09	11
Good	59	71
Very Good	11	13
Excellent	03	04
Total	83	100

The respondents were asked to gauge their business performance for the period they had used cross-network mobile money transfer service. The results revealed that most businesses were doing good at 71%, those who said their trade was very good were at 13%, 11% of the traders stated that their business outcomes since the adoption of the service were merely on average levels, 4% of the respondents revealed that their trade had reached an excellent level and 1% thought that the performance had declined by choosing the below-average scale as captured in the table below.

These findings show that most of the business traders were in agreement that the service had brought benefits to their businesses because only 1% stated that the performance had declined.

This is an indication that cross-network mobile money had made trading more efficient and effective

4.6.2: Cross-network mobile money transfer usage and business growth

Table 4. 11: The growth of the business since the adoption of cross-network mobile money transfer service

Rating	Frequency	%
Strongly disagree	02	3
Disagree	03	4
Neutral	16	19
Agree	46	55
Strongly agree	16	19
Total	83	100

The traders were asked to identify by how far their business had grown due to usage of Cross-network mobile money transfer service.55% of the traders were in agreement that Cross-network mobile money had made their business growth leading to improved outcomes, 19% had a tie between those who strongly agreed and those who were neutral. Those who disagreed were at 4% and those who strongly disagreed with the statement were at 3%. These findings show that business performance was on the upward trend due to the usage of cross-network mobile money transfer services.

4.6.3 SMEs Performance

The performance of SMEs was investigated in terms of sales, customer base, profits, and business expansion. The study sought information on whether adopting cross-network mobile money transfer had led to increased sales, customer base, profits, and whether the business had

experienced any meaningful growth. Traders strongly agreed that the four indicators of growth under investigation had improved from the time they have begun using the new technology.

The study found out that an increase in sales as a result of the interoperability of mobile money was high as shown by a mean of 4. 217 and a standard deviation of 0. 606. The customer base was also on the rise as reflected by a mean of 3. 518 and a standard deviation of 0. 802. Traders strongly agreed that there was an increase in profits as shown by a mean of 3.687 and a standard deviation of 0.810 due to the usage of cross-network mobile money transfer service. Business expansion due to the usage of cross-network mobile money had a mean of 3. 482 and a standard deviation of 0. 811.

Table 4. 12: The results of business performance and growth as a result of Cross-network mobile money transfer service adoption

Indicators of growth	MEAN	Std. deviation
Increased sales	4.217	0.606
Increased customer base	3.518	0.802
Increased profits	3.687	0.810
Business expansion	3.482	0.811

From the above findings, it's clear that cross-network mobile money transfer service had made the business grow in terms of performance because it made the operations more efficient and effective.

4.7 Inferential Statistics

The results of this study were analyzed further through inferential statistics to note whether there was any relationship between the dependent and independent variables.

Table 4. 13: Inferential Statistics Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.4539	0.2061	0.1654	1.894383

The model summary above produced an R squared of 0.2061. This shows a moderate fit of the data in the model. The results further gave an adjusted R square of 0.1654 and indication that 16.54 % of changes in Cross-network mobile money transfer adoption determinants affected SMEs' performance. Some fields of study most in social sciences contain an inherently greater amount of unexplainable variation. In these areas, R-Square values are bound to be lower like is the case in this study because it is harder to predict human behavior (Ngongo, Ochola, Ndegwa & Katuse, 2019).

There was a positive moderate correlation amongst the study variables as confirmed by R which was 0.4539. These findings reveal that the study variables had a positive moderate association.

This study concludes that there is a positive moderate relationship between Cross-network mobile money transfer service adoption determinants and performance of SMEs in Murang' a municipality. This is an indication that the growth of SMEs is not entirely connected to the adoption of interoperability of mobile money, but other factors that affect the growth of SME's exist.

