RELATIONSHIP BETWEEN THE ADOPTION OF MOBILE BANKING SERVICES AND THE INCOME LEVELS OF THE KENYAN POPULATION

BY:
IRENE KOKI MUASYA
D61/P/7476/05

A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR AWARD OF MASTER OF BUSINESS ADMINISTRATION (MBA) DEGREE, UNIVERSITY OF NAIROBI

OCTOBER 2013
DECLARATION

This research project is my original work and has not been submitted for examination in any other University.

Signature ............................ Date..............................
Irene Muasya
D61/P/7476/05

SUPERVISOR
This research project has been submitted for examination with my approval as a University supervisor.

Signature ............................ Date..............................
Mr. James Ng’ang’a

MODERATOR
This research project has been submitted for examination with my approval as a University moderator.
ACKNOWLEDGEMENT

I am indebted to many individuals for their support and contributions towards the successful completion of this project. My first and deep appreciation goes to God without whom I would not have done this. Secondly, I want to thank my supervisor Mr. James Ng’ang’a, for his professional support, guidance, commitment and encouragement. I would also like to thank my family for their constant support. I would also like to acknowledge Kenyan population for the assistance in obtaining data for this project.
DEDICATION

This work is dedicated to my family.
# TABLE OF CONTENTS

DECLARATION .................................................................................................................. ii  
ACKNOWLEDGEMENT ...................................................................................................... iii  
DEDICATION ..................................................................................................................... iv  
TABLE OF CONTENTS ..................................................................................................... v  
LIST OF FIGURES ............................................................................................................. vii  
LIST OF TABLES ............................................................................................................... viii  
ABSTRACT ......................................................................................................................... ix  
LIST OF ABBREVIATIONS AND ACRONYMS ................................................................ x  
CHAPTER ONE .................................................................................................................. 1  
INTRODUCTION ............................................................................................................... 1  
1.1 Background of the Study .......................................................................................... 1  
  1.1.1 Income Levels ..................................................................................................... 2  
  1.1.2 Adoption of Mobile Banking ............................................................................. 2  
  1.1.3 Relationship between income levels and adoption of mobile banking in Kenya .................................................................................................................. 3  
  1.1.4 Mobile Telephony Services in Kenya .................................................................. 4  
CHAPTER TWO .................................................................................................................. 7  
LITERATURE REVIEW ..................................................................................................... 7  
2.1 Introduction .............................................................................................................. 7  
2.2 Theoretical Review ................................................................................................... 7  
  2.2.1 Technology Acceptance Model ......................................................................... 7  
  2.2.2 Innovation Diffusion Theory ............................................................................ 8  
  2.2.3 Unified Technology Acceptance User Technology ............................................ 9  
2.3 Review of Empirical Studies .................................................................................... 10  
2.4 Conclusion ............................................................................................................... 12  
CHAPTER THREE ............................................................................................................ 14  
RESEARCH METHODOLOGY ......................................................................................... 14  
3.1 Introduction .............................................................................................................. 14  
3.2 Research Design ...................................................................................................... 14  
3.3 Population ................................................................................................................ 14  
3.4 Sample Design ........................................................................................................ 14  
3.5 Data Collection ....................................................................................................... 14  
3.6 Data Analysis .......................................................................................................... 15
<table>
<thead>
<tr>
<th>CHAPTER FOUR</th>
<th>DATA ANALYSIS AND FINDINGS</th>
<th>4.1 Introduction</th>
<th>4.2 Descriptive Analysis</th>
<th>4.3 Regression Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>17</td>
<td>17</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER FIVE</th>
<th>CONCLUSIONS AND RECOMMENDATIONS</th>
<th>5.1 Summary and Conclusions</th>
<th>5.2 Recommendations</th>
<th>5.3 Suggestions for Further Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>39</td>
<td>40</td>
<td>41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REFERENCES</th>
<th>APPENDIX I</th>
<th>The Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>42</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 4.1: Gender
Figure 4.2: Age Group
Figure 4.3: Work Status
Figure 4.4: Monthly Business Income
Figure 4.5: Monthly Employment Income
Figure 4.6: Other Income
Figure 4.7: Mobile Phone Possession
Figure 4.8: Bank Account Possession
Figure 4.9: Use of Mobile Banking
Figure 4.10: Mobile Service Providers used
Figure 4.11: Mobile Banking Services used
Figure 4.12: Frequency of Monthly Mobile Banking Transactions
Figure 4.13: Percentage of Banking done using Mobile Banking
Figure 4.14: Average Monthly Amounts Transacted through Mobile Banking
Figure 4.15: Number of Respondents that Record charges
Figure 4.16: Absorption of Mobile Banking charges
Figure 4.17: Reasons for using Mobile Banking
Figure 4.18: Impact of Mobile Banking on Respondents
Figure 4.19: Use of Mobile Banking if Respondents’ Income was Lower
Figure 4.20: Use of Mobile Banking if Respondents’ Income was Higher
Figure 4.21: Impact of Mobile Banking on Respondents’ Income
Figure 4.22: Income Level as a determinant of using Mobile Banking
Figure 4.23: Income Level most likely of using Mobile Banking
Figure 4.24: Income Level least likely of using Mobile Banking
Figure 4.25: Respondents’ Family and Friends using Mobile Banking
Figure 4.26: Income Level of Respondents’ Family and Friends
Figure 4.27: Reasons for Family and Friends using Mobile Banking
Figure 4.28: Reasons for Respondents not using Mobile Banking
Figure 4.29: Changes if made would make Respondents use Mobile Banking
Figure 4.30: Change in Income Level would cause use of Mobile Banking
LIST OF TABLES

Table 4.1: Variables Entered/Removed
Table 4.2: Model Summary
Table 4.3: ANOVA
Table 4.4: Pearson’s Correlation
ABSTRACT
The study’s objective was to investigate the relationship between the adoption of mobile banking and the income levels of the Kenyan population. The research followed a quantitative research methodology. Quantitative research was used to provide numerical measurement and analysis of the adoption dynamic. Survey questionnaires were used for standardization purposes to allow for aggregation of the results. The population for this study was therefore the entire Kenyan population which stood at 41.61 million by 2011. The researcher utilized a multi-stage probabilistic sampling technique. First, simple random sampling was used to select one county from among the 47 counties in Kenya which were the primary unit. Simple random sampling was then employed on the sampled county to obtain the secondary units, who were the respondents in this study. A paper-based survey questionnaire was prepared and distributed to the randomly selected respondents. Quantitative data was analyzed using descriptive statistics while qualitative data was analyzed using content analysis. Inferential analysis was done using Pearson Correlation analysis to determine the linear relationship between effects. The dependent variable in this study was the adoption of mobile banking which was measured by the average amount of money transacted through mobile banking per month, while the independent variables were income levels which were measured using business income, employment income and other income which covered farming income, rental income, interest income and income from insurance commission. Findings indicated that there was positive relationship between monthly other income which covered farming income, rental income, interest income and income from insurance commission and adoption of mobile banking by the Kenya population. Monthly business income and monthly employment income had a negative relationship with the adoption of mobile banking by the Kenyan population. The researcher made several recommendations including but not limited to that mobile service providers should ensure that their mobile banking services are safe by adopting cutting edge technology that provides ultimate security within their systems as majority of the Kenyan population would use mobile banking if the safety of their money can be guaranteed; and should increase the user features of the mobile banking service and promote user knowledge among the entire Kenyan population as findings indicate that all income groups of the Kenyan population had an equal likelihood of using mobile banking.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCK</td>
<td>Communications Commission of Kenya</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GNI</td>
<td>Gross National Income</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
<tr>
<td>IDT</td>
<td>Innovation Diffusion Theory</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
</tr>
<tr>
<td>M-Banking</td>
<td>Mobile Banking</td>
</tr>
<tr>
<td>PU</td>
<td>Perceived Usefulness</td>
</tr>
<tr>
<td>PEOU</td>
<td>Perceived Ease of Use</td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
<tr>
<td>TPB</td>
<td>Theory of Planned Behaviour</td>
</tr>
<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
</tr>
<tr>
<td>UTAUT</td>
<td>Unified Technology Acceptance User Technology</td>
</tr>
</tbody>
</table>
CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The convergence of telecommunication and banking services has created opportunities for the emergence of mobile commerce, in particular mobile banking. Mobile banking services provide time independence, convenience and promptness to customers, along with cost savings. Mobile banking presents an opportunity for banks to expand market penetration through mobile services (Lee, Lee & Kim, 2007). According to the International Telecommunication Union (ITU) report, there is significant growth in the use of mobile phones (ITU, 2009). Mobile phones have become a tool for everyday use, which creates an opportunity for the evolution of banking services to reach the previously unbanked population through mobile banking. The use of mobile banking can make basic financial services more accessible to low-income people, minimizing time and distance to the nearest retail bank branches (CGAP, 2006).

