UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

AN IMPLEMENTATION MODEL FOR M-PAYMENT ADOPTION: A CASE OF LIPA NA MPESA BY THE MITUMBA TRADERS IN GIKOMBA MARKET.

BY

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DECLARATION

I declare that this project work as presented in this report is my own original work and has not been presented anywhere else for any award.

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ABSTRACT

Mobile money in Kenya is already well established contributing to the growth of the economy. Despite these remarkable achievements in mobile telephon, Lipa na Mpesa has not been widely adopted. This study therefore sought to investigate factors affecting usage of Lipa na Mpesa payment system among middle level business, a case study of Mitumba traders in Gikomba market with an aim of proposing a framework for successful adoption of Lipa na Mpesa by SME in Kenya. Specifically, the study explored various theoretical models (Technology Acceptance Model as well as Innovation Diffusion Model) in an effort to identify a framework and validating the proposed framework for successful adoption of electronic mobile money, Lipa na Mpesa, in Kenya. The study considered the following study variables; individual factors, business factors and technological factors. The Cross Sectional data collected in the study area was analysed using Statistical Package for Social Sciences (SPSS) and descriptive statistics like relative frequencies, mean scores and standard deviation. The variables were analysed using Linear Regression Model and the results shows a variation of 73.1% on the Lipa na Mpesa implementation due to changes in the independent variables. A strong positive relationship of 87.4% between the study variables was revealed. At 95 percent confidence interval, individual factors, business factors and technological factors were both found to be positive and statistically significantly relating to the adoption and use of Lipa na Mpesa services. However, individual factors were found to be more significant ($p=0.002$), followed by technological factors ($p=0.017$) and business factors which were fairly significant ($p=0.049$).

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LIST OF ABBREVIATIONS

TAM ¯ Technology Acceptance Model.

IDT ¯ Innovation Diffusion Theory.

PEOU ¯ Perceived Ease of Use.

RA ¯ Relative Advantage.

PU ¯ Perceived Usefulness.

MM ¯ Mobile Money.

DEFINITION OF TERMS

1. M-Payments ¯ a system using mobile device to make transactions such as pay bills.
2. Perceived Use ¯ Degree to which user believes that using a system would enhance their job performance.
3. Trust ¯ the belief that vendors will perform some activity in accordance with customer˘s expectations.

1.0 CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Lipa na Mpesa is a product of Mpesa service meant to improve the way customers transact their day to day businesses. According to Wikipedia, the free encyclopedia, Mpesa (M for mobile and Pesa is Swahili for money) is a mobile-phone based money transfer and micro financing service, launched in 2007 by Vodafone for Safaricom and Vodacom, the largest mobile network operators in Kenya and Tanzania.

In this regard, the starting point for any mobile money campaign is building awareness: letting potential customers know that the service has been launched, what is being offered, and how they might use it. According to other studies like Carole, (2012) high level brand awareness is not enough, in this sector, it is also essential that operators build understanding by communicating how the platform is useful for the consumer. Well-trained agents are proven to be effective in driving customer activation. Poorly trained agents won˘t be able to perform their side of transactions, let alone demonstrating to customers how to perform theirs. Explaining to consumers how to use mobile money is time-consuming for agents. It is therefore important that agents have been incentivized properly for both registration and cash-in, and for the balance between those incentives to be right. As important as the commissions that agents are paid are the volume of transactions that they are able to perform; this in turn obligates operators to carefully grow their agent network in proportion to their user base in order to meet the needs of both groups.

Agents can be a powerful force for driving customer adoption; unfortunately, if unsupervised, they can as easily drive customers away, Jenkins, (2008). Unscrupulous, incompetent, and illiquid agents do more harm than good, so operators need to monitor the network to discover and rectify these problems. The critical success factor for this tactic is the incentives for field agents: the commissions paid to the agents must be aligned with the objectives of the campaign. However, field agents who are paid simply for registering customers will leave operators with a large volume of registered but inactive customers**.**

1.2 Overview of the adoption of Lipa na Mpesa

Rogers (1995), states that adoption is conceived as a social change process, in which an innovation is communicated overtime among members of a social system. Adoption includes the evaluation of an innovation to determine if it will best satisfy the needs of the prospective adopting organizations, as well as the sustained use of the innovation (commonly referred to as full implementation).

In Africa and specifically in Kenya, the use of mobile money is already well established. However, despite of these remarkable achievements in mobile telephone, Kihara, (2010) points out that there has been limited inter-service delivery across the existing mobile money service providers in Kenya. It was found out that only third party companies like Tangaza which do not provide direct mobile money services to customers have recently introduced a cross platform service delivery. Consequently, the services offered require the customer visiting an `agent_ in order to transact and hence does not exhibit the advantages of an interoperable mobile money transfer platform (Jiddena, 2011).

According to a study published in the Financial Sector Deepening Kenya (2009), the adoption rates for many new technologies have followed a common pattern: slow uptake in the early phase, followed by exponential growth. It seems that the speed of growth is increasing over time. When users of M-Pesa were asked to compare the service with their previous national money transfer service over 95% of users found that M-Pesa was faster, more convenient, safer and cheaper. At the time of survey Safaricom offered service to 4,420,279 users through 4,781 M-Pesa agents. The ease of access compared very well with 887 bank branches and 1,424 ATMs countrywide. Given M-Pesa versus these other remittance services the strong growth of user numbers for M-Pesa shows that the introduction of M-Pesa has increased Kenya˘s payment infrastructure. With all these developments, Lipa na M-Pesa which is a product of M-Pesa is still at its infancy as can be deduced from the feedback of the respondents.

The BNR has managed the market very well so far, but Lipa Na Mpesa need to be carefully reassured that tough regulation on short notice is not going to stifle the market in future and maintain infancy status quo. A viable solution for interoperability will only emerge by creating and using common standards and interoperable business models for mobile money services,

otherwise all stakeholders will miss business opportunities. The case studies from Japan, Singapore and other countries where open and collaborative approaches were implemented, prove the efficiency of an open space interoperable mobile financial services ecosystem.

Despite the fact that the government has a role of facilitating mobile payments in emerging markets, interbank settlement systems and often payment switches are operated by a consortium of local banks that may not have the greatest incentive to see mobile payments flourish. However, these systems are regulated and part-owned in most cases by the Central Bank that have a say in how they are run. If the central bank mandates that the system must also be capable of processing mobile payments, then interoperability in this form at least, has a fighting chance. This is an illustration of how government can enable interoperability via the provision of technology and services. Government can also regulate for the provision of interoperability at an operator level (either SIM or handset), as has been the case in Ghana and Nigeria.

A bid by three mobile phone providers to have Safaricom's Mpesa service on their respective networks received a major blow today after the National Treasury hinted its reluctance in allowing the request. National treasury cabinet secretary Henry Rotich in a speech read on his behalf by Central Bank Governor Prof Njuguna Ndung'u said sharing of mobile money transfer service, commonly referred to as interoperability, can only be adopted in Kenya if it protects proprietary rights and compels all providers to invest (Daily Nation, 2013). The developed nations continue to debate the best way of introducing mobile payments. In Africa and in Kenya specifically, the use of mobile money is already well established. In fact it is doing so well that the World Bank has issued a warning about the way payments systems are developing and the threat of monopoly.

1.3 Advantages of Lipa na MPESA Service in Kenya

The obvious advantage of Lipa Na Mpesa in Kenya is the paperless transaction enabled by the services which greatly reduce the risk of theft and fraud. Business owners in Kenya do not have to worry about fake currency while using Lipa Na Mpesa service in Kenya. The business owners in Kenya also do not have to worry about looking for loose change to give to their customers

while using Lipa Na Mpesa service. Another advantage of Lipa Na Mpesa service in Kenya is increased and enhanced business efficiency. When customers in Kenya pay via the Lipa Na Mpesa service, the business owner does not waste time on counting cash, verifying authenticity and looking for change. Customers in Kenya can also order for goods and pay for them before picking them up or having them delivered. According to Jake Kendall, mobile money provides a safer, faster, traceable, long distance way to pay for goods received or to be delivered. In fact, many supermarkets in Kenya have started utilizing the Lipa Na Mpesa service to enhance online shopping in Kenya. This way a customer can shop online in Kenya, pay for the goods and await delivery from the comfort of their home.

Safaricom Company has been on the forefront of major innovations in the telecommunication world in Kenya to provide a platform for customers to access products and services that were previously unavailable to them. Businesses in Kenya can greatly benefit from this Lipa Na Mpesa service. The benefits and convenience makes Lipa Na Mpesa service very valuable to all business owners in Kenya. For instance; the buyer does not need to have an account with the seller and the payments can be one off, Lipa na Mpesa has very little transaction fee, the seller can withdraw cash from their Lipa na Mpesa accounts directly to Mpesa which increases convenience and improves efficiency, merchants can also get statements which give them more information about their customers. From this they can make a decision on how to improve their businesses by identifying local customers and eradication of loose change which at times especially plagues the supermarkets.

Despite these remarkable achievements in mobile telephony, there have been many challenges of ensuring inter-service delivery across the existing mobile money service providers in Kenya (CCK, 2013). Challenges still remain in convincing people that they can now use Lipa na Mpesa for payments despite the massive uptake of the product with more than 78 percent of adults using Mpesa in Kenya. Many small medium enterprises customers don't use this technology in their business operation. This study seeks to explore the impact of SMEs behavior on the usage of Lipa Na Mpesa in the successful implementation of m-payment, a case study of Gikomba traders in Nairobi.

Small businesses are the backbone of the Kenya˘s economy, accounting for more than half of total employment and over eighty percent of employment growth in the past decade (Wheelen & Hunger, 1989). Small firms are also often innovative and challenging to manage strategically (Dollinger, 1985; Bracker & Pearson, 1986; Carter, 1990). Consequently, it is important to assess the value of techniques like technology adoption for improving the performance of these firms. Literature review has shown that mobile payment system among SME coverage in Kenya is below accepted levels unlike other sectors (CCK, 2013). Data from CCK indicate very discouraging statistics of Lipa Na Mpesa, Bebapay, Mobicash, among others (CCK, 2013). The uptake is low; it is far below other sectors such as large corporate and individual level. It is also indicative that Technology coverage is also low in SME, while remarkable strides have been made in adopting technology in sectors like education and banking; little has been realized in the SME in Kenya (Makau 2010).