Table 4. 14: Coefficients

MODEL	Coefficient	Std.Error	t	P> [t]	95% conf.
Constant	8.427	1.894	4.5	0.00	4.656
Individual Attributes	-.1018	.0948	-1.07	0.286	-.2906
Perceived Social Influence	0.0983	0.1183	0.83	0.408	-.137
Technological Characteristics	0.3629	.1074	0.491	0.001	.145
Government legal framework	0.7428	.10739	0.69	0.491	-.1395

The proposed regression equation was

$$Y = 8.427 + -1.1018X_1 + 0.0983X_2 + 0.3629 X_3 + 0.7428X_4$$

The equation revealed that holding the cross-network mobile money transfer adoption determinants constant, there will be a positive effect on SMEs' performance as revealed by a constant of 8.427. This further confirmed that the study variables under investigation collectively had a positive moderate effect on SMEs' performance.

The result further revealed that technological characteristics adoption determinants had a positive relationship with SMEs' performance as shown by a constant of 0.3626 and $p < 0.05$ (0.001) indicating the existence of a significant and statistically positive relationship. The technological factors proved to have a lot of influence than the other variables under this study.

The individual attributes had a negative and insignificant relationship with SMEs' performance as revealed by a constant of -.1018 and the $P > 0.05$ (0.286). Perceived social influence resulted in a positive association with the SMEs' performance as revealed by a constant of 0.0983. The government legal framework in place also had a positive relationship as shown by a constant of 0.7428.

Both the regression and inferential statistics revealed that cross-network mobile money transfer had a positive effect on the performance of small and medium enterprises because traders strongly agreed that the service had improved their business activities. These results concurred with those of Muchiri (2018), on mobile banking adoption effect on the performance of SMEs who established that mobile money adoption had contributed greatly to the growth of the SME sector.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

The study's specific objectives were to assess individual attributes, Perceived social influence, technological characteristics, and government legal framework influence on the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality and to establish the association between the use of cross-network mobile money transfer service and SMEs' performance. This chapter discusses the summary, conclusion, and recommendation obtained from data analysis and discussion.

5.2 Summary of findings

There was a response rate of 92% in this study as 230 out of 250 questionnaires were properly answered and returned. In this study, the gender balance was greatly observed. From the results, the male gender accounted for 46% and 54 % comprised of their female counterparts. The adequate representations of both genders ensured that the finding of the study did not suffer from gender bias.

The distribution of the age of the traders who took in the survey is outlined as follows. Most of the traders at 57% were of the age bracket 21-30. Those aged between 31-40 years accounted for 22%. Traders aged below 20 years accounted for 13% followed by an age bracket of 41-50 years at 6%. Participants aged above 50 years had the smallest number at 2%.

Traders who took part in this research were asked to state their marital status. From the results, 60% of the respondents indicated that they were single and the remaining 40% revealed that they were married. The information on the level of education of traders was also sought in this study.

According to the results, 35 % of the respondents had diplomas, 30% had certificates, undergraduate and KSCE holders tied at 17%. Master qualification accounted for 1%. No respondent had a doctorate in this survey.

Information on the number of years the traders had operated in their business was sought. Most of them at 51 % had run their businesses between two to six years, 23% had been in business in a period less than 2 years, 21% between 7-10 years, and 5% above 11 years. The participants were also requested to reveal the mobile money service provider they had adopted in their business. From the results 81 % use M-Pesa, 11% of the respondents were subscribers of Airtel money, 4% used Tcash, and 3% used Equitel.

Cross-network mobile money transfer service extent of adoption was also investigated; the traders were requested to give information on whether or not they had used the service. The findings revealed a low rate of adoption as only 36 % of the respondents had adopted the service at the time of the survey and 64 % had not made any use of the service. Respondents were asked to state the reasons why they had used the service, the majority of them at 21% claimed that they were not aware that the interoperability of mobile money was in existence in Kenya.

More traders at 18% had not adopted the new technology due to trust in Mpesa. Lack of agent interoperability was another reason which made traders at 20% not to adopt the service. Loyalties in M-Pesa and network connectivity challenges were other reasons given by traders at 17% and 16% respectively. The little presence of rival networks to Safaricom on mobile money provision services was also a hindrance to adoption at 8%.