There are possible benefits for using mobile banking; however questions still remain about whether low-income customers will adopt mobile banking in a scale that would make a meaningful economic impact. There are also regulatory barriers which may prevent mobile operators from independently offering innovative mobile money services (GSMA, 2009). The mobile banking providers are making investments into the mobile banking infrastructure for effective provision of mobile banking services. Hence, it is important for mobile banking service providers to understand the factors influencing the intention to use or adopt mobile banking in order to obtain the expected return on investment made (CGAP, 2006). A clear understanding of these factors will enable mobile banking service providers to develop suitable marketing strategies, business models, processes, awareness programmes and pilot projects (GSMA, 2009). This research examined the relationship between income levels and the adoption of mobile banking in Kenya.
1.1.1 Income Levels

According to statistics from the World Bank, 45.9% of Kenyans were living below the poverty line by the year 2005. Kenya is classified as a low income economy with a gross domestic product (GDP) level of $33.62 billion against a population of 41.61 million and a gross national income (GNI) of $820 and GDP per capita of Kshs. 38,970 in the year 2011. People living on less than $1.25 per day purchasing power parity (PPP) could be considered as poor. PPP exchange rates take into account the local prices of goods and services not traded internationally (cost of living). (World Bank, 2012). For operational and analytical purposes, the World Bank’s main criterion for classifying economies is gross national income (GNI) per capita. Previously, this term was referred to as gross national product, or GNP. Based on its GNI per capita, every economy is classified as low income, middle income (subdivided into lower middle and upper middle), or high income (World Bank, 2012).

Economies are divided according to 2011 GNI per capita, calculated using the World Bank Atlas method. The groups are: low income, $1,025 or less; lower middle income, $1,026 - $4,035; upper middle income, $4,036 - $12,475; and high income, $12,476 or more (World Bank, 2012).

1.1.2 Adoption of Mobile Banking

Across the developing world, there are more people with mobile phones than with bank accounts (Porteous, 2010). In 2007, there were over 3.3 billion phone users and close to 60% of the subscribers lived in the developing world (ITU,2007). Thus, many entities with a global development focus have turned to the mobile phone as a potential platform for delivering financial services to the “unbanked”. The unbanked are people without formal bank accounts who operate in a cash economy; they are limited in their ability to take out loans, maintain savings, or make remote payments, and these constraints can inhibit their economic opportunities. It is anticipated that these obstacles could be partially overcome if financial services were delivered over mobile phones. Mobile phone-enabled banking (m-banking) services are already
available in some countries and are increasingly being targeted at unbanked populations that are largely low-income and low-literate. However, there seem to be a number of issues which prevent this population from meaningfully adopting and using existing services. Research in understanding actual usage of existing m-banking services by low-income, low-literate population in developing countries though is sparse.

According to The Communications Commission of Kenya (CCK), the number of mobile phone subscribers as at December 2012, stood at 31.7 million subscribers with a mobile phone penetration rate of 78%. During the same period, the number of mobile money transfer subscribers stood at 21.1 million people with total deposits of Ksh. 226 billion. The number of active agents stood at 62,300 (CCK 2013).

1.1.3 Relationship between income levels and adoption of mobile banking in Kenya

A study by Crabbe et al, (2009) found that a significant relationship exists between income and the intention to adopt mobile phone banking (Crabbe et al, 2009). This is particularly so because of the cost element for the low income population which is largely price sensitive. For the higher income segments of the population, convenience would be a greater determinant of whether or not to adopt mobile banking. Convenience here would cover time savings that would be made by using mobile banking as opposed to using conventional banking. the middle income segment of the population would look at both the cost element as well as the time element.

The number of enlisted mobile phone service providers imposes a ceiling on the possible users of M-banking services. Availability of vendors is also a factor of concern. That is why in Kenya for instance, certain mobile banking platforms which have a wide network of vendors and agents are more popular than the others despite the lower rates provided. Where network coverage is inexistent or poorly established it then follows that mobile banking penetration is low.
A majority of regular M-banking users are low and average income earners. These categories also happen to hold the higher percentage of people without possession of traditional bank accounts. On this account, users perceive the M-banking service as a complete substitute to bank accounts as previously held.

1.1.4 Mobile Telephony Services in Kenya

Kenya currently has four companies providing mobile telephony services. These are Safaricom, Airtel Kenya, Orange and YU. Safaricom is the leading mobile telephony company in Kenya with over 17 million subscribers. Safaricom is a publicly listed company with 40% ownership by Vodafone. It offers a wide range of telecommunications services with its greatest success being M-PESA. M-PESA initially started as a money transfer service but has expanded into payment of bills, a mobile savings account where you can save and transact and has most recently launched a loan facility in collaboration with Commercial Bank of Africa. M-PESA does not require users to have bank accounts, an important aspect in a country like Kenya where many people do not have bank accounts. With M-PESA, the user can buy digital funds at any M-PESA agent and send that electronic cash to any other mobile phone user in Kenya, who can then redeem it for conventional cash at any agent. An M-PESA enabled mobile phone can also function as an electronic wallet and can hold up to 100,000 Kenyan shillings (Safaricom, 2007).

Airtel Kenya is the second largest mobile telephony company in Kenya. It is a subsidiary of Bharti Airtel which holds 80% of its shares. Airtel Kenya offers its mobile money services through its Airtel Money brand. Telkom Kenya, which is also the provider of landlines also ventured into the mobile telephony services field with their product “Orange”. Their mobile money service is dubbed “Orange Money”. Telkom Kenya is owned by France Telecom at 70% with the Kenyan Government retaining a 30% stake. Essar Telecom Kenya, the fourth mobile telephony service provider operates in Kenya under the business name “YU” and also has a mobile money service under the name “YU Cash”.

In the year 2000, only 180,000 Kenyans had access to a mobile phone. By the end of
2006, the figure had grown to 7.3 million people. By 30\textsuperscript{th} June 2011, Kenya had a total of 25.27 million mobile subscribers. The number of subscribers however dropped from 30.7 million to 29.8 million between January and March 2013. The decline was attributed to the de-activation of 2.4 million unregistered sim cards during the quarter.