According to Makau 2010, little research has been undertaken to find out the cause of these phenomena, especially those of small merchants enterprise likes of Gikomba traders: some claim that there is no existing formal strategic planning to promote the mobile money payment system, others claiming that there is no long-term view, and, in general, there may be little or no benefits for small firms because they are dealing with direct transactions with low margins that may not have a competitive advantage by promoting the mobile money approach (CCK, 2012).

1.4 Statement of the Problem

Small businesses are the backbone of Kenya˘s economy, accounting for more than half of the total employment and over eighty percent of employment growth in the past decade (wheelen & hunger, 1989). Small firms are also often innovative and challenging to manage strategically (dollinger, 1985; bracker & pearson, 1986; carter, 1990). With the prevailing digital age many businesses have embraced technology for effective and efficient growth of their business.

The available literature from different sources indicates that adoption of electronic mobile payment in Kenya by the Gikomba Mitumba traders has not yet picked up well. Services such as Lipa na Mpesa, Mobicash, Bebapay are still very unpopular despite the huge investment by the service provider and this is due to the negative perception of the traders. This has interested the

researcher to carry out a research to discover why the tread hence come up with a framework which can be used to encourage adoption of the same.

Safaricom has put a lot of effort to revolutionalize the money industry and has invested hugely on different money products, Lipa na Mpesa being one of them. However, despite the development being successful, efforts have received little success and the adoption of the product by the intended users especially the Gikomba Mitumba traders has been rather very slow. The traders˘ perception has been one of the factors that affect the adoption of the m-payment system and use. Thus the low uptake of the product has prompted the interest to investigate the factors that hinder the usage of the product hence propose a model that can be adopted to improve the situation.

1.5 Study Objectives

The overall objective of the study is to establish the factors affecting usage of Lipa na Mpesa payment system among middle level business, a case study of Mitumba traders in Gikomba market with an aim of proposing a framework for successful adoption of Lipa na Mpesa by SME in Kenya. The specific objectives are;

i. To investigate the factors affecting usage of Lipa na Mpesa mode of payment for services and goods among middle level business. a case study of Mitumba traders in Gikomba market
ii. To propose a framework for adopting Lipa na Mpesa by the Gikomba traders who represent the Small Medium Enterprises (SME) in Kenya.

1.6 Research Questions

i. What are the factors affecting usage of Lipa na Mpesa among middle level business
ii. Is there a framework for successful use of Lipa na Mpesa by SME in Kenya

1.7 Justification and Significance of the Study

From the researcher˘s preliminary study, the value for e-market is a global concern and so far not much has been researched on how our Kenyan Small Scale Entrepreneurs are copying with the new technology. This highlights the need to develop a framework to assist in adoption and integration of technology by SME in Kenya. This will enhance Digital payment uptake of SME

in our national economy and social fabric. The SME employs more people than the larger enterprises and therefore this study will significantly be representative of a Kenyan population.

This will move Kenya towards middle level income country as envisaged in the vision 2030 and hence the need for the current study. The study will take into consideration perceptions of the different players involved namely the payer and the payee. This will shade more light on some of the factors affecting usage of Digital Payment Technology by most of our SME in the Kenyan market. The study will help Mobile vendors to come up with the right products for their potential customers. The research will also give an insight to future researchers on customers˘ perception of technology which include attitudes and inherent fears towards technological adoption.

1.8 Limitation of the Study

The research will be limited to SME in Mitumba traders in Gikomba; there will be limited time to collect data from all the SME sampled by the study. Data collection from SME will be private and confidential for the business owners because of the nature of privacy of the industry. The researcher will utilize both qualitative and quantitative data collection tools to maximize the data collected

1.9 Assumptions of the study

There is the assumption that all sampled user groups will be willing to participate in this study and that the respondents will be knowledgeable enough.

2.0 CHAPTER TWO: LITERATURE RVIEW

2.1 Introduction

This chapter reviews the literature related to the topic of study. It specifically looks at both empirical and theoretical literature as well as the conceptual framework of the study.

2.2 Theoretical Background

Theoretical framework is a group of related ideas that provides guidance to a research project or business endeavor. The appropriateness of a theoretical framework that a marketing department is using to promote its corporate and product image to the consuming public can be important determinant of its ultimate success.

According to Chen (2008) mobile payment services can enjoy a consistent growth only when a service provider recruits a strong marketing force capable of selling the concept of mobile payment. A little help from users to inform about their need is the major factor for successful brand. Needs and wants are diverse and marketer or service provider is interested to find out common needs or in the other way features in the mobile phone mostly preferred by the target population. Extraction of the same is being attempted by researchers all over the world. The most basic question is `What factors make the consumers adopt a new self-service technology?_ This question has not been answered by majority of the research studies (Heijden et al., 2003; Lee and Turban, 2001; Sarker and Wells 2003).

There are several adoption models that relate to m-payments. They include, Roger˘s (1991) Innovation Diffusion Theory (IDT), Davies˘(1989) Technology Acceptance Model (TAM), the extended technology acceptance model (Davis 1989), the Theory of Planned Behavior (Azjen 1977) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) have been used for the last two decades to explain possible consumer behavior on adoption and acceptance patterns of new technologies and innovations. Several researchers have sought to develop constructs that affect consumers˘behavior when deciding on the adoption of mobile services by applying these existing information system theories and models (Wu and Wang, 2005; Hung, et al., 2004; Bouwman, et al., 2007).

A study of over forty literatures on mobile services shows that application of the above information system theories and models have extended to valued added mobile services (Barnes and Huff, 2003; Biljon et al., 2008). The most applied, tested and refined model is the TAM followed by UTAUT, IDT and then TPB. In more recent contributions, researchers have used a number of constructs from all four areas and new constructs from other sources. For example, Barnes and Huff (2003) extended IDT by including trust and image as new constructs. Also, Tan and Teo (2000) included perceived risk; subjective norm and self-efficacy. Pedersen et al (2001), posits that the TAM should be extended to include subjective norm and behavioral control constructs.

According to Diffusion of Innovation Theory by Rogers (1995), perceptions of innovation characteristics is one of the main sources that influence the adoption and diffusion of innovations such as mobile money transfer and in this case the Lipa na Mpesa. He further argues that there are five perceived characteristics which include: 1) relative advantage which is the degree to which the innovation is perceived as better as compared to the status quo; 2) compatibility which is the degree to which the innovation is perceived as being consistent with the existing values and practices among the potential adopters; 3) complexity which is the degree of difficulty perceived regarding the use of the innovation; 4) triability which represents the possibility for a potential adopter to experiment the innovation ; and 5) observability which is the degree to which the results are visible to the potential adopters. However, according to Chau et al (1997), the Diffusion of Innovation Theory was developed to explain the diffusion of any innovation and the relationship it posits between concepts such as innovations characteristics and adoption behavior are not explicit. It therefore lacks specificity.

The Theory of Reasoned Action (Fishbein et al, 1975) has it that realization of a certain behavior is Lipa Na Mpesa by the individual intentions. These intentions are in turn formed by two antecedents: attitude towards the behavior and subjective norm. The former represents the evaluation of the advantages and disadvantages associated with the performance of a given behavior weighted by their relative advantage. The latter is the adopter˘s perception that significant others will approve or disapprove the behavior in question compared by the motivation to comply. However, according to Ajzen (1991), some behaviors might not be totally

under volitional control. They may require specific resources, skills or opportunities for an individual to perform them. In his Theory of Planned Behavior he added the perception of behavioral control. This explains the adopter˘s evaluation of the barriers related to the realization of the behavior and the perceived capacity to overcome them.

In an overview of Lipa na Mpesa theoretical models and application, Gagnon (2006) reported that technology perceptions can be grouped into three broad categories; 1) Perceived Attributes which refers to users perceptions towards the technology and their evaluation of the consequences of adopting it, 2) Perceived Normative Factors which refers to social factors that include social norm, role beliefs and professional norm and 3) Perceived Barriers and Facilitators to technology acceptance and adoption. Parasuraman (2002) asserts that in order to understand technology adoption, it is critical to understand the users˘ perceptions on inhibitors and contributors of technology acceptance and ultimate adoption. Moore et al (1991), postulates that perceptions rather than objective technology attributes have been found to be more relevant to technology acceptance.

2.2.1 Technology Acceptance Model

Over the years TAM has been tested and applied in the prediction of future consumer behavior (Adams et al., 1992; Chau and Hu, 2002; Davis and Venkatesh, (1996); Kwon and Chidambaram, (2000); Legris et al., 2003), among other places in the mobile services domain (Cheong and Park, 2005; Kwon and Chidambaram, 2000; Nysveen et al., 2005a). The premises that the contracts perceived useful and perceived ease of use are fundamental determinants of system adoption and use (Davis, 1989). These two believes create a favorable disposition or intention toward using the IT that consequently affects its use. Perceived Usefulness (PU) is said to be the degree to which a person thinks that using a particular system will enhance his or her performance. Whereas Perceived Ease of Use (PEOU) is the degree to which a person believes that using a particular system will be free of effort (Davis, 1989). TAM has received praises from earlier researchers on its contribution towards our understanding into consumer behavior. Lu et al (2003) argues that TAM has received extensive empirical support through validations, applications and replications for its power to predict use of information systems. Also, Legris et al (2003) conclude that TAM proved to be a useful theoretical model which helps to understand

and explain user behavior in information system implementation. The diagram represents the variables and their association with the Technological payments methods:

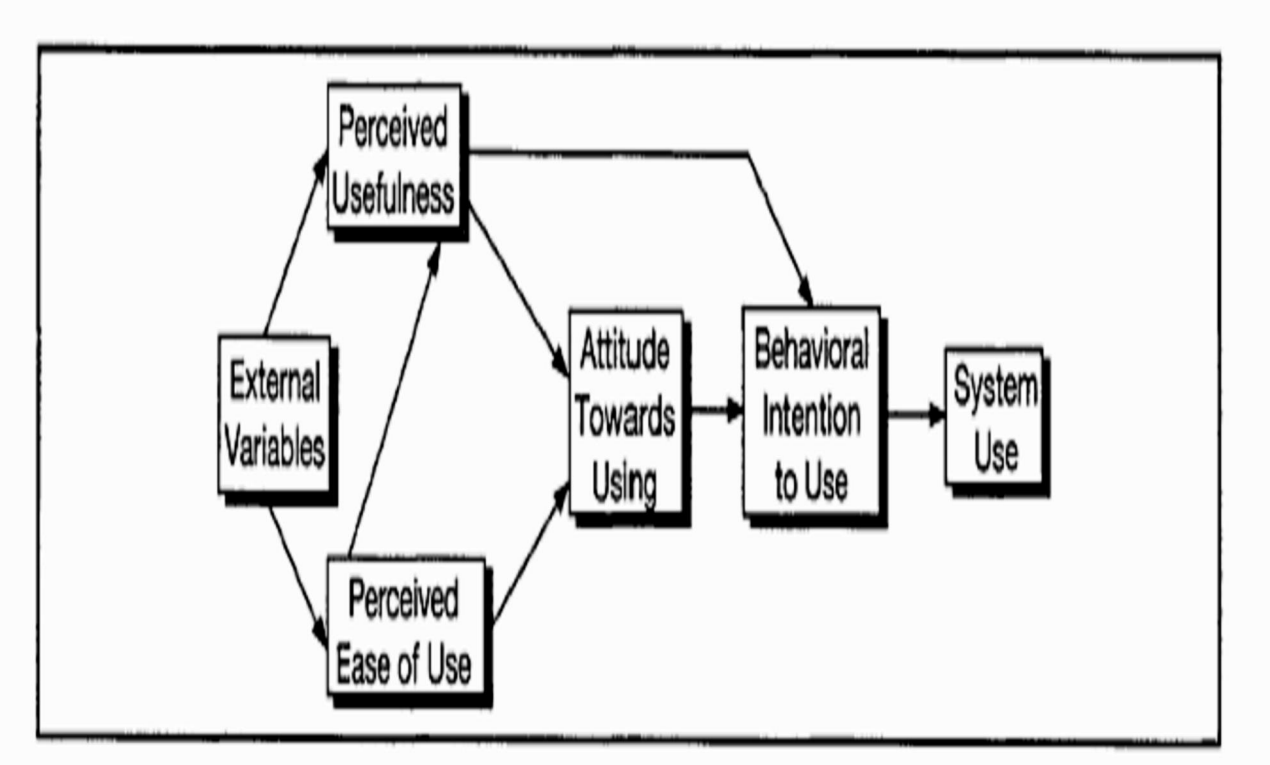

Figure 1: Technology Acceptance Model

Source: Davis, et al., (1989)

Perceived Usefulness: Davis (1989) shows PU that the degree to which a person thinks that using a particular system will enhance his or her performance. Whereas the initial definition stated was about the usefulness in performing a job function, PU in the adoption of mobile services is defined in a broader context to include how well consumers believes mobile services can be integrated into their daily activities (Kleijnen, et al., 2003). And in a mobile payment context it can also be defined as the degree at which the consumer believes that the Mobile Money transfer will enhance his transaction (Chen, 2008). When this belief increases, the consumer˘s intention to use the Lipa Na M-Pesa method will also increase. In consumer behavior analysis PU has been well tested as a determinant for a consumer˘s intention to use mobile services. Also, the extent to which a consumer finds the Lipa Na M-Pesa mode of payment

useful may depend on the Relative advantage (RA) of the service. If the mobility and easier accessibility characteristics of mobile services leads to a consumer belief that the Lipa na M-Pesa is better than its predecessors (other money transfer services) then that will affect its perceived usefulness. The ultimate reason people exploit Mobile Money transfer is that they find them useful (Luarn & Lin, 2005).

H1: Higher perceived usefulness will lead to higher behavioral intention to use mobile payment.
H2: Higher Relative Advantage will lead to higher Perceived Usefulness

Perceived Ease of Use: - according to Davis (1989) **PEOU** is the degree to which a person believes that using a particular system will be free of effort (Davis, 1989). In M-payments transfer, it includes registration procedures, ease of use of the payment procedure, easy access to customer services, minimal steps required to make a payment, appropriate screen size and input capabilities. Also, the availability of the mobile money transfer agents will increase the PEOU. Furthermore, it should be accessible on mobile phones with the most basic features and software. Prior researches have concluded that PEOU is a key determinant to consumer behavioral intentions (Venkatesh & Davis, 1996, 2000; Venkatesh & Morris, 2000 Pousttchi and Wiedemann, 2005; Carlsson, et al., 2005). In order to prevent the ::under-used˜˜ system problem, M-Payments transfer must be both easy to learn and easy to use (Luarn and Lin, 2005). And also the original TAM posits that perceived ease of use has a direct effect on perceived usefulness (Davis, 1989).

H3: Higher perceived Ease of Use will lead to a higher Perceived Usefulness
H4: Higher perceived Ease of Use will lead to a higher behavioral intention to use mobile money.

2.2.2. Innovation Diffusion Theory

Another theory which has received similar attention by scholars in explaining consumer behavior towards new technology is the Rogers˘ Innovation Diffusion Theory (Rogers, 1995). Innovation is defined as an idea, practice or object that is perceived as new by an individual or another unit of adoption, while diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995).

By these definitions, innovation diffusion is achieved by how a social system accepts and begins to use (adopt) an idea or a technology. Rogers further states that the following are the characteristics of any innovation: Relative Advantage: the degree to which the innovation is perceived as being better than the practice it supersedes; Compatibility: the extent to which adopting the innovation is compatible with what people do; Complexity: the degree to which an innovation is perceived as relatively difficult to understand and use; Trial ability: the degree to which an innovation may be experimented on a limited basis before making an adoption (or rejection) decision; and Observability: the degree to which the results of an innovation are visible to others (Rogers, 1995).

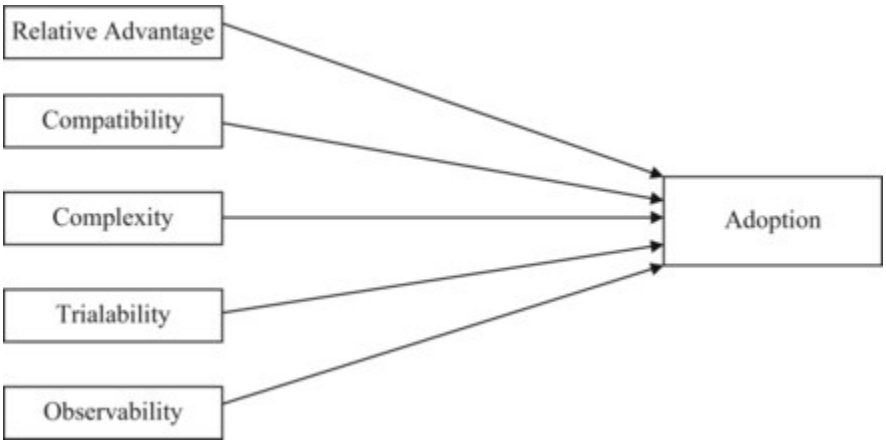

Figure 2: Innovation Diffusion Theory

Source: Moore and Benbasat (1991).

2.2.3. Application of TAM and IDT to Mobile Money

The various terms that relate to the use of mobile phones to access, store and transfer or link to an account as used in the study are; mobile banking, mobile payments, mobile money transfer and mobile microfinance and are collectively referred to as mobile money. Research on adoption of mobile money can be seen as part of previous researches in mobile banking and mobile payments. Therefore it could be argued that the determinants of adoption in m-banking and m-payment environment should be applicable to mobile money. TAM and IDT are considered to be

extremely similar in some constructs and supplement one another (Wu, 2004). Some similarities can be drawn between RA and PU; Complexity and PEOU to some extent such that a researcher identifies the TAM constructs as a subset of the Innovation Diffusion Theory (Wu, 2004). However, developing different measurements for RA and PU was found to be particularly important in MM adoption.

2.3 Empirical Background

Empirical background was based on experience the traders had on the Lipa na M-Pesa service.

According to Kihara (2010) Kenya is a world leader in the mobile money service technology with four main mobile money service providers; Mpesa, YuCash, Airtel Money and Orange Money where Mpesa dominates the market. The leading mobile money service Mpesa processes more transactions domestically within Kenya compared to Western Union which does globally and currently providing mobile banking facilities to more than 70 per cent of the country˘s adult population (Jiddena, 2011).

Wakoba (2012) found out that dominant players like Mpesa will always drive the sector for its gain as opposed to growth and therefore proper regulation is needed to end competitions. The study shows that the Kenya market represents about 50 percent of the more than 40 million global mobile money subscriptions. According to Loretta, (2011) the market proportion for the four main mobile money subscribers in Kenya is estimated with Mpesa having 15.5m, Airtel money 2.8m, Orange Money 0.20m and YuCash 0.65m. However, the transactions across networks expand a firm's clients and even increases revenue through surcharge and thus there is need to harness the wide market share Kenya enjoys in mobile telephony by allowing service interoperability across different networks. It is on this note that this paper proposes a platform-level interoperability of mobile money transfer systems as opposed to the closed loop system.

Fredrick, (2012) revealed that in Kenya, 47 per cent of all money transfer services are currently carried out using mobile phones as opposed to conventional payment channels such as clearing houses, bank branches, automated teller machines (ATMs) and money transfer services such as Western Union. The study concludes that interoperable systems can accelerate financial inclusion by allowing customers to use the infrastructure of multiple service providers. It is

shown that interoperability would be part of the solution to that problem (Killian, 2012). Mobile money services in countries outside Kenya have just not had the uptake that the industry leader enjoys.