The researcher sought to establish the period in which traders had utilized cross-network mobile money transfer facilities, 64% of the respondents who had adopted cross-network mobile money

transfer services had used it for one year and the remaining 36% had used the service for less than one year.

The first objective of this study was an assessment of how individual attributes affects the adoption of cross-network mobile money transfer by SMEs traders in Murang'a municipality was the first objective of this study and as such the adopters were asked the individual attributes which influenced their decision to use the service. Traders revealed that user awareness influenced their decision to adopt the service as shown by a mean of 3.964, perceived usefulness was also influenced by a mean of 3.602. Perceived ease of use also influenced the decision to adopt the service with a mean of 3.783. User attitude towards the interoperability of mobile money had a significant effect on adoption at 3.554.

The second objective was to establish how perceived social influence affected the uptake of the service in Murang'a municipality. Respondents strongly agreed that marketing contributed heavily to their decision to adopt cross-network mobile money with a mean of 3.904. Persuasion influenced the decision to adopt with a mean of 3.892. On conformity, the research found out that it was influenced by a mean of 3.759. Compliance also influenced the traders' decision to adopt and use cross-network mobile money with a mean of 3.590.

The third objective was to establish technological characteristics influencing the adoption of cross-network mobile money transfer services. Perceived advantage strongly influenced the decision to use the service as indicated by an average of 3.964. Traders also indicated that network complexity had a significant effect on the adoption of the service with a mean of 3.590. Network compatibility also influenced the decision to adopt the service with a mean of 3.843. Participants agreed that network Security influenced their decision to adopt the service as shown by a mean of 3.506.

The fourth objective was to assess how the government legal framework affects the adoption of cross-network mobile money transfer service; traders strongly agreed that authorization procedures greatly influenced their decision to adopt the new technology as shown by a mean of 3.759. Transaction limits had a very strong impact on the decision to adopt a cross-network mobile money transfer service. Consumer protection laws also had an impact on the decision to adopt the service. On agent interoperability, the traders agreed that it had a very significant effect on the decision to adopt the interoperability of the service.

Traders were asked to gauge their business performance for the period they had used cross-network mobile money transfer service. The results revealed that most businesses were doing good at 71%, those who said their trade was very good were at 13%, 11% of the traders stated that their business outcomes since the adoption of the service were on average levels, 4% of the respondents revealed that their trade had reached excellent levels and 1% thought that the performance had declined by choosing the below average scale.

The traders were asked the extent to which Cross-network mobile money transfer service had improved their business growth, 55% of the traders were in agreement that Cross-network mobile money had made their business growth leading to improved outcomes, 19% had a tie between those who strongly agreed and those who were neutral. Those who disagreed were at 4% and those who strongly disagreed with the statement were at 3%.

On SMEs' performance, the study found out that there was an increase in sales as a result of the interoperability of mobile money as shown by a mean of 4.217. The customer base was also on the rise as revealed by a mean of 3.518. The traders also strongly agreed that there was an increase in profits as shown by a mean of 3.687 due to the usage of cross-network mobile money transfer service. Business expansion had a mean of 3.482.

The results of this study were analyzed further through inferential statistics to note whether there was any correlation between the dependent and independent variables. The multiple regression equation gave an Adjusted R square 0.1654 an indication that 16.54 % of changes in Cross-network mobile money transfer adoption determinants affected SMEs' performance. There was a positive moderate correlation amongst the study variables as confirmed by R which was 0.4539.

The result further revealed that technological characteristics adoption determinants had a positive correlation with SMEs' performance indicating the existence of a significant and statistically positive relationship. The individual attributes had a negative and insignificant relationship with SMEs' performance. Perceived social influence and the government legal framework also had a positive relationship with SMEs' performance but were not statistically significant.

5.3 Conclusion

The results of this study confirmed that the adoption of cross-network mobile money transfer by SMEs in Murang'a municipality was at a very low stage (36%). This means that the service has not been widely adopted in Kenya at large. The main reasons for the low adoption were unawareness, lack of agent interoperability, the limited presence of rival mobile money providers, network challenges, trust, and loyalty in M-Pesa.