1.2 Research Problem

According to the financial Access report of 2009 by Financial Sector Deepening (FSD), 32.7\% of Kenyans were completely unbanked with only 22.6\% having access to conventional bank accounts (FSD, 2009). This could largely be attributed to the small number of banks in Kenya, currently at 44 and the total branch network being at 880 bank branches and 1400 ATMs. There have also been attempts in the recent past towards agency banking so as to increase financial access to most Kenyans. despite all this, a good number of Kenyans still remained unbanked until the introduction of mobile phone banking in 2007.

Mobile phone banking is considered to be one of the most value-adding and important mobile services available to consumers (Lee et al., 2003). According to the Communications Commission of Kenya’s third quarter 2012/2013 report, the total mobile subscribers stood at 29.8 million while the mobile money subscribers stood at 23.2 million, with 74,216 agents as at March 2013 (CCK, 2013). This then implies that there are over 6 million potential subscribers who have opted not to subscribe to mobile banking services yet.

Mobile banking can provide benefits for both the mobile banking service provider and the user. In order for mobile banking service providers to effectively reach the over 6 million potential subscribers, there is need for an understanding as to the reasons for their lack of adoption and whether this has a bearing on their income levels. The basic question which needed to be answered is whether there are variations in adoption of mobile banking by the different income categories in Kenya and if so, what factors bring about these variations?

Research was conducted on the areas of mobile commerce and mobile banking,
with foci on different factors and contexts. Wu and Wang (2005), in a study on middle class populations, found that cost had minimal significant impact on the adoption of mobile banking, however it is critical when the technology is first introduced. A study by Wu and Wang (2005) on the costs of mobile commerce showed that perceived cost had minimal significance when compared to other variables such as perceived risk, compatibility and perceived usefulness.

1.3 Research Objective

The research objective was to investigate the relationship between the adoption of mobile banking and the income levels of the Kenyan population.

1.4 Value of the Study

The findings of this research are useful to the mobile banking service providers in determining whether income levels of the Kenyan population have a relationship with their patterns of adoption of mobile banking. They can then use the results of the study to effectively target the correct income segment in their efforts to increase their respective market shares.

Scholars and researchers can also use the study as a reference point for further studies in the same or related areas.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter critically reviews the literature that pertains to the adoption of mobile banking and its relationship with the income levels of the Kenyan population. It covers both theoretical and empirical literature. Theoretical literature focuses on the adoption of mobile banking and its relationship with income levels of the population. The empirical literature lays emphasis on the analysis of findings of previous studies.

2.2 Theoretical Review

Since the late 1980s, technology adoption research focused on exploring the determinants of users’ intentions to use new technologies. Many theories have been developed to study Information Technology (IT) adoption issues, including the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), the technology acceptance model (TAM) (Davis, 1989), the extended technology acceptance model (TAM2) (Venkatesh & Davis, 2000), the theory of planned behaviour (TPB) by Ajzen (1991), the innovation diffusion theory (Rogers, 1995) and the unified technology acceptance user technology (UTAUT) (Venkatesh, Morris, Davis & Davis, 2003).

2.2.1 Technology Acceptance Model

Technology Acceptance Model (TAM), suggests that perceived usefulness (PU) and perceived ease of use (PEOU) are the two most important factors in explaining individual users’ adoption intentions and actual usage (Davis, 1989). Davis (1989) defines PU as the degree to which a person believes that using a particular system will enhance his or her job performance. In addition, PEOU refers to the degree to which the person believes that using the system will be free of effort (Davis, 1989).
TAM has been extensively tested and validated and is a widely accepted model, which can be modified or extended using other theories or constructs (Taylor & Todd, 1995; Davis & Venkatesh, 2000; Wu & Wang, 2005; Luarn & Lin, 2005; Zhang, Gou & Cheng, 2008; Yen, Wu, Cheng & Huang, 2010). Venkatesh and Davis (2000) introduced such social and organisational factors as subjective norms, impression, quality of output and work relevance into the TAM model and proposed the so-called extended TAM model (TAM2).

Wu and Wang (2005) combined TAM2 and innovation diffusion theory (IDT) by Rogers (1995), in a study focused on investigating the drivers of mobile commerce. The PU and PEOU constructs from the TAM2 model were combined with perceived risk and cost constructs. From the IDT the compatibility constructs were added to the research model (Wu & Wang, 2005).

### 2.2.2 Innovation Diffusion Theory

The Innovation Diffusion Theory (IDT) Rogers (1995) defines diffusion as the process by which innovation or perceived new technology is communicated through certain channels over time among members of a social system. Rogers (1995) proposed and defined the five attributes determining the rate of adoption of new technology as: Relative advantage, Compatibility, Complexity, Observability and Trialability. Relative advantage refers to the extent to which the innovation is perceived as better than the technology it replaces, including technical performance, cost, risk or other attributes. Compatibility refers to the extent to which an innovation is perceived as being consistent with the existing values, past experiences and needs of potential users. Complexity refers to the level of difficulty in understanding and using the technology. Observability refers to the extent to which the results of a new technology can be observed or visible to others. Trialability refers to the ability to try or experiment with the performance of a new technology on a limited basis (Rogers, 1995). Many authors, for a variety of different technologies including Voice over Internet Protocol (VoIP), Internet banking and mobile banking, have studied Roger’s IDT (Walker, 2004; Bidoli, 2004; Venkatesh et al., 2003).
2.2.3 Unified Technology Acceptance User Technology

Unified Technology Acceptance User Technology (UTAUT) was proposed by Venkatesh et al. (2003) after reviewing the following eight IT adoption theories: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the motivational model, Theory of Planned Behaviour (TPB), the PC utilisation model (PCUM), Innovation Diffusion Theory (IDT), the social cognitive theory (SCT), and the integrated model of technology acceptance and planned behaviour. In UTAUT, the factors influencing the adoption and usage of information technology includes: performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). Performance expectancy refers to the extent to which an individual believes that using the system will help him or her achieve better results on the task. Effort expectancy refers to the extent of ease associated with the use of the system. Social influence refers to the extent to which an individual perceives that important others believe that he or she should use the new system. Facilitating conditions refers to the extent to which an individual believes that an organizational and technical infrastructure exists to support use of the system.

UTAUT is considered to be the most important theory for IT adoption research in Information Systems (IS) fields in the future. The model has been empirically examined and found to outperform the other eight individual models, including the TAM model (Carlsson, Carlsson, Hyvonen, Puhakainen & Walden, 2006). However, UTAUT is not perfect. To apply UTAUT in certain special IT applications such as mobile banking, modification and revision is needed as recommended by Venkatesh et al. (2003). In a study by Carlsson et al. (2006) using the UTAUT in Finland, performance expectancy and effort expectancy are found to be the main determinants of behavioural intention in using mobile services (Carlsson et al., 2006). The UTAUT model has also been revised to study mobile commerce acceptance, where additional determinants such as trust, privacy, convenience and cost were shown to affect the behavioural intention (Min, Ji & Qu, 2008).
The effort expectancy from UTAUT, PEOU from TAM and complexity from IDT are regarded as similar (Venkatesh et al., 2003). Similarly, the relative advantage of IDT and performance expectancy of UTAUT are analogous to PU from TAM (Taylor & Todd, 1995; Venkatesh et al., 2003). For this study, the terms POEU and PU are adopted as independent variables on the research model. Luarn and Lin (2005) conducted a study in Taiwan, where TAM and the theory of planned behaviour (TPB) by Ajzen (1991) were combined. The study investigated the possible factors affecting mobile banking users’ behavioural intentions. These factors include perceived usefulness (PU), perceived ease of use (PEOU), perceived credibility, self-efficacy, and perceived financial cost (Luarn & Lin, 2005). In a study by Lee (2009) in Taiwan which investigated the factors influencing the adoption of internet banking, the TAM and TPB were integrated with perceived risk and perceived benefit constructs were added to the research model. In a study by Lee (2009), the following five antecedents of perceived risk were discussed: performance risk, social risk, financial risk, time risk and security risk.