Bromberg and Issarmy, (2004) claim that at the technical level, there are issues of how to handle payment clearing, netting and settlement between the different operators. According to Killian, (2012), the problem can only be solved by a national payment switch and perhaps an interbank settlement service, which in some countries may not have the capability to add non-bank (i.e. mobile payment) operators and mobile payments to their systems. However, Fredrick, (2012) shows that there are special exceptional cases where mobile payment systems are the common means for instance where the diffusion rate is as high as 70%. It has also been found that business usage is not fully known by agents or Vodacom; though many agents believe that there is an 80- 20 split (private-business). Mobile money transfer systems are a recent phenomenon in Tanzania, introduced in mid-2008. To develop the agent network has taken considerable time as the already existing ꞉voucher˘ network was not set up to meet the new conditions set by MMT regulations and business models.

Loretta, (2011) shows that the necessary precondition for trying mobile money is trust in the mobile money service, which must be high, since for most users, their first interaction with a mobile money service will be to hand over cash. An association with a known mobile operator brand, extensive above-the-line advertising, trustworthy agents, and positive word of mouth all build trust. But the most effective way to gain a customer˘s trust is to ensure that their experience with the service is a good one. If it˘s not, it˘s unlikely that the customer will ever become a regular user. Specifically, it is crucial to identify the services that potential customers use as alternatives to mobile money and their advantages and disadvantages so that mobile money can be positioned compellingly. There are obvious direct competitors such as mobile money platforms offered by competing mobile network operators. But there are also less obvious indirect competitors, such as, when it comes to money transfer services.

Makau (2010) in his study explored both demographic and socioeconomic factors and established out age, gender and income as import factors affecting the money transfer market. The study also concludes that important as a segment˘s size is, so is the intensity of the demand

that customers in the segment are likely to experience for mobile money. That˘s because the higher the intensity of their demand, the more likely they are to try the service. Generally speaking, intensity of demand for the operator˘s mobile money product is a function of how dissatisfied the customers are with their current money transfer mechanism. Customers who are very frustrated with their current approach to money transfer are significantly more likely to try mobile money. Thus there is need for the customer issue to be sorted out.

Carlsson et al. (2006) showed that mobile financial transactions complemented with research that concerns MSE business context in sub-Saharan Africa. In their study, the pre suggested two aspects rarely have been integrated into a coherent framework. There has not been much material that specifically covers MSE usage of mobile money transfers and how this technology affects lives and businesses. Other studies like Chen, 2008 and Muk, (2007) have also included an inventory of mobile money transfer (MMT) providers and their offerings, regulatory aspects as well as recent developments regarding international and sub-regional transfers.

Teo and Pok, (2003) indicates that adoption of electronic mobile payment in Kenya from SME is wanting. These services such as Lipa na M-Pesa, Mobicash and Bebapay indicates a rather grim picture of the much touted electronic mobile money transfers service in Kenya. Small businesses are the backbone of the Kenya economy, accounting for more than half of total employment and over eighty percent of employment growth in the past decade (Wheelen & Hunger, 1989). Small firms are also often innovative and challenging to manage strategically (Dollinger, 1985; Bracker & Pearson, 1986).

A study by Dolan (2012) found out that the reality of how interoperability works in detail can be quite complex. At the technical level for instance, there are the issues of how to handle payment clearing, netting and settlement between the different operators. In a country with only a few mobile payment operators it might be possible to do this bilaterally or multilaterally but as the number of operators increases the relationships between them grows exponentially, as does the expense of implementing a solution. So under this scenario the problem can only really be solved by a national payment switch and perhaps an interbank settlement service, which in some countries may not have the capability to add non-bank (i.e. mobile payment) operators and mobile payments to their systems.

According to Killian, (2012) in moving towards interoperability, the signals sent to the Lipa Na Mpesa are important. Mobile money is a relatively new market with an operating model that is neither stationary nor one-size-fits-all. The business requires significant investment and has long time horizons to break-even. For these reasons, according to Coye, (2012) the consensus within the scholars on mobile money interoperability is that regulation should aim to be ‗light touch', giving the market a chance to mature. If operators feel that their interests are compromised by heavy-handed regulation, they are unlikely to commit the investment needed to achieve sustainable scale.

Carter, (1990) shows that assessing the value of techniques like technology adoption leads to improvement of the performance of these firms. The study concludes that there is a compelling reason for advocating mobile payment that is, it can deepen adoption and improve on growth scale implementation and saves the associated costs. Being inter-operable will force the telecoms companies to compete better on services, cost and convenience and give consumer better choices. Dollinger, (1985) also argued in favor of mobile money payment systems from analogies to other industries especially where it has been seen to help boost growth e.g. formal banking systems.

2.4 Discussion of Literature Review

The literature reviewed both theoretical and empirical has established that mobile Lipa na Mpesa as a mobile payment solution has got some of the important and much needed content with it. But to facilitate wide adoption, the user should not be shown additional costs. In addition there are some other challenges against full adoption of the payment system which include lack of security, reliability and trust (Kihara, 2010). Also the available literature including Killian, (2012) establish that the mobile payments has not been widely adopted by Kenya SME and hence the need for this study in order to establish the factors affecting usage of mobile payment among middle level business, a case study of Lipa na Mpesa by the Gikomba Mitumba traders. Several factors have been outlined as significant in affecting the adoption and usage of Lipa na Mpesa services including customer experience, awareness, knowledge and attitude in the first place then the business size, margin and transaction cost. Finally, we have the perceived advantage, ease of use, network compatibility and reliability (Davis, 1989 and Rogers, 1995). All

this are categorized into individual, business and technological factors respectively in this study. However, Gagnon (2006) observes that the a few remarkable achievements made in mobile telephony have been limited with challenges in the inter-service delivery across the existing mobile money service providers in Kenya. Consequently, the services offered require the customer visiting an `agent_ in order to transact and hence does not exhibit the advantages of an interoperable mobile money transfer platform. Therefore, this study applies the existing model to design questionnaires and interview the relevant users of the system in the process of data collection. The data collected will then be used to develop the model.

2.5 The Conceptual Model

The figure below shows the conceptual model in terms of the research questions. To answer the research questions, the M-Payment factors survey will be used to measure the level of benefit attained from use of the Lipa na M-Pesa and user satisfaction survey will be used to test the framework. This will establish whether there is any relationship between the identified Lipa na M-Pesa factors and the impact of Lipa na M-Pesa and how this affects the adoption of Lipa na M-Pesa. The following perceived usefulness, perceived ease of use, perceived trust, perceived risk and transactional cost have been explored.

Perceived Usefulness: - PU is said to be the degree to which a person thinks that using a particular system will enhance his or her performance. Whereas the initial definition stated was about the usefulness in performing a job function, PU in the adoption of mobile services is defined in a broader context to include how well consumers believes mobile services can be integrated into their daily activities (Kleijnen et al, 2003). And in a mobile payment context it can also be defined as the degree at which the consumer believes that the MM transfer will enhance his transaction (Chen, 2008). When this belief increases, the consumer˘s intention to use the MM transfer services will also increase. In consumer behavior analysis PU has been well tested as a determinant for a consumer˘s intention to use mobile services. Also, the extent to which a consumer finds the MM transfer useful may depend on the RA of the service. If the mobility and easier accessibility characteristics of mobile services leads to a consumer belief that the MM transfer is better than its predecessors (other money transfer services) then that will

affect its perceived usefulness. The ultimate reason people exploit mobile money transfer is that they find them useful (Luarn & Lin, 2005).

H1: Higher perceived usefulness will lead to higher behavioral intention to use mobile payment.
H2: Higher Relative Advantage will lead to higher Perceived Usefulness

Perceived Ease of Use: - PEOU is `the degree to which a person believes that using a particular system will be free of effort_ (Davis, 1989). In MM transfer, it includes registration procedures, ease of use of the payment procedure, easy access to customer services, minimal steps required to make a payment, appropriate screen size and input capabilities. Also, the availability of the MM transfer agents will increase the PEOU. Furthermore, it should be accessible on mobile phones with the most basic features and software. Prior researches have concluded that PEOU is a key determinant to consumer behavioral intentions (Venkatesh &Davis, 1996, 2000; Venkatesh & Morris, 2000; Pousttchi and Wiedemann, 2005; Carlsson, et al., 2005). In order to prevent the ::under-used˘˘ system problem, MM transfer must be both easy to learn and easy to use (Luarn and Lin, 2005). And also the original TAM posits that perceived ease of use has a direct effect on perceived usefulness (Davis, 1989). H3: Higher perceived Ease of Use will lead to a higher Perceived Usefulness H4: Higher perceived Ease of Use will lead to a higher behavioral intention to use MM.

Perceived Trust: - Mobile Money transfer environment, like all business transactions require an element of trust. To become a viable unit of doing business MM transfer should overcome user distrust (Siau et al, 2003). And for the purpose of this study, trust is defined as a measure of consumer˘s level of assurance that the service will be provided with minimum possible hindrance. Siau and Shen (2003) posit that trust in mobile commerce can be differentiated into two categories: trust in mobile technology and trust in mobile vendors. The existence of local agents who are well integrated into the communities will be necessary for this level of trust to be obtained. Users would expect some level of privacy from the agents. In addition overall network and service perceived reliability affect consumer˘s perceived trust in the service.

The reliability can be measured by the successful utilization of the service over a period of time with little or no interference. Consumers need to have a belief that the network is reliable.

Previous studies have found perceived trust as a significant determinant influencing consumers˘ behavior intention towards conduct electronic commerce transactions (Mallat, 2007; Gefen et al., 2003; Jarvenpaa et al., 2000). Although, PEOU has been identified as an antecedent to perceived trust in prior e-commerce adoption research, this was seen as not applicable to MM transfer (Gefen et al, 2003; Gu, et al., 2009). The complexity of using the MM transfer applications will not necessary be attributed to the trustworthiness of the service provider. Thus, privacy and reliability are seen as antecedents to perceived trust which is expected to have a direct effect on behavioral intentions.

