

**FACTORS INFLUENCING ADOPTION OF ALTERNATIVE
BANKING CHANNELS BY COMMERCIAL BANKS LISTED IN
NAIROBI SECURITIES EXCHANGE**

BY

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the Award of a Degree of Masters of Arts in Project Planning and
Management of the University of Nairobi**

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DECLARATION

This project report is my own original work and it has not been presented in this or any other institution for the award of a master's degree, degree or diploma.

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L50/71762/2014

Date

This research report has been presented for examination with my approval as the university supervisor.

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DEDICATION

This study is dedicated to my wife Evelyn, my son Michael and my daughter Abigail. You supported, inspired and contributed in various ways to my achievement this far.

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TABLE OF CONTENT

	Page
DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS.....	x
ABSTRACT.....	xi
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	3
1.3 Purpose of the Study	5
1.4 Objectives of the Study	5
1.5 Research Questions	5
1.6 Significance of the Study	6
1.7 Limitations of the Study.....	6
1.8 Delimitation of the Study.....	6
1.9 Assumptions of the Study	7
1.10 Definition of Significant terms used in the Study	7
1.11 Organization of the Study.....	8
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction to Literature Review	9

2.2	Clients’ technological literacy factors and adoption of Alternative Banking Channels ..	9
2.3	Costs Factors and adoption of Alternative Banking Channels.....	13
2.4	Security Factors and adoption of Alternative Banking Channels	16
2.5	Regulatory policy factors and adoption of Alternative Banking Channels.....	21
2.6	Theoretical Framework	23
2.7	Conceptual Framework	24
2.8	Summary of the Chapter	26
2.9	Research Gap.....	27
CHAPTER THREE		29
RESEARCH METHODOLOGY		29
3.1	Introduction	29
3.2	Research Design.....	29
3.3	Target Population	29
3.4	Sample Size and Sampling Technique	30
3.5	Methods of Data collection	31
3.6	Research Instrument.....	31
3.7	Pilot Study	32
3.8	Validity of the instrument	32
3.9	Reliability of the instrument.....	33
3.10	Data Analysis.....	33
3.11	Ethical Considerations	34
3.12	Operational definition of variables	35
CHAPTER FOUR.....		39
DATA ANALYSIS, PRESENTATION AND INTERPRETATION		39

4.1 Introduction.....	39
4.2 Questionnaire Response Rate	39
4.3 Profiles of the Respondents	39
4.5. Clients’ technological literacy levels factors and alternative banking channels.....	42
4.6. Costs factors and alternative banking channels	46
4.7. Security factors and alternative banking channels.....	49
4.8. Regulatory policy factors and alternative banking channels	53
4.9. Regression Analysis.....	56
CHAPTER FIVE	58
DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS.....	58
5.1 Introduction.....	58
5.2 Summary of findings.....	58
5.3 Conclusion	60
5.4 Recommendations.....	62
5.5 Suggestions for further research	63
REFERENCES.....	64
APPENDICES.....	68
Appendix I: Letter of transmittal of data collection instruments	68
Appendix II: Banks’ I.T employees and branch managers questionnaire	69
Appendix III: Kenya bankers association managers’ interview guide	75
Appendix IV: Commercial banks listed in NSE.....	76

LIST OF TABLES

	Page
Table 1.1: Adoption Rates of ABCs by Commercial Banks.....	4
Table 3.1: Target Population.....	32
Table 3.2: Sampling Frame.....	33
Table 3.3 Operationalization Table of Variables.....	37
Table 4.1: Distribution of Respondents by Age Group.....	41
Table 4.2: Distribution of Respondents by Gender.....	41
Table 4.3: Distribution of Respondents by Level of Education.....	42
Table 4.4: Distribution of Respondents by Tenure of Service in the Organization.....	43
Table 4.5: Ease of functionality.....	43
Table 4.6: Ease of understandability.....	44
Table 4.7: Level of user involvement.....	45
Table 4.8: Clients' technological literacy levels.....	45
Table 4.9: Infrastructure costs.....	47
Table 4.10: Marketing costs.....	48
Table 4.11: Maintenance costs.....	48
Table 4.12: Cost factors.....	49
Table 4.13: Fear of hacking influence.....	51
Table 4.14: Fear of PIN theft influence.....	52
Table 15: Perceived security factors.....	53
Table 4.16: Legislation.....	55
Table 4.17: Customer security regulations.....	56
Table 4.18: Money transportation regulations.....	57
Table 4.19: Regulatory and supervisory factors.....	57
Table 4.20: Regression Analysis.....	59