The first objective of the study was to assess individual attributes influencing the adoption of cross-network mobile money transfer services. Most of the respondents strongly agreed that user awareness, perceived usefulness, Perceived ease of use, and user attitude had a significant effect on the adoption of the service. It is therefore important to pay attention to user awareness of new technology to increase the rate of usage. The study also concludes that service providers explain the usefulness of a product to potential customers as they will increase the usage of a given

Product. On P.E.O.U the study concludes that products must be made in such a way that they are devoid of difficulties in their usage.

The second objective was to establish how perceived social influence affected the uptake of cross-network mobile money transfer service in Murang'a municipality. The study concludes that aggressive and widespread marketing influences the adoption of new technology. Members of a given society make usage of innovation due to willingness to conform to early adopters. Persuasions by close friends and relatives can also influence the uptake of new technology. The study also established that people adopt a product due to compliance pressure. The study, therefore, concludes the adoption of cross-network mobile money transfer service was also influenced by the perceived social influence.

The third objective was to establish technological characteristics influencing the adoption of cross-network mobile money transfer services. A perceived advantage strongly influenced the decision to use the service. Traders also indicated that network complexity had a significant effect on the adoption of the service. Network compatibility also influenced the decision to adopt the service. Participants agreed that network Security influenced their decision to adopt the service. This is an indication that the technological features of a given innovation have a very significant influence on the adoption of new technology.

On the existing legal framework, which was the fourth objective, traders strongly agreed that authorization procedures, existing transaction limits, consumer protection laws, and agent interoperability greatly influenced their decision to adopt cross-network mobile money transfer services. This is an indication that the government plays a key role in influencing the adoption of new technologies. If the laws are favorable they will promote massive adoption at any given time.

The fifth objective was to determine whether the adoption of cross-network mobile money had an impact on the performance of SMEs. The study concluded that cross-network mobile money transfer adoption impacted the performance of SMEs in Murang'a municipality positively because many traders strongly agreed that their business performance had improved as a result of adopting the service.

5.4 Recommendations

The following recommendations were important based on the study objectives and findings on cross-network mobile money transfer adoption determinants and the performance of small and medium enterprises in Murang'a municipality.

Due to the low rate (36%) of adoption of cross-network mobile money service, the study recommends to policymakers to introduce interoperability at the agent level to attract more customers because consumers will adopt the service if they can withdraw or deposit cash at any agent shop regardless of the operators. There is also a need to conduct aggressive marketing and campaign to increase awareness in the market. The study also recommends that other mobile money providers improve on network connectivity challenges and increase their presence across the country to increase their competition against M-Pesa.

The study further recommends that the network providers consider the impact of adoption determinants as they introduce new products in the market. This is because the study found out that, individual attributes, perceived social influence, technological characteristics, and the legal framework affected the adoption decisions by customers.

The SMEs which had adopted the service should continue using it to accrue more benefits of its usage. Traders who had not utilized cross-network mobile money transfer services should adopt it so that they may conduct their trading activities better. This is because those who had adopted reported increased performance.

To increase financial inclusivity in the country the study recommends that the service providers raise transaction limits of mobile money to go beyond the current ceiling because mobile money users are rapidly increasing in the country. There is also a need to lower transaction costs to attract more customers.

5.5 Suggestions for Further Areas of Studies

This study found out that the adoption rate of cross-network mobile money transfer services is still very low (36%) in Murang'a Municipality. Therefore, there is a need to conduct further follow-up studies on the same topic in later years to assess the extent of adoption.

The study focused on SMEs and confirmed that there was a positive moderate relationship between SMEs' performance and adoption determinants of the service, there is, therefore, a need to conduct a similar study in large organizations to assess its effect on their performance.

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APPENDICES

APPENDIX 1: LETTER TO THE RESPONDENTS

STANLEY MOMANYI

P.O BOX 75-10200

MURANG'A, KENYA,

March 2020.