H5: Higher Perceived Trust will lead to a higher behavioral intention to use mobile payment
H6: Higher Reliability will lead to a higher Perceived Trust
H7: Higher Privacy will lead to a higher Perceived Trust

Perceived Risk: A consumer˘s perceived risk was identified by the selected consumers and mobile payment professionals interviewed as a significant barrier for MM transactions. Perceived Risk is defined as a consumer˘s belief about the potential uncertain negative outcomes from the mobile money transaction. Consumers˘ desire to minimize risk supersedes their willingness to maximize utility and thus their subjective risk perception strongly determines their behavior (Bauer et al, 2005). Thus, reducing uncertainty has been found to have a positive influence on consumers˘ intention to adopt electronic transactional systems (Chen, 2008).

H8: The higher the Perceived Risk will lead to a negative influence on behavioral intention to use mobile money.

Transactional Cost: - TC includes transaction price, registration fee, or cost of a new device if one is needed to use the service. Consumers interviewed confirmed that transactional cost can influence their behavior intention to use the MM transfer services. Given that the original TAM was developed in an organizational context, the transactional cost of using technology was not considered as a relevant variable since the consumer was not responsible for the payment of the technology.

H9: Higher Transactional Cost will have negative influence on consumer behavioral intention to use Lipa Na Mpesa

Below is a figurative presentation of the discussed factors in relation to adoption and utilization of Lipa na M-Pesa services.

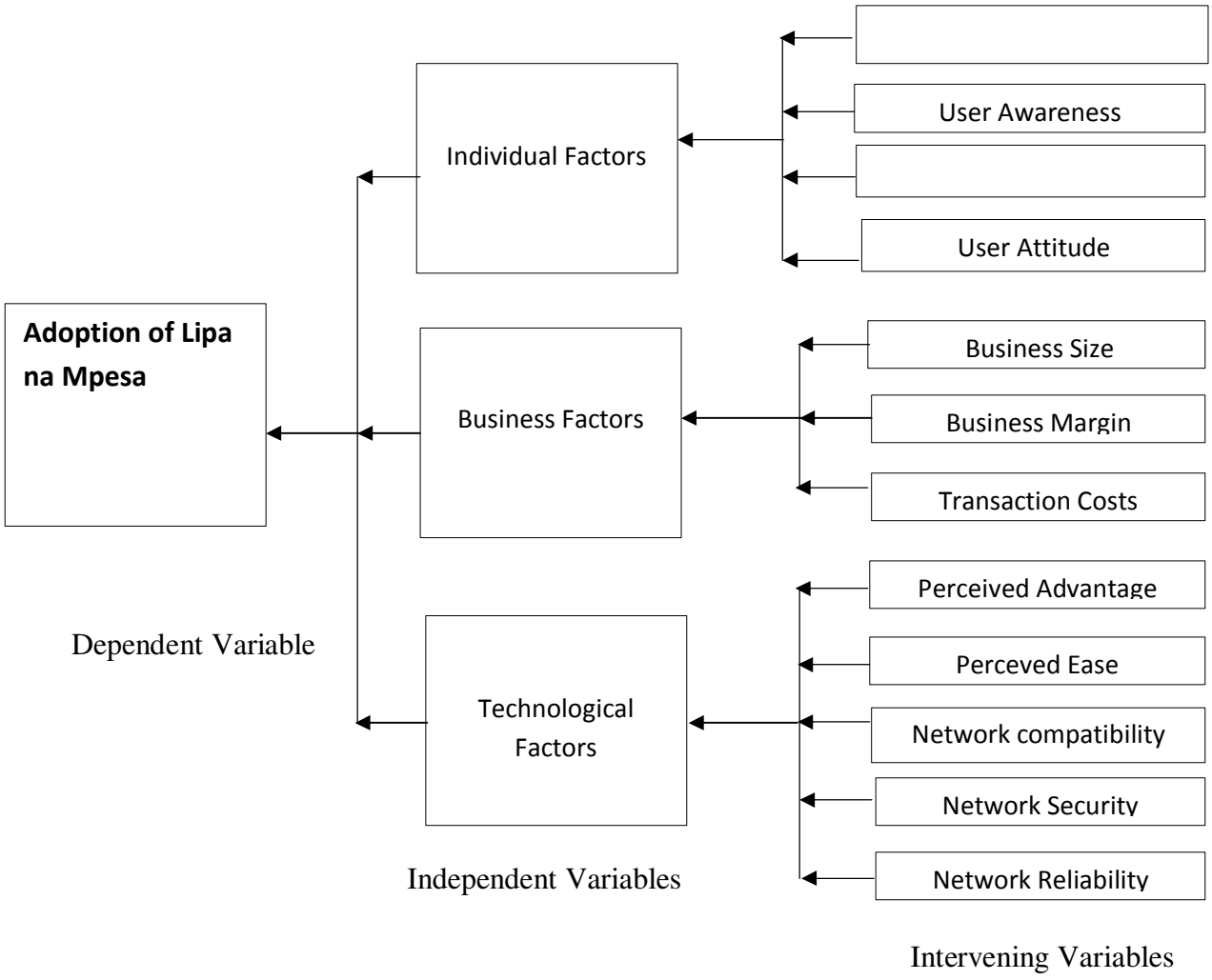

Figure 3: The Conceptual Model

Source: Developed by Researcher

Table 1. Adoption factors survey

Lipa na Mpesa factors	Customer feelings about the service
Ease of use	Majority indicated that there was no formal training on how to use the Lipa na Mpesa service
Usefulness	Majority of the traders were not sure of the benefits of the service
Accessibility/Availability	Network sometimes very congested hence cannot use the service
Cost	Consumer was afraid of transaction costs going up
Ease of Interoperability (Cross Network)	A challenge to use different networks
Reliability	Not really reliable, delays cause a lot of inconvenience
Data Privacy and Integrity	Respondents not sure about their privacy and integrity of the service

Source: Researcher

The table above describes lipa na mpesa factors in relation to customers feelings about the service.

3.0 CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology applied in carrying out the research. It addressed the research design chosen, sources of data for the study, tools and procedures for collecting data, sample size and data analysis methods. Quantitative research method was used where numerical data was collected and analyzed using mathematically based methods. This was useful because it was a baseline survey and was independent of the researcher and one should get similar results no matter who carries out the research.

3.2 Research Design

Case study methodology was used to do the research based on small scale traders at the Gikomba market and questionnaires were used as a means of data collection. This was because a case study focuses on a particular unity. The case study enabled the researcher to do an analysis of a group of traders and made generalizations about a larger group or society as a whole.

3.3 Research Strategy

Based on literature review on money transfer interoperability, the study proposed what can be considered as a viable Lipa na Mpesa platform. It included the key determinants for the TAM (Perceived Usefulness & Perceived Ease of Use) and some aspects of the Diffusion of Innovation Theory like Relative Advantage. It was supported by other constructs such as Perceived Trust (PT), Transactional Cost (TC) and Perceived Risk (PR).Also Reliability and Perceived Privacy were identified as antecedents of Perceived Trust.

The study used key informants/ expert opinion to validate the proposed platform-level interoperability model across mobile money transfer system. Expert Opinion is a technique that can be used in problem identification, clarifying the issues relevant to a particular topic and in the evaluation of products (Whitfield et al, 2008).

3.4 Target Population

Target Population is a group of individuals, objects, or items from which samples are taken for measurement. It refers to a large group from which the sample is taken, (Orodho 2004). Population is the group to whom the researcher would like to generalize the result of the study (Best and Kahn, 2004).

Since the main objective of this study was to establish the factors affecting usage of Lipa na Mpesa with an aim of proposing a framework for successful adoption of the same among the Gikomba Mitumba Traders, the population of interest was defined from this group at a section of Gikomba Market, who are permanently located at the lower side of the market near the Jua kali traders. A sample of 80 mitumba traders was used.

3.5 Sampling Technique

The researcher used purposeful sampling design; purposefully sampling is used to identify respondents, who will participate in the study. Purposeful or Judgmental sampling was used in order to target those people that the researcher believed they could offer liable information also referred to as key informants. In this research the respondents were the Gikomba Mitumba merchants who could only be purposefully selected. Purposive sampling can be very useful for situations where you need to reach a targeted sample quickly and where sampling for proportionality is not the main concern.

The study also used expert opinion to finalize the proposed platform. Expert opinion is a technic that can be used in problem identification, clarifying the issues relevant to a particular topic and in the evaluation of products. The study used a sample of Mpesa agents for this task.

3.6 Data Collection Design, Procedure and Instruments

In most cases, data collection instrument is influenced by the strategy chosen to conduct the research. In this study, primary data was collected through use of questionnaires. The questionnaire had pre-determined questions which the respondents were served with and given a chance to fill. Open ended and closed types of questions were used to ensure that the given answers produced relevant information. The researcher then phrased the questions clearly in order to make clear dimensions along which responses were analyzed. For the open ended ones,

space was provided for relevant explanations to be given by the respondents, where they expressed their feelings. A pilot study was done in order to come up with a fit for purpose questionnaire. Fifteen respondents were identified and requested to fill a sample questionnaire taking care to report any ambiguities. A sample questionnaire was as shown in appendix1.

Questionnaire was used for this research due to its ability to give accurate and precise. Other factors that led to the use of the questionnaire for data capturing were:-

1. Questionnaires are relatively easy and quick to design
2. This method allows the researcher to conduct many respondents within a short time
3. A questionnaire is easy to standardize as every respondent is asked the same question in the same way
4. Has a sense of privacy since one does not need to indicate their names. This increases the chance of the respondents being honest when completing the questionnaire as there is no intimidation whatsoever.