LIST OF FIGURES

Figure 1: Conceptual Framework.....	33
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ABBREVIATIONS AND ACRONYMS

ABC	Alternative Banking Channels
ATM	Automated Teller Machine
CBK	Central Bank of Kenya
IB	Internet Banking
ICT	Information and Communication Technologies
IT	Information Technology
KBA	Kenya Bankers Association
NSE	Nairobi Securities Exchange
PIN	Personal Identification Number
ROE	Return on Equity
ROA	Return on Assets
SACCOs	Savings and Credit Cooperative Societies
SPSS	Statistical Package for Social Sciences

ABSTRACT

The purpose of this study was to investigate on factors that influence the adoption of alternative banking channels by commercial banks listed in Nairobi Securities Exchange. The study had four main objectives which were: to assess the influence of the client's technological literacy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange; to establish the influence of costs factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange; to determine the influence of security factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange; and to establish the influence of regulatory factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange. The study adopted descriptive survey design. The data was collected through a self-administered structured questionnaire to collect data from the banks' I.T employees and branch managers and interview guide to collect data from managers from the Kenya Bankers Association. The research instrument was piloted for validity through content related method and reliability through half-split criterion. A target population 1,220 Banks' I.T Employees and 903 Banks' branch managers and Kenya Bankers Association management 10 was selected. A sample size of 122 banks' I.T employees were selected using stratified sampling from a target population of 1,220 Banks' I.T Employees and 90 Banks' branch managers and 10 Kenya Bankers Association management members. The sample size was 222 composed of 122 Banks' I.T Employees, 90 branch managers from the 11 commercial banks listed in the NSE and 10 managers from the Kenya Bankers Association selected using stratified sampling and random sampling. Out of the 222 questionnaires that were administered, 180 questionnaires were duly filled and returned and therefore regarded as the responsive instrument and formed the basis for data analysis. This formed a questionnaire return rate of 81.08%. Data was analyzed through the use of Statistical Package for Social Sciences (SPSS). The data collected was analyzed by descriptive statistics. Regression analysis was conducted to determine the relationship between the five under study variables and their influence on the topic of study. Descriptive statistics such as frequencies and percentages were used to describe the data. The analyzed data was presented in form of tables. The study found out that 94%, 90%, 85% and 83% of the respondents felt that the client's technological level, cost factors, security factors and regulatory factors respectively. The factors had beta values of 0.219, 0.303, 0.219 and 0.100 respectively confirming that they are significant in the adoption of alternative banking channels. The study recommends that commercial banks should consider the clients technological level when coming up with new products and establish network surveillance and security monitoring procedures using of network scanners, intrusion detectors and security alerts. The study further suggests that more research be carried out to determine the influence of clientele charges on the adoption of the alternative banking channels.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globally intense competition in the financial services sector fueled by information communication technology (ICT) developments especially in the banking industry has necessitated most commercial banks to be innovative. Alternative banking channels using (ICT) platforms are thought to be competitors' differentiation strategy that would enable commercial banks to not only compete but also enable them provide their services to their clientele 24hours thereby improving their financial performance (Park and Weber, 2002). Further, Portela and Thanassoulis (2007) report the attraction to alternative banking channels by commercial banks is as a result of the realization that these new service delivery channels contribute to the improvement of operating efficiency in the short-term and enhances a bank's market competition ability in the long-term. Using the technology platform for alternative banking channels such as; mobile banking, agency banking and internet banking is reported to increasingly reduce costs and increase access for low-income clients in rural populations in developing countries which has brought with it profitability for commercial banks (Ivatury, 2006).