Dear Respondent,

This letter is to request you to help me obtain data to facilitate my study titled: **Cross-Network Mobile Money Transfer Adoption Determinants and Performance of Small and Medium Enterprises in Murang'a Municipality** by filling the questionnaire attached.

The information you voluntarily provide will be treated with utmost confidentiality as the final results will be communicated in a general manner. Thanking you in advance for your cooperation and I am looking forward to your positive feedback.

Yours faithfully,

Stanley Momanyi BE401/5140/2017

Cell numbers: 0706841617/0724540432/0773294749

Student at Murang'a University of Technology, Kenya

APPENDIX 2: QUESTIONNAIRE

SECTION A: General Information

1. Please indicate your gender

Male [] Female []

2. Indicate your age.

Below 20 years [] 21-30 years [] 31-40 years [] 41- 50 years [] Over
50 years []

3. Please indicate your marital status.

Married []

Single []

4. Please indicate your highest level of education.

Doctorate []

Master []

Undergraduate []

Diploma []

Certificate []

KCSE []

5. For how long have you been in this trade?

Below 2 years [] 2-6 years [] 7-10 years [] above 11 years []

SECTION B: Cross-Network Mobile Money Transfer service Adoption of Determinants

1. Do you use mobile money YES [] NO []

(If No, please indicate below the reason why you do not use mobile money services)

.....
.....

2. What is your mobile money service provider? (If you use more than one tick appropriately)

M-Pesa [] Airtel Money [] Tcash [] others specify.....

3. Do you use the cross-network mobile money transfer service?

YES [] NO []

(If yes, please continue with the questionnaire)

(If no, please state the reason why you do not use cross-network mobile money transfer service)

.....
.....
.....
.....

4. For how long have you used the cross-network mobile money transfer service?

.....
.....
.....
.....
.....

5. Individual attributes influencing adoption of cross-network mobile money transfer service by traders: (Tick one choice in each row based on the Following rankings: 5(Strongly agree), 4(Agree), 3 (Neutral), 2(Disagree), 1(Strongly disagree)

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Awareness of the existence of cross-network mobile money transfer influences its adoption					
Perceived usefulness of cross-network mobile money transfer affects its adoption					
Perceived ease of use affects cross-network mobile money transfer adoption					
The attitude of users about the service					

6. Perceived social influence effect on the Adoption of cross-network mobile money transfer service by traders: (Tick one choice in each row based on the Following rankings: 5(Strongly agree), 4(Agree), 3 (Neutral), 2(Disagree), 1(Strongly disagree)

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Marketing affects cross-network mobile money transfer adoption					
Persuasions by other people affect cross-network mobile money transfer adoption					
Conformity to the current trends affects cross-network mobile money transfer adoption					
Compliance with the requests set by others affects cross-network mobile money transfer adoption					

7. Technological characteristics influencing Adoption of cross-network mobile money transfer service by traders: (Tick one choice in each row based on the Following rankings: 5(Strongly agree), 4(Agree), 3 (Neutral), 2(Disagree), 1(Strongly disagree))

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Perceived advantage affects cross-network mobile money transfer adoption					
Network complexity affects cross-network mobile money transfer adoption					
Network Compatibility affects the adoption of cross-network mobile money transfer service					
Network security affects cross-network mobile money transfer adoption					

8. Government legal framework affecting the adoption of cross-network mobile money transfer by traders :(Tick one choice in each row based on the Following rankings: 5(Strongly agree), 4(Agree), 3 (Neutral), 2(Disagree), 1(Strongly disagree)

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Authorization procedures affect the adoption of cross-network mobile money transfer					
Transaction limits affect the adoption of the cross-network mobile money transfer					
Consumer protection laws affect cross-network mobile money transfer adoption					
Agent interoperability influences the adoption of cross-network mobile money transfer					

Section C: Effect of cross-network mobile money transfer adoption on Performance of SMEs

1. Please rate your current business performance since you started using cross-network mobile money transfer?

Below average [] Average [] Good [] Very Good [] Excellent []

2. Cross-network Mobile money transfer service has made this business grow in terms of performance. Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree []

3. Briefly explain how the use of Cross-network Mobile money transfer service has helped your business to grow

.....