3.7 Validity and Reliability

According to Best and Khan (1986), validity is the degree to which a test measures what it purports to measure. Face validity and content validity of the instruments were tested. Face validity refers to the likelihood that a question in a research instrument will not be misunderstood or misinterpreted. Pre-testing is a good way to increase the likelihood of face validity. Consequently, the researcher used the pilot study to identify any items in the questionnaires that appeared ambiguous or unclear to the respondents and such items were changed effectively, thereby increasing face validity of the instruments. Content validity refers to whether an instrument provides adequate coverage of a topic. Therefore, the researcher sought expert opinion from supervisors, other faculty members and Mpesa Agents to improve on content validity of the instruments. First, an item analysis was done to see whether the items in the instrument belonged there and a pre ¯ test was carried out to check validity and reliability so as to minimize on vagueness of the results to be generated. The validity of the instrument was further measured using the Content Validity Index (CVI). Reliability (internal consistency and stability) of the instruments was tested using Cronbach˘s Alpha Coefficient. The study first tested inters ¯ item consistency reliability to ensure that there was the consistency of

respondents˘ answers to all items in the measure. The overall reliability coefficient for the tools was 0.728. Nunnally (1978) recommends that instruments used in basic research have reliability of about .70 or better. He adds that increasing reliabilities much beyond .80 is a waste of time with instruments used for basic research. On the other hand, with instruments used in applied settings, a reliability of .80 may not be high enough. Where important decisions about the fate of individuals are made on the basis of test scores, reliability should be at least .90, preferably .95 or better.

3.8 User satisfaction survey

A user satisfaction questionnaire was developed which consisted of closed questions relating to the impact of Lipa na Mpesa on business operations and transactions. It was used to measure the factors affecting usage of Lipa na Mpesa as indicated in the conceptual model. These factors were divided into three categories namely, the Individual factors, Business factors and Technological factors. This is as depicted in the user satisfaction questionnaire as can be seen in the appendix.

3.9 Data Analysis

Statistical findings and findings from qualitative data analysis was interpreted in light of the research objectives and literature that was reviewed to attach meaning to figures and make recommendations.

The analysis was done using descriptive statistics such as proportions, percentages, tables, measures of central tendency and frequencies. This assisted to summarize the data relating to factors affecting Lipa na Mpesa meaningfully and effectively. It provided tools for describing collections of statistical data given that SPSS was used to perform the data analysis. Inferential statistics tool such as correlation, regression and chi-square were used to find out whether there was any relationship between the variables.

The data was first cleaned up by editing, coding, classification and tabulation, and then interpreted. Finally, conclusions and recommendations were made. Ultimately a final presentation of the project was done.

4.0 CHAPTER FOUR: RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents the analysis and findings of the research. The study population target was 80 respondents. The chapter is organized under sub-sections guided by research questions, Section 1 deals with administration of the questionnaires, Section 2 presents demographic characteristics of the respondents, Section 3 presents information on analysis and interpretation of the findings pertaining to levels of electronic mobile payment technology adoption by traders, Section 4 concerns the findings pertaining to factors influencing electronic mobile payment technology by traders in Kenya while section 5 concerns framework for successful adoption of electronic mobile money Lipa na Mpesa. Data analysis was done using Statistical Package for Social Scientists (SPSS). Descriptive statistics was used to analyze the data. In the descriptive statistics, relative frequencies were used in some questions and others were analyzed using mean scores, standard deviation while the model was made using regression analysis.

4.2.1 Mean of Likert Scale

According to the psychologist Rensis Likert, a **Likert scale** is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale, or more accurately the **Likert-type scale**, even though the two are not synonymous. Likert distinguished between a scale proper, which emerges from collective responses to a set of items (usually eight or more) and the format in which responses are scored along a range.

In the proceeding results, the analysis was done using mean in the range of 0 to 5 inclusive, whereby:

If the mean was between 0 and 1.499, then it falls in the category of very Strongly Disagree; we awarded it a scale of 1 in the questionnaire.

If the mean was between 1.5 and 2.499, we say it falls in the category of Disagree; we awarded it a scale of 2 in the questionnaire.

If the mean was between 2.5 and 3.499, we say it falls in the category of moderate we awarded it a scale of 3 in the questionnaire.

If the mean was between 3.5 and 4.499, we say it falls in the category of Agree we awarded it a scale of 4 in the questionnaire.

If the mean was between 4.5 and 5, we say it falls in the category of Strongly Agree; we awarded it a scale of 5 in the questionnaire.

4.2.2 Standard deviation interpretation

The standard deviation was analyzed as either low or high depending on whether the deviation value was less or more than 1. If the standard deviation is less than 1 we say that this is low standard deviation which is an indication that the respondent did not differ much in their opinion, an indication that respondents almost said the same thing. Also if the standard deviation is greater than one, we say it is high standard deviation, an indication that respondents differed much in their opinion.

Table 2: Analysis of Respondents Demographic

	Gender	**Frequency**	**%**
Gender of Trader	Male	57	71.2
	Female	23	28.8
Total		80	100
Age	18-28	31	38.8
	28-38	27	34.8
	Over 38	22	26.4
Total		80	100
Literacy			
	No Formal Education	19	23.8
	Primary Education	24	30.0
	Secondary Education	25	31.3
	Post-Secondary Education	12	15.0
		80	100
Trading	1-3 Years	23	28.1
	2-5 Years	27	33.9
	Over 5 years	**14**	**18.0**
Total		**80**	**100**

Source: Researcher:

Most of Mitumba traders in Gikombas who participated in the study were male accounting for 71.2% (57) while female accounted for 28.8 (23), On the other hand, the study established that at the time of the survey most traders who participated in the study were of the age bracket 18-28 years who were young and energetic and could use mobile money transfer, followed by those

aged between 28-38 years who accounted for 34.8 % and the least were those who mentioned they were above 38 years. The study also sought the information on the level of literacy of traders in order to ascertain their level of competency to use technology and found out that most traders were either semi illiterate or illiterate as explained by the fact that 23.8% (19) were found to be with no formal education while 30% (24) had schooled up to primary school level, at the same time 31.1% of traders had secondary education while only 15% of traders had post-secondary level of education.

4.3 Traders perception on factors affecting Lipa na Mpesa

In the second section of the questionnaire the researcher was interested to find out which the category of factors the traders had more concerns. The factors were grouped into three categories namely Individual, Business and Technological factors. The mean of the respondents was calculated which was used to determine the dominant category of factors affecting the Lipa na Mpesa. The results were as shown in the above table.

The results showed that the traders perceived factors from the Individual category to affect the Lipa na Mpesa more than the other categories.

Table 3. Percentage score of factors influencing Lipa na Mpesa as perceived by the traders

Individual factors	Frequency	Percentage
User experience	21	26.25
User awareness	35	43.75
User Knowledge & skill	8	10
User altitude	16	20
Mean	**20**	
Business factors		
Business size in regard to number of agents	37	46.25
Business size in regard to total investment	18	22.5
Business margin for service	10	12.5
Transaction costs	8	10
Business experience	7	8.75
Mean	**16**	
Technological factors		
Perceived advantage	36	45
Perceived easiness	15	18.75
Compatibility	10	12.5
Security & Privacy	4	5
Perceived reliability	13	16.25
Mean	**15.6**	

Individual factors tended to influence the Lipa na Mpesa more as can be shown by a mean of 20 from the above table. This was followed by the business factors with a mean of 16 and the technological factors had a close mean of 15.6. This was according to the respondents˘ perception.

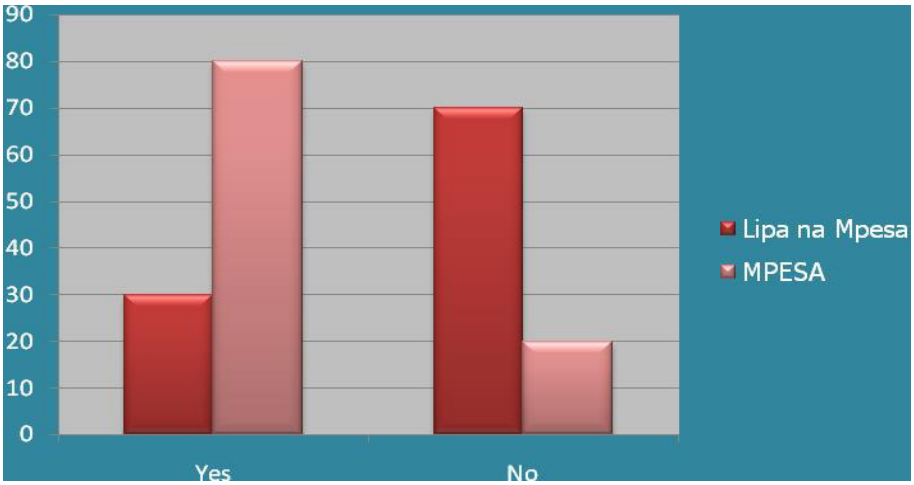

Figure 4 MPESA USE VERSUS LIPA NA MPESA

From the fig. above, majority of respondents were not using lipa na Mpesa service. It is also noted that majority of respondents were using Mpesa service.

4.4 Role of Lipa na Mpesa services to traders

This section presents the respondent opinion of the traders on various benefits of Lipa na Mpesa Whereby the traders gave the following as what they perceived as benefits of Lipa na Mpesa which includes that Lipa na Mpesa reduces the risk of theft of money as well as fraud in terms of the employees and fake currency. The traders said that they no longer need to worry about looking for change. The traders also indicated that there was an improvement of business efficiency that they no longer waste much time counting money as the money is sent electronically

Table 4: Benefit of the Lipa na Mpesa services

Benefits of Lipa na Mpesa	**Mean**	**Std deviation**
Reduce the risk of theft and fraud	4.450	0.688
No worry about change	4.250	0.618
Increase and enhanced business efficiency	4.150	0.793
No waste of time counting money	4.400	0.488

The benefits of lipa na Mpesa have an average of about 4.2 as per computed means in the table above. The deviations from the mean are more or less on the same scale of about 0.65

Table 5: Why traders do not prefer the Lipa na Mpesa services

Disadvantages	Frequency	%
Customers not ready to use the service	4.211	0.737
Trust or perceived trust of transaction	3.700	0.703
Knowledge to use still low	3.450	0.584
Competitors not willing due to cost of interoperability	3.650	0.592

Source: Researcher

The main reasons why despite the advantages of Lipa na Mpesa services many traders said that customers are not yet ready to use the Lipa na Mpesa services, that there is perceived lack of trust of the transaction, that traders do not want to use the Lipa na Mpesa because of associated cost of transaction that are chargeable to the traders who many operate with a small profit margin, that many traders as well as customers have little knowledge. At times safaricom network can be very unreliable as in it can have long delays which makes customers unreliable. Again competitors have different networks which may not be interoperable.