For instance, in South America stiff competition among commercial banks has necessitated most banks to be innovative and therefore adopt alternative banking channels with the main focus been correspondent banking (agent banking) as a measure of reducing the cost of delivering financial services, relieve crowds in bank branches and establish presence in new areas. For instance, Kumar et al., (2006) report this has been a success in Brazil with most banks seeking to reach the rural population adopting agent banking as an alternative service delivery channel. A similar situation has been reported in Mexico by Hernandez-Coss (2009), who observed that agent banking and mobile banking has revolutionized the way commercial banks are doing business in the country.

According to DeYoung (2005) commercial banks in Europe have also adopted alternative banking channels and more so internet banking. Karjaluo et al., (2002) reports that internet banking as an alternative banking channel was successfully adopted by commercial banks in Finland. Though they faced resistance at the introductory stages and contributed to the poor

performance of commercial banks at first, the successful adoption of alternative banking channels by commercial banks was also reported to improve the profitability of these banks in Spain over time (Hernando and Nieto 2007). Further, in the U.K retail banking as an alternative banking channel has been reported to be a success in growing personal current accounts in commercial banks in the country (Gondat-Larralde and Nier 2004). Commercial banks employees' perceptions were reported to influence the successful adoption of alternative banking channels in Greece with most banks adopting those channels that most employees were familiar with (Lymperopoulos and Chaniotakis 2004). In Germany it was reported that internet banking was the most preferred alternative banking channel adopted by commercial because of its ease of use especially among high-end clients (Stroborn et al., 2004).

In Asia, competition among banks for clientele has led to the adoption of alternative banking channels such as internet banking by commercial banks in several countries. For instance, Shrotriya, (2007) observed that though faced by various bottlenecks, to meet customer needs at low costs and in a more convenient way commercial banks in India have adopted alternative banking channels such as; mobile banking, retail banking, and internet banking. Though marred by challenges such as security and clientele literacy levels, the successful adoption of alternative banking channels such as internet banking and has also been reported in Malaysia (Boon and Ming 2003). Customer perception and satisfaction was reported to be the major factors in the adoption of alternative banking channels by commercial banks in Pakistan (Faizan 2011).

Different bottlenecks have also been reported to influence the effective adoption of alternative banking channels by commercial banks in the Middle East. For instance, in Iran perceived risk among customers and slow implementation of regulatory laws have been reported to be serious challenges for the successful adoption of alternative banking channels in the country (Daghfous and Toufaily 2007). Khamis, (2003) did report the initial adoption of alternative banking channels by 2 commercial banks in Jordan (Jordan Alhi bank and Jordan commercial bank). However, slow adoption of alternative banking channels due to issues surrounding culture has also been experienced in Jordan (Almazari and Siam 2008). Various commercial banks in Saudi Arabia have adopted alternative banking channels with the Al Rahji Bank leading the pack

(Awamleh and Fernandez 2005). Durukan (2003) did report a slow adoption of internet banking in Turkey.

Alternative banking channels have also been adopted in Africa as a differentiation strategy from competitors by commercial banks. For instance, in Ghana though faced by multiple challenges such as rejection by customers due to associated complexity at the initial stages of implementation as reported by Abor (2004); Acquah (2006) postulated that banks in Ghana were more efficient after introducing Automated Teller Machines (ATMs), mobile banking and internet banking as this reduced the long queues witnessed before. In South Africa, the adoption of alternative banking channels has also been slow more so internet banking (Singh 2004). Other scholars observed that this was due to factors such as complexity associated with technology and perceived risk (Brown and Alemayehu 2005). Slow adoption of alternative banking channels by commercial banks due to challenges associated to; ICT infrastructure and customers perceived risk has also been reported in Ethiopia (Wondwossen and Tsegai 2005).

Alternative banking channels have also been a success in Kenya. However, most clients have exhibited higher preference for mobile banking than other channels such as internet banking and agency banking (Liu and Mithika, 2009).