2.3 Review of Empirical Studies

Several studies have been undertaken in the area of mobile commerce in the few years since its inception. Most of the studies however, have centered on the impact of mobile banking with most paying specific attention to M-Pesa in Kenya. Examples of such include Mbiti I & Weil D. N (2011) ‘Mobile Banking: The impact of M-Pesa in Kenya’. This was a research for the National Bureau of Economic Research. The research concluded that introduction of M-Pesa led to the reduction in prices by competing money transfer services, that frequent M-Pesa users are more likely to be urban, educated, banked and affluent and that M-Pesa is complementary to banks, whereby the adoption of M-pesa has increased demand for bank products. A similar research was done by Porteous D. (2010) ‘The enabling environment for mobile banking in Africa’ for the Department for International Development (DFID). The objectives of this study were first, to determine whether access to mobile banking in Kenya and South Africa was likely to lead to greater financial access and second to determine whether enablement would be needed for this or whether it would happen
simultaneously.

A study aimed at determining the factors that influence adoption of mobile commerce in South Africa by Masinge K. (2010) found that perceived usefulness, perceived ease of use and risk were factors likely to affect the adoption of mobile banking, whereas perceived risk was not a factor likely to influence the adoption of mobile banking. Another study which produced differing results was carried out by Lee (2009) and Lee, Lee and Kim (2007) and found that all five risks; security, financial, time, social and performance risks emerged as negative factors in the intention to adopt online banking. However, social risk was found to have an insignificance effect on the intention to adopt online banking (Lee, 2009).

A study by Wu and Wang (2005) on mobile commerce acceptance showed that perceived cost had minimal significance when compared to other variables such as perceived risk, compatibility and perceived usefulness. A further qualitative investigation on the same study was conducted, which revealed that perceived cost is normally a major concern when a technology is first introduced (Wu & Wang, 2005). However, when there is an emergency or sudden need, the utility benefits outweigh the cost issues. The study by Wu and Wang (2005) was conducted on respondents with an average income level of US$650 per month (equivalent to approximately R5000). This income level was regarded as being a good financial status, implying that the users could afford mobile commerce (Wu & Wang, 2005).

Mallat (2007), in a qualitative study found that end users value the relative advantages (time, independence, availability, remote purchases) of mobile payments compared to other means and face several barriers such as pricing, complexity of payment procedures, lack of widespread merchant acceptance and perceived risks. InterMedia (2011), a global research company found in Tanzania that mobile money users encountered some challenges such as network problems, assistance to transact, poor agent customer service, agent’s lack of e-float and illiteracy issue. Still in this study, end users are interested in mobile money because of its safety, security, and convenience (InterMedia 2011).
Kamotho (2009) carried out a study on Mobile Phone Banking: Usage experiences in Kenya. The study covered the two main mobile banking service providers; Safaricom and Zain during the three year period 2006 to 2008. From inception, the mobile service providers’ agents had tripled to 8,000 whereas the commercial banks 876 branches and 1424 ATMs. This research had similar conclusions to that of Mbiti I & Weil D. N (2011) that adoption of innovations helps to lower transaction costs.

Other studies that have been undertaken in the area of mobile banking include MBA researches by Kioi P.G (2011) “The extent of mobile commerce adoption by selected small and medium enterprises in the central business district of Nairobi, Kenya”. This study sought to determine the extent of usage of mobile banking amongst the target population. Another related study was done by Maina M. (2011) “Towards a model for mobile phone technology adoption in reproductive health in Kenya”. This study was mainly geared towards determining which mobile phone banking technology was appropriate for the reproductive health sector in Kenya and how its adoption had impacted on the sector. Another study was done by Munga G. N (2010) “The impact of mobile banking: A Case study of M-Pesa in the Kenyan Society. This study mainly emphasized on the levels of adoption and usage of M-Pesa amongst the study population.

2.4 Conclusion

The chapter has reviewed and summarized the existing theoretical issues and empirical literature on adoption of mobile banking and income levels both locally and globally. The chapter has reviewed several theories relating to the adoption of new technology which can then be used to explain the adoption of mobile banking. These are; Technology Acceptance Model (TAM), Innovation Diffusion Theory and The Unified Theory of Acceptance and use of Technology (UTAUT). The chapter has provided some interesting insights on the issue of adoption of mobile banking with various empirical results yielding very different results depending on the income segment under study. The study by Masinge K. (2010), found that perceived risk was not a factor likely to influence the adoption of mobile banking whereas studies by Lee (2009) and Lee et al (2007), found that risk was in fact a key consideration when it
comes to the adoption of mobile banking. This is because Masinge’s study was centered around the bottom of the pyramid, a segment of the population which is highly price sensitive. It would therefore be interesting to establish the relationships between income levels and the adoption of mobile banking in Kenya.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
This chapter explains the research design, target population, sampling techniques, preparation of data collection instruments and the procedures that will be used to analyze the data in order to generate research findings for reporting.

3.2 Research Design
The research followed a quantitative research methodology. Quantitative research was used to provide numerical measurement and analysis of the adoption dynamic. Survey questionnaires were used for standardization purposes to allow for aggregation of the results. The investigation aimed to identify whether the independent variables are statistically significant effects of the adoption of mobile banking.

3.3 Population
According to Zikmund (2003) a population is any complete group of people, companies, hospitals, stores, college students or the like that share some set of characteristics. For the purposes of this study, the population was the entire Kenyan population which stood at 41.61 million by 2011.

3.4 Sample Design
The sampling design was a multi-stage probabilistic technique. First, simple random sampling was used to select one county from among the 47 counties in Kenya which were the primary unit. The county selected was Nairobi County. Simple random sampling was then employed on the sampled county to obtain the secondary units, who were the respondents in this study.

According to Zikmund (2003), sample size has a direct influence over the accuracy of the research findings. To determine a suitable sample size, it is necessary to specify the variation or standard deviation of the population, magnitude of
acceptable error and confidence level. For a population of 500,000 or more, a sample of 306 is required to obtain a 95% confidence level and a range of error of 5%. (Zikmund, 2003). Approximately 450 questionnaires were prepared and circulated, with 320 being returned. This allowed for a non-response rate of 25%, but still retaining an adequate number of responses to obtain a 95% confidence level.

3.5 Data Collection

A paper-based survey questionnaire was prepared and distributed to the randomly selected respondents. The questionnaire contained both structured and unstructured questions, which were short and concise with the options of multiple choices where necessary to restrict options to the relevant area of study. The questionnaire was divided into two sections with the first seeking to establish the demographic data of the respondents and the second part seeking to determine the respondents’ perceptions with a view to determining their level of adoption of mobile banking and any relationship this may have with their income levels.