Table 6: Shows the results on individual factors on the Lipa na Mpesa

Individual Factors	**Mean**	**Std deviation**
Experience of users	1.864	0.909
Awareness of the service by users	2.121	0.634
Knowledge and skills on how to use the service	1.713	0.869
Attitude of users about the service	1.808	1.041

The study found that majority of the traders agreed that experience of use of the service has an effect on the use of Lipa na Mpesa mean of 1864, awareness and self-efficacy has an effect on the Lipa na Mpesa as shown by mean of 2.121, knowledge on how to use the technology has an effect on the Lipa na Mpesa shown by mean of 1.713, attitude towards Lipa na Mpesa has an effect on the Lipa na Mpesa as shown by mean of 1.808

Table 7: shows the results on business factors on the Lipa na Mpesa

Business Factors	**Mean**	**Std deviation**
Business s size in regard to number of agents	2.205	0.811
Business's size in regard to total capital investment in the service	1.382	0.614
Business margin for service	1.702	0.673
Transaction costs	1.698	0.685
Business experience has an of the owners	1.654	0.845

From the findings, the study found that respondent strongly agreed that business 's size in regard to total capital investment has an effect on Lipa na Mpesa as shown by mean of 1.382 in the table below, respondent agreed that Business experience has an effect Lipa na Mpesa as shown by mean of 1.654, business margin has an effect on the implementation of Lipa na Mpesa as shown by mean of 1.698, Financial resource has an effect on the Lipa na Mpesa as shown by mean of 1.702 and Firm's size in regard to number of employees has an effect Lipa na Mpesa as shown by mean of 2.205.

Table 8: Technological factors on the Lipa na Mpesa

Technological factors on Lipa Na Mpesa	**Mean**	**Std deviation**
Perceived advantage has an effect on the **Lipa Na Mpesa** application.	2.176	1.138
Perceived easiness has an effect on the **Lipa Na Mpesa**	1.786	0.612
Compatibility has an effect on the implementation of **Lipa Na Mpesa**	1.514	0.613
Security and privacy	1.496	0.648
Perceived reliability of **Lipa Na Mpesa**	1.669	0.631

On the Technological factors the study found that respondents strongly agreed that Perceived advantage has an effect on the implementation of Lipa Na Mpesa as shown by mean of 2.176, respondent further agreed that compatibility has an effect on the implementation of Lipa Na

Mpesa as shown by mean of 1.514, Perceived easiness has an effect on the Lipa Na Mpesa as shown by mean of 1.786, Security and privacy s has an effect on the implementation of Lipa Na Mpesa as shown by mean of 1.496, Trial ability has an effect on the implementation Lipa Na Mpesa as shown by mean of 1.794 and Perceived reliability has an effect on the Lipa Na Mpesa as shown by mean of 1.669.

4.5 Regression Analysis

Table 9: Regression analysis model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.874[a]	0.764	0.731	0.12225

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.731 an indication that there was variation of 73.1% on the Lipa na Mpesa implementation due to changes in the independent variables namely the Individual factors, Business factors and the Technological factors. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.874

Table 10: Regression reports for Lipa na Mpesa factors

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.878	0.357		2.459	
	Individual Factors	0.305	0.097	0.402	3.145	0.002
	Business Factors	0.245	0.093	0.091	0.760	0.049
	Technology Factors	0.158	0.100	0.183	1.583	0.017

Source: Researcher

The Established Regression equation was

$Y = 0.878 + 0.305\ X_1 + 0.245\ X_2 + 0.158\ X_3$

From the above regression equation it was revealed that holding all factors to a constant zero, use of Lipa Na Mpesa would stand at 0.878, a unit increase in influence of individual factors would lead to increase in Lipa Na Mpesa. This is indicated by a ϕ of 0.402 and was significant at the $p<0.05$ ($t=3.145$) level thus indicating the existence of a positive and statistically significant relationship between individual factors (user experience, awareness, attitude and knowledge & skill) and the adoption of Lipa Na Mpesa.

The test on business factors influence on Lipa Na Mpesa had a ϕ of 0.091 and was significant at the $p<0.05$ level ($t=0.760$) indicating the existence of a positive and statistically significant relationship between business factors and the adoption of Lipa Na Mpesa. Unit increase in influence of technological factors lead to a ϕ of 0.183 and was significant at $p<0.05$ level ($t=1.583$) thus indicating the existence of a positive and statistically significant relationship between the technological factors and the adoption of Lipa Na Mpesa. The effect reported in Table 4.13 of this study is fully consistent with and support the study˘s overall predications. These results helped the researcher to come up with the proposed Lipa na Mpesa model.

5.0 CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER WORK

5.1 Introduction

From the data collected and analysis, the following summary of findings, conclusions and recommendations were made.

The objective of this study has been met successfully, to develop a framework for successful adoption and diffusion of Lipa na Mpesa services.

In the findings, the study demonstrated the several factors affecting the use of Lipa na Mpesa. It clearly came out that Individual factors, Business factors and Technological factors all contributed to the usage of the service Lipa na Mpesa.

Regression analysis was used to test the framework. The study considered this design appropriate since it facilitated towards gathering of reliable data describing the true characteristics of mobile money service providers in Kenya, platforms and techniques used.

The target population was 80 Mitumba traders in Gikomba Market. It is from the target population that the sample was extracted to participate in the research process. Open ended and closed types of questions were used to ensure that the given answers produced relevant information. The researcher phrased the questions clearly in order to make clear dimensions along which responses were analyzed. For the open ended ones, space was provided for relevant explanations to be provided by the respondents, where they expressed their feelings.

5.2 Summary of findings

Most of the Mitumba traders in Gikomba who participated in the study were male accounting for 71.2% (57) while female accounted for 28.8% (23). On the other hand, the study established that at the time of the survey most traders who participated in the study belonged to the age between 18-28 Years who were young and energetic and could use mobile money transfer, followed by those aged between 28-38 years who accounted for 34.8 % and the least were those who

mentioned they were above 38 years. The study also sought the information on the level of literacy of traders in order to ascertain their level of competency to use technology and found out that most traders were either semi illiterate or illiterate as explained by the fact that 23.8% (19) were found to be with no formal education while 30.0% (24) had schooled up to primary school level. At the same time 31.1% of traders had secondary education while only 15% of traders had post-secondary. From the findings on the respondents˘ length of time of using Mpesa to receive or pay, the study found that 35% of the respondents indicated that they had used Mpesa for over 7 years, 28.2% of the respondents indicated that they had used Mpesa for 5 to 7 years, 23.3% of the respondents indicated that they had used Mpesa for 2 to 4 years whereas13.6% of the respondents indicated that they had used Mpesa for less than 2 years.

This section presents the respondent opinion of the traders on various benefits of Lipa na Mpesa whereby the traders gave the following as what they perceived as benefits of Lipa na Mpesa which includes that Lipa na Mpesa reduces the risk of theft of money as well as fraud in terms of the employees and fake currency, traders said that they no longer need to worry about looking for the change. They also pointed out that Lipa na Mpesa has increased the business efficiency in term of time saving as they no longer waste much time counting money as the money is sent electronically.

From the findings on the respondent rating the validity of various statements in regard to the benefits realized by the traders, majority of the respondent rated the following as being valid; Improving pricing and competition as shown by 4.650, Deepening adoption of mobile money transfer technology and therefore also the growth of the sector as shown by mean of 4.700. Developing a common standard will help to build an interoperable technical standards and building the sector as shown by mean of 4.800 and Customers ability to overcome the challenges of interoperable lowering cost structures.

The main reasons why despite the advantages of Lipa na Mpesa services many traders said that customers are not yet ready to use the Lipa na Mpesa services, that they is perceived lack of trust of the transaction, that traders do not want to use the Lipa na Mpesa because of associated cost of transaction that are chargeable to the traders who majority operate with a small profit margin,

that many traders as well as customers have little knowledge that sometimes safaricom network has not been reliable and that competitors have different networks which may not interoperable.

The study found that majority of the traders agreed that experience of use of the service has an effect on the use of Lipa na Mpesa mean of 1.656, awareness and self-efficacy has an effect on the Lipa na Mpesa as shown by mean of 1.713, knowledge on how to use the technology has an effect on the Lipa na Mpesa shown by mean of 1.808, attitude towards Lipa na Mpesa has an effect on the Lipa na Mpesa as shown by mean of 1.864.

From the findings, the study found that respondent strongly agreed that business˘s size in regard to total capital investment has an effect on Lipa na Mpesa as shown by mean of 1.382, respondent also agreed that business experience has an effect on Lipa na Mpesa as shown by mean of 1.654, business margin has an effect on the implementation of Lipa na Mpesa as shown by mean of 1.698. Financial resource has an effect on the Lipa na Mpesa as shown by mean of 1.702 and the business˘ size in regard to number of employees has an effect on Lipa na Mpesa as shown by mean of 2.205.

On the Technological factors the study found that respondents strongly agreed that Perceived advantage has an effect on the implementation of Lipa Na Mpesa as shown by mean of 1.496, respondents further agreed that compatibility has an effect on the implementation of Lipa Na Mpesa as shown by mean of 1.514, Perceived easiness has an effect on the Lipa Na Mpesa as shown by mean of 1.669, Security and privacy has an effect on the implementation of Lipa Na Mpesa as shown by mean of 1.786, Trial ability has an effect on the implementation Lipa Na Mpesa as shown by mean of 1.794 and Perceived reliability has an effect on the Lipa Na Mpesa as shown by mean of 2.176.

The study found that respondents agreed that they believe that the adoption of Lipa na Mpesa will make business more efficient as shown by mean of 1.510, they believe that the adoption of Lipa na Mpesa by traders will make traders to be able to manage our resources better than other traders as shown by mean of 1.729, they believe that the adoption of Lipa na Mpesa makes their business processes more efficient, as shown by mean of 1.860, and they believe that the adoption

of Lipa na Mpesa allows them (traders) to generate more business opportunities than before as shown by mean of 2.123.