.....

.....

4. SMEs Financial Performance

1. Indicate your level of agreement with the following statements about SMEs performance by ticking appropriately (Tick one choice in each row based on the Following rankings: 5(Strongly agree), 4(Agree), 3 (Neutral), 2(Disagree), 1(Strongly disagree))

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Use of cross-network mobile money transfer service has increased sale					
Use cross-network mobile money transfer service has assisted in increasing customer base					
Use of cross-network mobile money transfer service has increased profits					
The use of cross-network mobile money transfer service has led to business expansion					

Thank you very much for your participation

APPENDIX 3: NACOSTI RESEARCH LICENSE


REPUBLIC OF KENYA


**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: 984406 **Date of Issue: 23/March/2020**

RESEARCH LICENSE

This is to Certify that Mr. Momanyi Onko Stanley of Murang'a University of Technology, has been licensed to conduct research in Muranga on the topic: CROSS-NETWORK MOBILE MONEY TRANSFER ADOPTION DETERMINANTS AND PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN MURANG'A MUNICIPALITY for the period ending : 23/March/2021.

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984406 

Applicant Identification Number **Director General**

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APPENDIX 4: APPROVAL OF RESEARCH PROPOSAL AND DATA COLLECTION LETTER



MURANG'A UNIVERSITY OF TECHNOLOGY (MUT)

Tel: +254-771463515
Fax: 06030269
Email: bps@mut.ac.ke
Website: www.mut.ac.ke

P.O. Box 75-10200
Murang'a
Kenya

DIRECTORATE OF POSTGRADUATE STUDIES

Ref: MUT/BPS/M/05

Date: 22nd July 2019

Dear Mr. Stanley Momanyi [BE401/5140/2017]

RE: APPROVAL OF RESEARCH PROPOSAL AND SUPERVISORS

I am pleased to inform you that the directorate of Postgraduate Studies has considered and approved your MA proposal entitled "Cross-network mobile money transfer adoption and performance of small and medium enterprises in Murang'a Municipality" and appointed the following as supervisors:

1. Prof. Clifford Machogu [School of Business and Economics]
2. Dr. Richard Juma [School of Business and Economics]

You may now proceed with your data collection subject to obtaining research permit from NACOSTI. You should also begin consulting your supervisors and submit through them quarterly progress reports to the Director Postgraduate Studies through your COD and School Dean. Progress Reports can be accessed in the University Website. It is the policy and regulations of the University that you observe deadlines. The Guidelines on Postgraduate supervision can be accessed in the post graduate Handbook.

Your responsibilities as a student will include, among others:

1. Maintaining regular consultation with your supervisor(s) at least once a month
2. Submitting quarterly reports through your supervisors, COD, Dean to the Director of Postgraduate studies.
3. Securing, organizing and presenting content professionally and accurately.
4. Adhering to correct format of presenting content professionally and accurately.
5. Adhering to correct format of presenting quotations, footnotes, bibliographical items, tables, and other illustrative materials.
6. Editing the thesis for possible errors to enhance its quality.
7. Presenting the Notice of Submission of thesis to the relevant Department as stipulated in the University Regulations.
8. Defending all aspects of the thesis during oral examinations.
9. Making corrections on the thesis as recommended by the Board of Examiners.
10. Ensuring that the required number of copies of thesis, and the original thesis are duly signed and together with required forms are submitted to the Director of Postgraduate studies.
11. Publish one article from your research findings/results in a refereed Journal prior to graduation.

For any further clarification, please contact the undersigned.

Yours Sincerely,

Dr. Andrew Makori

Ag Director, Directorate of Postgraduate Studies

CC Registrar- ASA

Prof. Clifford Machogu (Supervisor)

Dr. Richard Juma (Supervisor)



MUT IS ISO 9001:2015 CERTIFIED