3.6 Data Analysis

The completed questionnaires were edited for completeness and consistency. Quantitative data was analyzed using descriptive statistics while qualitative data was analyzed using content analysis. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 17). Analysis was then based on descriptive statistics. Descriptive statistics involves the use of absolute and relative percentages, frequencies, measures of central tendency and dispersion (mean and standard deviation). The study also used multiple regression analysis to establish the relationship between the variables in the study. The responses from the unstructured questions were organized into themes due to their qualitative nature and then coded appropriately for analysis.

The findings were organized, summarized and presented using tables, pie charts and bar graphs for clarity and comparison purposes. Inferential analysis was done using Pearson Correlation analysis to determine the linear relationship between effects. The
model’s significance was tested using analysis of variance (ANOVA) test conducted at 95% confidence level ($\alpha \leq 0.05$). T-test significance further tested the significance of the variables included in the model. The dependent variable in this study was the adoption of mobile banking which was measured by the number of respondents who indicated that they were using mobile banking, while the independent variables were income levels which were measured using business income, employment income and other income which covered farming income, rental income, interest income and income from insurance commission.

The regression model below was adopted.

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \]

Where:
\[ Y = \text{Adoption of mobile banking} \]
\[ \beta_0 = \text{Regression Constant} \]
\[ \beta_1, \beta_3 = \text{Coefficient of the factors} \]
\[ X_1 = \text{Business Income} \]
\[ X_2 = \text{Employment Income} \]
\[ X_3 = \text{Other Income} \]
\[ \varepsilon = \text{Error term} \]

Validity is the degree to which results obtained from the analysis of the data actually represents the phenomenon under study. In this study, validity was ensured by including objective questions in the questionnaire. Reliability on the other hand refers to the degree to which research instruments yield consistent results. Reliability was ensured by pre-testing the questionnaires with a selected sample of questions. Questionnaires were also designed with snares to check for validity and reliability.
CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction
This chapter outlines the analysis and findings of collected data relating to the respondents’ perceptions with a view to determining their level of adoption of mobile banking and any relationship this may have with their income levels.

4.2 Descriptive Analysis
This section outlines the descriptive analysis of the study’s findings. Figure 4.1 illustrates the respondents’ gender. According to the figure, 57.8% were male while 42.2% were female. This finding indicates that majority of the Kenyan population that has adopted mobile banking were men.

Figure 4.1: Gender

Figure 4.2 illustrates the respondents’ age group. According to the figure, 66.3% were between 20 and 35 years, 18.9% were between 36 and 49 years, 9.7% were below 20 years, while 5.1% were 50 years and above. This finding indicates that majority of the Kenyan population were the youth.
Figure 4.2: Age Group

According to the figure, 44.3% were in formal employment, 25.6% were students, 14.8% were in business, 7.4% were unemployed, 6.8% were in informal employment and 0.6% was retired. This finding indicates that majority of the Kenyan population were in formal employment.

Figure 4.3: Work Status
Figure 4.4 illustrates the respondents’ monthly business income. According to the figure, 36.9% earned between Kshs. 7,500 and Kshs. 29,499, 35.7% earned below Kshs. 7,500, 19% earned between Kshs. 29,500 and Kshs. 91,000 and 8.3% earned over Kshs. 91,000. This finding indicates that majority of the Kenyan population have monthly business income ranging from between Kshs. 7,500 and Kshs. 29,499.

Figure 4.4: Monthly Business Income

Figure 4.5 illustrates the respondents’ monthly employment income. According to the figure, 34.8% earned between Kshs. 7,500 and Kshs. 29,499, 24.3% earned between Kshs. 29,500 and Kshs. 91,000, another 24.3% earned below Kshs. 7,500, and 16.5% earned over Kshs. 91,000. This finding indicates that majority of the Kenyan population have monthly employment income ranging from between Kshs. 7,500 and Kshs. 29,499.
Figure 4.5: Monthly Employment Income

Figure 4.6 illustrates the respondents’ other income which covered farming income, rental income, interest income and income from insurance commission. According to the figure, 44.8% earned below Kshs. 7,500, 41.4% earned between Kshs. 7,500 and Kshs. 29,499, 10.3% earned between Kshs. 29,500 and Kshs. 91,000 and 3.4% earned over Kshs. 91,000. This finding indicates that majority of the Kenyan population earned below Kshs. 7,500 from farming income, rental income, interest income and income from insurance commission.

Figure 4.6: Other Income
Figure 4.7 illustrates the number of respondents that had a mobile phone. According to the figure, 98.9% of the respondents had a mobile phone, while only 1.1% did not possess a mobile phone. This finding indicates that majority of the Kenyan population possess a mobile phone.

Figure 4.7: Mobile Phone Possession

Figure 4.8 illustrates the number of respondents that had a bank account. According to the figure, 91.3% of the respondents had a bank account, while 8.7% did not possess a bank account. This finding indicates that majority of the Kenyan population possess a bank account.

Figure 4.8: Bank Account Possession
Figure 4.9 illustrates the number of respondents that use mobile banking. According to the figure, 67.4% of the respondents used mobile banking, while 32.6% did not use mobile banking. This finding indicates that majority of the Kenyan population has adopted mobile banking.

**Figure 4.9: Use of Mobile Banking**

Figure 4.10 illustrates the mobile service providers used by the respondents. According to the figure, 94.2% of the respondents used Safaricom (M-pesa), 4.3% used Airtel (Airtel Money), 0.7% used Orange (Orange Money) and another 0.7% used Yu (Yu Cash). This finding indicates that majority of the Kenyan population use Safaricom (M-pesa).
Figure 4.10: Mobile Service Providers used

![Bar chart showing mobile service providers used](image)

Figure 4.11 illustrates the mobile banking services used by the respondents. According to the figure, 52.7% used money transfer, 12.2% withdrew cash from the ATM, 11.5% paid utilities, 7.6% deposited money into their bank accounts, 7.6% saved money, 7.6% bought airtime and 0.8% paid for goods and services. This finding indicates that majority of the Kenyan population used mobile banking money transfer service.

Figure 4.11: Mobile Banking Services used

![Pie chart showing mobile banking services](image)
Figure 4.12 illustrates the frequency of monthly mobile banking transactions by the respondents. According to the figure, 35.7% had between 6 to 10 transactions, 34.9% had between 0 and 5 transactions, 14.3% had between 11 to 20 transactions, 9.5% had over 30 transactions and 5.6% had between 21 to 30 transactions per month. This finding indicates that majority of the Kenyan population had between 6 to 10 transactions per month.

Figure 4.12: Frequency of Monthly Mobile Banking Transactions

Figure 4.13 illustrates the percentage of banking done using mobile banking by the respondents. According to the figure, 36.8% between 6 and 10 percent, 24.8% below 5 percent, 15.2% between 31 and 50 percent, 12.8% between 11 and 30 percent, 7.2% between 51 and 80 percent and 3.2% more than 80%. This finding indicates that majority of the Kenyan population did banking using mobile banking between 6 and 10 percent.
Figure 4.13: Percentage of Banking done using Mobile Banking

Figure 4.14 illustrates the average monthly transaction amounts engaged through mobile banking by the respondents. According to the figure, 39.4% between Kshs.1,001 and Kshs.5,000, 26.8% between Kshs.5,001 and Kshs.10,000, 14.2% below Kshs.1,000, 8.7% between Kshs.10,001 and Kshs.20,000, 7.9% over Kshs.35,000 and 3.1% between Kshs.20,001 and Kshs.35,000 per month. This finding indicates that majority of the Kenyan population had average monthly transactions engaged through mobile banking between Kshs.1,001 and Kshs.5,000.