5.3 Conclusion

The objective of this study has been obtained, to access the level of Lipa na Mpesa adoption by the small business traders namely the Gikomba Mitumba traders. The results of this study provide evidence that the use of Lipa na Mpesa is at very low stage. The findings tend to indicate that at the outset of individual factors such as knowledge level, attitudes towards technology, supervisory authority can play a significant role in diffusion of the innovation. This can offer some encouraging evidence for regulators to evaluate the effectiveness of rules and regulations on customer management. The results here can also serve as a positive indicator for other countries where Lipa na Mpesa is still in its infancy. Findings also indicate that establishment of regulations or guidelines on Customer relationship management are very crucial for its eventual success.

From the findings, the study found that business˘ size in regard to total capital investment has an effect on Lipa na Mpesa as well as the business experience. The case also demonstrated how s is the financial resource of the business can affect the acceptance of Lipa na Mpesa

On the Technological factors, perceived advantage has an effect on the implementation of Lipa Na Mpesa whereas compatibility has an effect on the implementation of Lipa Na Mpesa. This is coupled with perceived easiness which has an effect on the Lipa Na Mpesa. Security and privacy has an effect on the implementation of Lipa Na Mpesa. This implies that there are fears in the business environment because the service has not been in play long enough to build the required customer confidence. Perceived reliability has an effect on the Lipa Na Mpesa

The study shows that Peer Influence impacts on the Lipa na Mpesa implementation as peers in an office can decide to stick to their old ways of doing things, for instance they could be technophobia hence resist the change.

5.4 Recommendations of the study

For further study the following recommendations should be considered:-

Other methods of data collection like observation could have provided further evidence regarding factors affecting Lipa na Mpesa and it adoption among the small scale traders.

The sample included Mitumba traders located at a section of Gikomba market which did not include all other Mitumba traders in other areas. This results may not be strictly generalized to the population of other Mitumba traders in the country, although given their fit with other studies the results are likely to be broadly transferable across settings.

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APPENDICES

APPENDIX 1

Dear respondent,

I am a post-graduate students at the main objective of the study is to establish the factors affecting usage of mobile payment among middle level business. A case study of Machakos County. You are kindly requested to answer the following questions as you have been selected to be part of the sample that is going to participate in this research study.

Please answer accurately by filling in or ticking the appropriate answer in the space provided. The information obtained will be used for academic purposes and treated with utmost confidentiality.

Thanks in advance for your co-operation

PART A: BIO DATA

1. Age bracket of the respondent

(a) (18-25) ☐ (b) (26-33) ☐

(c) (34-40) ☐ (d) 41 & above ☐

2. Education level

(a) Secondary level ☐ (b) certificate level ☐

(c) Diploma ☐ (d) degree ☐

(d) Others please specifyŭ ŭ ŭ ŭ ŭ ..

3. How long have you been in business?

(i) 2-4 years ☐ (ii) 5-7 years ☐

(iii) 8-10 years ☐ (iv) 11 years and above ☐

For each of the following parts, please tick where applicable to the extent to which you agree using the following likert scale.

A=agree SA= Strongly Agree U=Uncertain D=Disagree SA=Strongly Disagree

4. Kindly state your area of operation/residence _____

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

[ ] M-Pesa [ ] Airtel Money [ ] Yu Cash [ ] Orange Money

How often do you send/receive money using the mobile money service identified in 7?

i. M-Pesa

[ ] Daily [ ] Weekly [ ] Monthly

ii. Airtel Money

[ ] Daily [ ] Weekly [ ] Monthly

iii. Yu Cash

[ ] Daily [ ] Weekly [ ] Monthly

iv. Orange Money

[ ] Daily [ ] Weekly [ ] Monthly

For how long have you used this platform _____

State the reason why you use this platform (If you use more than one tick appropriately)

[ ] Cheap [ ] Convenience [ ] Influence [ ] Oldest [ ] Other

State some other reasons why you use this platform _____

_____

_____

5.0 How do rate your operator in terms of (tick as appropriate)

Ease of use	Very easy { } Easy{ } Normal{ } Difficult { } Very Difficult{ }
Accessibility/Availability	Very Accessible { } Accessible{ } Normal{ } Inaccessible { } Very Inaccessible{ }
Cost	Very cheap{ } cheap{ } Normal{ } expensive { } Very expensive{ }
Ease of Interoperability(cross network) with other providers	Very easy { } Easy{ } Normal{ } Difficult { } Very Difficult{ }
Reliability	Very Reliable { } Reliable{ } Normal{ } Unreliable { } Very Unreliable{ }
Data Privacy and Integrity	Very Reliable { } Reliable{ } Normal{ } Unreliable { } Very Unreliable{ }

6.0 In a scale of one to five, rate the importance factor that influence your choice of service provider (tick appropriate box below:

1. Not at all important
2. Somewhat important
3. Neutral
4. Important
5. Very important

	1	2	3	4	5
Ease of use					
Accessibility/Availability					
Cost					
Ease of Interoperability (Cross Network)					
Reliability					
Data Privacy and Integrity					

7.0 Rate of the factors in terms of challenge:

1. Not at all
2. Somewhat challenging
3. Neutral
4. challenging
5. Very challenging

	1	2	3	4	5
Ease of use					
Accessibility/Availability					
Cost					
Ease of Interoperability (Cross Network)					
Reliability					
Data Privacy and Integrity					

The new framework is simple, sensible and suitable framework

Section C: Framework for Lipa na Mpesa Framework

(Please indicate the level which you agree/disagree with the following statements based on the following rankings by ticking 1,2,3,4,5 as per ranking:1(Strongly agree), 2(Agree)3 (Neutral), 4(Disagree), 5(Strongly disagree).

13. To what extent do you agree with that the proposed lipa na mpesa framework will improve electronic money transfer to traders

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
New framework is feasible, easy to understand and ease in implementation					
The new framework has a comprehensible approach covering all the challenges with Lipa na Mpesa					
New framework is simple and suitable					
The new framework provide a straight forward guide					
The new framework is practical, realistic and user friendly					
New framework has all the necessary attributes inbuilt in to the syayem which will be useful for money transfer service: Lipa na Mpesa					
New framework is appropriate to assisting interoperability					
New framework will reduce cost of transaction					
model did highlight all the challenges which includes technology, cost, security and expertise of staff					
New framework is suitable for the current study					

How do you perceive/rate sending or receiving money from a person in a different network (e.g. from M-Pesa to Airtel) or any other network?

{Very Convenient} {Convenient} {Not Convenient} {Not Applicable}

8.0 How do you compare onnet (sending to or receiving from same network) and offnet (sending to or receiving from different network) transaction charges

Less { } same { } more { }

9.0 What kind of problems did you encounter during the process in number 15 above?

_____

_____

_____

10.0 What modifications would you suggest if any to number 15 above?

11.0 How is the performance of the system (Number 15 above) in terms of the response time?

[ ] Good [ ] acceptable [ ] too slow

12.0 Any comments or recommendations to improve mobile money transfer

_____

_____

_____

Appendix 2: User Satisfaction Questionnaire

Instructions:

- Do not write your name
- Answer all the questions
- In sections where your response is based on five (5) points scales tick only one

Section A: Demographics

1. Your Genderŭ ŭ ŭ [ ] Male [ ] Female
2. What is your Age?
   - 18-28 Years [ ]
   - 28-38 Years [ ]
   - Over 38 Years [ ]
3. Length of Trading

   1-5 Years [] 5-10 Years []

   10 Years and Above [ ]

4.0 Literacy Rate

- No formal education [] Primary Education []
- Secondary Education [] Post-Secondary Education []

5.0 Length of use of using Lipa na MPESA or any other Mobile Phone Money Transfer

- Less than 2 Years [ ]
- 2-3 Years [ ]
- 3-5 Years [ ]
- Over 5 Years [ ]

6.0 (a) Do you use MPESA [Yes] [ ] No

(b) Do you use Lipan a MPESA [Yes] [No]

7.0 Perceived benefit of Lipa na Mpesa

To what extent do you agree/disagree with the following statements? (Tick one choice)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. Reduce the risk of theft and Fraud					
2. No worry about change					
3. Increased and enhanced business efficiency					
4. No waste of time counting money					

Any other benefitǔ ǔ

8.0 Why traders do not prefer the Lipa na Mpesa services?

To what extent do you agree with the influence of various aspect of drawback of Lipa Na Mpesa

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. Customers not ready to use the service					
2. Trust or perceived trust of transaction					
3. Associated costs, resources and infrastructure forego revenue					
4. Knowledge to use still low					
5. Competitors not willing to cost of interoperable					

Any other commentsǔ .
ǔ .

9.0 Individual factors influencing Adoption of Lipa na Mpesa by traders: (Tick one choice)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Experience of users.					
Awareness of the service of users					
Knowledge and skills on how to use the service.					
Attitude of users about the service.					

10.0 Business Factors influencing Adoption of Lipa na Mpesa by traders: (Tick one choice)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Business s size in regard to number of agents					
Business's size in regard to total capital investment in the service					
Business margin for service					
Transaction costs					
Business experience has an of the owners					
Business s size in regard to number of agents					
Business's size in regard to total capital investment in the service					

11.0 Technology Factors influencing Adoption of Lipa na Mpesa by traders: (Tick one choice)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Perceived advantage has an effect on the **Lipa Na Mpesa** application.					
Perceived easiness has an effect on the **Lipa Na Mpesa**					
Compatibility has an effect on the implementation of **Lipa Na Mpesa**					
Security and privacy					
Perceived reliability of **Lipa Na Mpesa**					

Perceived Advantage

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
We believe that the adoption of Lipa Na Mpesa makes my business more efficient than traders					
We believe that the adoption of Lipa Na Mpesa will manage our resources better than other firms.					
We believe that the adoption of Lipa Na Mpesa makes our business processes more efficient than other firms.					
We believe that the adoption of Lipa Na Mpesa allows our business to generate more business opportunities than other firms.					
We believe that the adoption of Lipa Na Mpesa makes my business more efficient than traders					
We believe that the adoption of Lipa Na Mpesa manage our resources better than other firms.					
We believe that the adoption of Lipa Na Mpesa makes our business processes more efficient than other firms.					