Figure 4.14: Average Monthly Amounts Transacted through Mobile Banking
Figure 4.15 illustrates the number of respondents that kept record of the charges incurred through use of mobile banking. According to the figure, 60.4% of the respondents did not keep record of the charges incurred through use of mobile banking and 39.6% did keep such records. This finding indicates that majority of the Kenyan population did not keep record of the charges incurred through use of mobile banking.

**Figure 4.15: Number of Respondents that Record charges**

Figure 4.16 illustrates the absorption of mobile banking charges by the respondents. According to the figure, 74.2% of the respondents absorbed all the charges, 18.3% shared the charges equally with their customers and 7.5% passed mobile banking charges incurred to others. This finding indicates that majority of the Kenyan population absorb mobile banking charges incurred themselves.
Figure 4.16: Absorption of Mobile Banking charges

According to the figure, 41.9% use mobile banking since they find it faster, 32.3% use it as they find it more convenient, 21% use it as it’s cheaper and 4.8% use mobile banking since they find it safer. This finding indicates that majority of the Kenyan population use mobile banking since they find it faster.

Figure 4.17: Reasons for using Mobile Banking
Figure 4.18 illustrates the impact of using mobile banking on the respondents. According to the figure, 63.5% indicated that the use of mobile banking saved time, 29.4% indicated that it saves money, 2.4% indicated that it increased their earnings and another 2.4% indicated that it had no change/impact. This finding indicates that majority of the Kenyan population save time through the use mobile banking.

**Figure 4.18: Impact of Mobile Banking on Respondents**

![Pie chart showing the impact of mobile banking on respondents.]

Figure 4.19 illustrates the use of mobile banking if the respondents’ income was lower. According to the figure, 58.5% indicated that they would use mobile banking if their income was lower and 41.5% indicated that they would not use mobile banking if their income was lower. This finding indicates that majority of the Kenyan population would still use mobile banking even if their income was lower.
Figure 4.19: Use of Mobile Banking if Respondents’ Income was Lower

Figure 4.20 illustrates the use of mobile banking if the respondents’ income was higher. According to the figure, 88.9% indicated that they would use mobile banking if their income was higher and 11.1% indicated that they would not use mobile banking if their income was higher. This finding indicates that majority of the Kenyan population would still use mobile banking even if their income was higher.

Figure 4.20: Use of Mobile Banking if Respondents’ Income was Higher
Figure 4.21 illustrates the impact of mobile banking on the respondents’ income. According to the figure, 54% indicated that the use of mobile banking had no effect on their income, 24.5% indicated that it would lead to a reduction in their income and 21.5% indicated that the use of mobile banking would lead to an increase in their income. This finding indicates that majority of the Kenyan population experience no effect/impact on their income as a result of using mobile banking.

**Figure 4.21: Impact of Mobile Banking on Respondents’ Income**

Figure 4.22 illustrates the respondents’ individual income level as a determinant of using mobile banking. According to the figure, 56.4% indicated that their individual income determines whether they used mobile banking and 43.6% indicated that their individual income did not determine whether their use of mobile banking. This finding indicates that the individual income of majority of the Kenyan population does determine their use of mobile banking.
Figure 4.22: Income Level as a determinant of using Mobile Banking

![Income Level as a determinant of using Mobile Banking](image)

Figure 4.23 illustrates the income level most likely to use mobile banking. According to the figure, upper middle income was most likely to use mobile banking at 29.7%, high income at 20.3%, low income at 4.1%, while 34.9% of all income groups had an equal likelihood of using mobile banking. This finding indicates that all income groups had equal likelihood of using mobile banking.

Figure 4.23: Income Level most likely of using Mobile Banking

![Income Level most likely of using Mobile Banking](image)
Figure 4.24 illustrates the income level least likely to use mobile banking. According to the figure, low income was least likely to use mobile banking at 25.9%, high income at 17.4%, low middle income at 12.6%, upper middle income at 9.6%, while 34.7% of all income groups had an equal likelihood of using mobile banking. This finding indicates that all income groups of the Kenyan population had an equal likelihood of using mobile banking.

**Figure 4.24: Income Level least likely of using Mobile Banking**

![Pie chart showing income levels least likely to use mobile banking](image)

Figure 4.25 illustrates the percentage of the respondents’ family and friends using mobile banking. According to the figure, between 10 to 29 percent of the respondents’ family and friends were using mobile banking at 25.7%, less than 10 percent at 23.4%, between 30 to 50 percent at 22.2%, between 51 to 80 percent at 9.6% and over 80 percent at 16.2%. This finding indicates that majority of the respondents’ family and friends between 10 to 29 percent were using mobile banking.
Figure 4.25: Respondents’ Family and Friends using Mobile Banking

![Bar chart showing the percentage of income levels for respondents' family and friends using mobile banking.]

Figure 4.26 illustrates the percentage of the income level of the respondents’ family and friends using mobile banking. According to the figure, 46% of the respondents’ family and friends using mobile banking were upper middle class, 27%, were high income level, 20.2% were lower middle income level and 6.7% were lower income level. This finding indicates that majority of the respondent’s family and friends that were using mobile banking were in the upper middle income level.

Figure 4.26: Income Level of Respondents’ Family and Friends

![Bar chart showing the income levels of respondents’ family and friends.]

33
Figure 4.27 illustrates the reasons for the respondents’ family and friends using mobile banking. According to the figure, 52.9% of the respondents’ family and friends were using mobile banking due to time savings, 27.1% due to convenience, 16.5% due to cost savings and 3.5% since it was less risky. This finding indicates that majority of the respondent’s family and friends were using mobile banking due to time savings.

**Figure 4.27: Reasons for Family and Friends using Mobile Banking**

Figure 4.28 illustrates the reasons for the respondents not using mobile banking. According to the figure, 35.7% of the respondents were not using mobile banking as they did not trust the safety of their money, 19.6% found it expensive, 12.5% found it hard to understand, 10.7% found the systems unreliable and 7.1% found mobile banking time consuming. This finding indicates that majority of the respondents were not using mobile banking as they did not trust the safety of their money.
Figure 4.28: Reasons for Respondents not using Mobile Banking

![Reasons for Respondents not using Mobile Banking](image)

Figure 4.28 illustrates the reasons why respondents are not using mobile banking. The most common reason is the lack of trust in the safety of their money (35.70%). Other reasons include: finding it hard to understand (12.50%), finding the systems unreliable (10.70%), finding it time consuming (7.10%), finding it expensive (19.60%), and other unspecified reasons (14.30%).

Figure 4.29 illustrates the changes/improvements if made to mobile banking in Kenya would make the respondents use mobile banking. According to the figure, 44.4% of the respondents indicated that if the safety of their money can be guaranteed they would use mobile banking, 23.8% if the costs were reduced, 15.9% if the processes were made simpler, 7.9% if the systems were improved and 4.8% if the processes were made faster. This finding indicates that majority of the Kenyan population would use mobile banking if the safety of their money can be guaranteed.

Figure 4.29: Changes if made would make Respondents use Mobile Banking

![Changes if made would make Respondents use Mobile Banking](image)
Figure 4.30 illustrates whether change in the respondents’ income level would cause them to use mobile banking. According to the figure, 48.5% of the respondents’ indicated that if they were to earn more money they would use mobile banking, 47% if they were to earn less money and 4.5% would not use mobile banking regardless of their income level. This finding indicates that majority of the Kenyan population would use mobile banking if they were to earn more money.

**Figure 4.30: Change in Income Level would cause use of Mobile Banking**

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, if I was to earn more money</td>
<td>48.5%</td>
</tr>
<tr>
<td>Yes, if I was to earn less money</td>
<td>4.5%</td>
</tr>
<tr>
<td>No</td>
<td>47%</td>
</tr>
</tbody>
</table>

### 4.3 Regression Analysis

Data analysis was based on Pearson correlation analysis and a multiple regression model, whereby the dependent variable in this study was the adoption of mobile banking which was measured by whether or not the respondents used mobile banking, while the independent variables were income levels which were measured using business income, employment income and other income which covered farming income, rental income, interest income and income from insurance commission. The “simultaneous” method (which SPSS calls the Enter method) was used whereby the researcher specified the set of predictor variables that made up the model. The success of this model in predicting the criterion variable was then assessed. Table 4.1 indicates that all the requested variables were entered.
Table 4.1: Variables Entered/Removed

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monthly &quot;Other&quot; Income, Monthly Business Income, Monthly Employment Income</td>
<td></td>
<td>Enter</td>
</tr>
</tbody>
</table>

a. All requested variables entered.
b. Dependent Variable: Adoption of Mobile Banking

Table 4.2 illustrates the model summary used in this study and indicates the adjusted R Square value which gives the most useful measure of the success of the model. Hence from the table it is evident that the model had accounted for 12.2% of the variance in adoption of Mobile Banking of the Kenyan Population.

Table 4.2: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of Estimate</th>
<th>Change Statistics</th>
<th>F Change</th>
<th>Sig. Change</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.442</td>
<td>.195</td>
<td>.132</td>
<td>.4446</td>
<td>.195</td>
<td>3.073</td>
<td>.039</td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Monthly "Other" Income, Monthly Business Income, Monthly Employment Income

Table 4.3 illustrates the Analysis of Variance (ANOVA) which assesses the overall significance of the model. According to the table p < 0.05, (0.003), indicating that we have sufficient evidence that the model is useful in explaining the adoption of mobile banking by the Kenyan population.

Table 4.3: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1.822</td>
<td>3</td>
<td>.607</td>
<td>3.073</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>7.511</td>
<td>38</td>
<td>.198</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9.333</td>
<td>41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Monthly "Other" Income, Monthly Business Income, Monthly Employment Income
b. Dependent Variable: Do you use Mobile Banking
Table 4.4 illustrates the Pearson’s correlation between the predictor variables. According to the table, there was positive relationship between monthly other income which covered farming income, rental income, interest income and income from insurance commission and adoption of mobile banking by the Kenya population at 0.22. Monthly business income and monthly employment income had a negative relationship with the adoption of mobile banking by the Kenyan population at -0.271 and -0.327 respectively. Consequently, an increase in both monthly business and employment income led to decreased adoption of mobile banking by the Kenyan population and vice versa.

Table 4.4: Pearson’s Correlation

<table>
<thead>
<tr>
<th></th>
<th>Do you use Mobile Banking</th>
<th>Monthly Business Income</th>
<th>Monthly Employment Income</th>
<th>Monthly &quot;Other&quot; Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you use Mobile Banking</td>
<td>1.000</td>
<td>-.271</td>
<td>-.327</td>
<td>.022</td>
</tr>
<tr>
<td>Monthly Business Income</td>
<td>-.271</td>
<td>1.000</td>
<td>.886</td>
<td>.572</td>
</tr>
<tr>
<td>Monthly Employment Income</td>
<td>-.327</td>
<td>.886</td>
<td>1.000</td>
<td>.633</td>
</tr>
<tr>
<td>Monthly &quot;Other&quot; Income</td>
<td>.022</td>
<td>.572</td>
<td>.633</td>
<td>1.000</td>
</tr>
</tbody>
</table>
5.1 Summary and Conclusions
The study’s research findings indicated that majority of the Kenyan population were male and were between 20 and 35 years. Majority were in formal employment and earned between Kshs. 7,500 and Kshs. 29,499. 24.3% of the population earned other income which covered farming income, rental income, interest income and income from insurance commission of below Kshs. 7,500. Majority of the Kenyan population had a mobile phone and had a bank account. Majority used mobile banking and used Safaricom (M-pesa) for money transfer. Most of the respondents had between 6 to 10 transactions and of banking done using mobile banking, with most of the respondents’ mobile banking at between 6 and 10 percent. The average monthly transactions engaged through mobile banking by majority of the respondents were between Kshs.1,001 and Kshs.5,000 and most of the respondents did not keep record of the charges incurred through use of mobile banking.

Findings further indicated that majority of the respondents absorbed all the charges and that most of them use mobile banking since they find it faster. Majority indicated that the use of mobile banking saved time and that they would use mobile banking whether their income was lower or higher. Majority indicated that the use of mobile banking had no effect on their income and that their individual income determines whether they used mobile banking or not.

Findings also indicated that the upper middle income was most likely to use mobile banking and that low income was least likely to use mobile banking. Between 10 to 29 percent of the respondents’ family and friends were using mobile banking and majority were upper middle class. Majority of the respondents’ family and friends were using mobile banking due to time savings, whereas most of them were not using mobile banking as they did not trust the safety of their money. Majority indicated that if the safety of their money can be guaranteed they can use mobile banking and that if they were to earn more money they would use mobile banking.
With regard to the relationship between the adoption of mobile banking and the income levels of the Kenyan population, findings indicated that there was positive relationship between monthly other income which covered farming income, rental income, interest income and income from insurance commission and adoption of mobile banking by the Kenya population. Monthly business income and monthly employment income had a negative relationship with the adoption of mobile banking by the Kenyan population. It can therefore be concluded that the more the Kenyan population earns from their employment and business income the less they utilize mobile banking. This could be attributed to the fact that such income is usually basic and individuals do not transact a lot with it as it is utilized for basic needs. In addition, most of such income is usually banked when earned, especially employment income. However, it is important to note that an increase in other income (which covered farming income, rental income, interest income and income from insurance commission), led to an increase in the adoption of mobile banking. It can therefore be concluded that such income is usually transacted more on the mobile platform as individuals earning such income consider it as “extra” income.

5.2 Recommendations
In line with the findings and conclusions of the study the following were recommended:

1. Mobile service providers should ensure that their mobile banking services are safe by adopting cutting edge technology that provides ultimate security within their systems as majority of the Kenyan population would use mobile banking if the safety of their money can be guaranteed.

2. Mobile Service providers should increase the user features of the mobile banking service and promote user knowledge among the entire Kenyan population as findings indicate that all income groups of the Kenyan population had an equal likelihood of using mobile banking.

3. The government and other stakeholders should ensure that there is favorable external business environment for mobile banking in Kenya.
5.3 Suggestions for Further Study

The researcher suggests that further study should be undertaken in order to investigate factors affecting the adoption of mobile banking amongst the different income groups in Kenya. This would shed more light on the inverse relationship observed in this research. Findings from such a study will provide more insight on the reasons behind the different adoption patterns of mobile banking in Kenya by various income segments, which could be useful in informing the relationship between adoption of mobile banking and the said factors among different income groups in the Kenyan population.
REFERENCES


APPENDIX I

The Questionnaire

The survey questionnaire will consist of two parts. The first section will focus on the respondent’s demographic information. The demographic variables include: gender, age, work status, income level, and whether the respondent has a bank account and mobile phone, the respondents will then be requested to indicate whether they currently use mobile banking. To verify the respondents’ economic category, respondents will be requested to indicate their income from various sources which will then be aggregated to determine the total income per respondent. In the second section we will ask questions which will establish the relationship between the variables in the research model.

The questionnaire will aim at identifying whether the independent variables are statistically significant effects of adoption of mobile banking on income levels. The dependent variable has been defined as: the adoption of mobile banking, whereas the independent variables selected for this study (identified through the researchers conceptual framework model) are consumption patterns, savings patterns, real income level and access to credit facilities.

Please complete the questionnaire by ticking the options applicable to your statement.

Section A: Demographic details

1. Gender
   - Male [ ]
   - Female [ ]

2. Age Group
   a) Below 20 years [ ]
   b) 20 – 35 years [ ]
   c) 36 – 49 years [ ]
   d) 50 years and above [ ]

3. Where do you stay
   …………………………………………………

4. Please describe your work status (Tick all applicable options)
   a) Student [ ]

46
b) Unemployed [ ]
c) Business [ ]
d) Formal Employment [ ]
e) Informal Employment [ ]
f) Pensioner/Retired [ ]
g) Other (Please Specify) [ ]

For questions 5-7 below, please answer where appropriate and indicate N/A where the question does not apply to you.

5. Please specify your monthly Business income (Kshs)
   a) Below 7,500 [ ]
   b) Between 7,500 and 29,499 [ ]
   c) Between 29,500 and 91,000 [ ]
   d) Over 91,000 [ ]

6. Please specify your monthly Employment income (Kshs)
   e) Below 7,500 [ ]
   f) Between 7,500 and 29,499 [ ]
   g) Between 29,500 and 91,000 [ ]
   h) Over 91,000 [ ]

7. Please specify your monthly “Other” income (Kshs)
   i) Below 7,500 [ ]
   j) Between 7,500 and 29,499 [ ]
   k) Between 29,500 and 91,000 [ ]
   l) Over 91,000 [ ]

Note: “Other” income in this case refers to Farming, Rental, Interest and income from Insurance Commission as well as any other income source not specified above.

8. Do you have a mobile phone? Yes [ ] No [ ]
9. Do you have a bank account? Yes [ ] No [ ]
10. Do you use mobile banking? Yes [ ] No [ ]

If you answered “No” to no. 10 above, please jump to question 20.

11. Please indicate which mobile service providers you use. (Tick all applicable options)
    a) Safaricom (M-Pesa) [ ]
    b) Airtel (Airtel Money) [ ]
12. Which mobile banking services do you use? (Tick all applicable options)
   
   a) Money transfer [ ]
   b) Payment of utility bills [ ]
   c) Depositing money into my bank account [ ]
   d) Withdrawing cash from the ATM [ ]
   e) Payment for goods and services [ ]
   f) Saving money [ ]
   g) Getting loans [ ]
   h) Buying airtime [ ]
   i) Other (Please specify) [ ]

13. Please specify the frequency of your monthly mobile banking transactions
   
   a) 0 – 5 transactions [ ]
   b) 6 – 10 transactions [ ]
   c) 11 – 20 transactions [ ]
   d) 21 – 30 transactions [ ]
   e) Over 30 transactions [ ]

14. What percentage of your banking do you carry out using mobile banking?
   
   a) Below 5% [ ]
   b) Between 6 – 10% [ ]
   c) Between 10 – 30% [ ]
   d) Between 31 – 50% [ ]
   e) Between 51 – 80% [ ]
   f) More than 80% [ ]

15. Please specify the average range of transactions you engage in through mobile banking per month. (In Kshs)
   
   a) Below 1,000 [ ]
   b) Between 1,001 and 5,000 [ ]
   c) Between 5,001 and 10,000 [ ]
   d) Between 10,000 and 20,000 [ ]
   e) Between 20,000 and 35,000 [ ]
   f) Over 35,000 [ ]

16. Do you keep a record of the charges incurred by you through use of mobile
banking?
Yes [ ] No [ ]

17. Do you absorb the mobile banking charges yourself or do you pass them on to the people you transact with?
   a) I absorb all charges [ ]
   b) I pass them on to others [ ]
   c) We share the charges equally [ ]

18. What are your reasons for using mobile banking? (Tick all applicable options)
   a) I find it cheaper [ ]
   b) I find it faster [ ]
   c) I find it more convenient [ ]
   d) I find it safer [ ]
   e) Other (Please specify) [ ]

19. How has the use of mobile banking impacted your life
   a) It saves me money [ ]
   b) It saves me time [ ]
   c) It has increased my earnings [ ]
   d) Nothing has changed [ ]
   e) It has decreased my earnings [ ]
   f) Other [ ]

Please explain your answers above…………………………………………………..

20. Would you use mobile banking if your income level was lower?
    Yes [ ] No [ ]

21. Would you use mobile banking if your income level was higher?
    Yes [ ] No [ ]

22. Do you think that use of mobile banking would have an impact on someone’s income in any way?
    a) Yes, it would lead to a reduction in income [ ]
    b) Yes, it would lead to an increase in income [ ]
    c) No, it would have no effect on the income [ ]

23. Do you think that an individual’s income level would determine whether or not they decide to use mobile banking? (Please explain).
    Yes [ ] No [ ]

24. What income level do you think is more likely to use mobile banking?
25. What income level do you think is least likely to use mobile banking?
   f) High income [ ]
   g) Upper middle income [ ]
   h) Lower middle income [ ]
   i) Low income [ ]
   j) The likelihood is equal amongst all income groups [ ]

26. What percentage of your family and friends use mobile banking?
   a) Less than 10% [ ]
   b) Between 10% - 29% [ ]
   c) Between 30% - 50% [ ]
   d) Between 51% - 80% [ ]
   e) Over 80% [ ]

27. Among the people you know who use mobile banking, what percentage of them can you classify as indicated below?
   a) High Income level [ ]
   b) Upper Middle level [ ]
   c) Lower Middle income level [ ]
   d) Low income level [ ]

28. Why do you think they use mobile banking?
   a) Cost savings [ ]
   b) Time savings [ ]
   c) Convenience [ ]
   d) Less risky [ ]
   e) Other (Please specify) [ ]

If you answered “no” to question 10, please proceed to answer questions 29 to 31.

29. Why don’t you use mobile banking?
   a) I find it expensive [ ]
   b) I do not trust the safety of my money [ ]
   c) I find it time consuming [ ]
d) I find the systems unreliable  [  ]
e) I find it hard to understand  [  ]
f) Other (Please specify)  [  ]

30. What changes/improvements if made to mobile banking in Kenya would make you use it?
   a) If the costs are reduced  [  ]
   b) If the safety of my money can be guaranteed  [  ]
   c) If the processes can be made faster  [  ]
   d) If the systems would be improved  [  ]
   e) If the processes are made simpler  [  ]
   f) Other (Please explain)  [  ]

31. Would a change in your income level cause you to use mobile banking?
   a) Yes, if I was to earn more money  [  ]
   b) Yes, if I was to earn less money  [  ]
   c) No  [  ]

Thank you for completing this questionnaire and assisting me in my research.

Kind Regards

Irene Muasya