1.2 Statement of the Problem

There has been mixed results in regards to the adoption of alternative banking channels by commercial banks. Banking institutions are today are faced with stiff competition as well as strategic challenges emanating from changes in technology adopted by competitors and the growing and changing needs and expectations of consumers in tandem with increased education levels and growing wealth. It is the emergence of such challenges that forces commercial banks which wish to better serve their clients and improve financial performance to adopt emerging technologies that enable alternative banking channels such as; Mobile banking, ATMs, Internet Banking and Agency Banking as opposed to the traditional banking halls queuing. These channels bring with them advantages such as; convenience in accessing banking services for clients, reduced costs both for the banks and their clients and efficiency. However, there has been slow adoption of particular alternative banking channels by certain commercial banks. This study

seeks to answer the following research question: what are these factors influencing the adoption of alternative banking channels by commercial banks listed in Nairobi securities Exchange?

Table 1.1 shows which commercial bank listed in the NSE has adopted which alternative banking channel and what rate. It can be deduced that internet banking has been adopted by most commercial banks listed in the securities market with the exception of Housing Finance Co Ltd. but it is mostly a reserve of high end clients.

Table: 1.1 Adoption rates of Alternative Banking Channels by Commercial Banks Listed in the NSE

NAME OF BANK	ALTERNATIVE BANKING CHANNELS			
	Internet Banking	Mobile Banking	Agency Banking	Automated Teller Machines
Barclays Bank Ltd	High End clients	Hello Money	Nil	230ATMs countrywide
CFC Stanbic Holdings Ltd	High End Clients	CFC Mobile	Nil	38 ATMs
Diamond Trust Bank Kenya Ltd	High End Clients	DTB Mobile	Nil	57 ATMs
Equity Bank Ltd	High End Clients	Equitel	Equity Agents 6,892 as of 2013	670 ATMs in the region
Housing Finance Co Ltd.	Nil	HFC Mobile	Nil	17 ATMs
I&M Holdings Ltd	High End Clients	I&M Mobile	I&M Karibu Agents	34 ATMs
Kenya Commercial Bank Ltd	High end Clients	KCB Mobi Bank	KCB Mtaani	940 ATMs in the Region
National Bank of Kenya Ltd	High End Clients	NBK Mobile	Nil	49 ATMs
NIC Bank Ltd	High End Clients	NIC Mobile	Nil	23 ATMS countrywide
Standard Chartered Bank Ltd	High End Clients	SCB Mobile	Nil	48 ATMs countrywide
The Cooperative Bank of Kenya Ltd	High End Clients	MCoop Cash	Coop Kwa Jirani 3,585 Agents as of December 2015	165 ATMs countrywide

Source: Central Bank of Kenya

From Table 1.1 though commercial banks listed in the NSE have adopted one or two alternative banking channels majority are yet to adopt channels that have proved to be successful for their competitors such as agency banking which has been registering better financial performance for Equity Bank, Cooperative bank of Kenya and Kenya Commercial Bank. This may be as a result of barriers to successful adoption. It is for this reason that this study sought to investigate factors

that influence the adoption of alternative banking channels by eleven commercial banks listed in Nairobi Stock Exchange.

1.3 Purpose of the Study

The purpose of this study was to investigate on factors that influence the adoption of alternative banking channels by eleven commercial banks listed in Nairobi Securities Exchange which are; Barclays Bank Ltd, CFC Stanbic Holdings Ltd, Diamond Trust Bank Kenya Ltd, Equity Bank Ltd, Housing Finance Co Ltd, I&M Holdings Ltd, Kenya Commercial Bank Ltd, National Bank of Kenya Ltd, NIC Bank Ltd, Standard Chartered Bank Ltd and Cooperative Bank of Kenya Ltd

1.4 Objectives of the Study

The objectives of this study were;

1. To assess the influence of the client's technological literacy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.
2. To establish the influence of costs factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.
3. To determine the influence of security factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.
4. To establish the influence of regulatory policy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.

1.5 Research Questions

The study was guided by the following research questions;

1. How do clients' technological literacy factors influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange?
2. How do cost factors influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange?
3. To what extent do security factors influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange?

4. How do regulatory policy factors influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange?

1.6 Significance of the Study

The study may be of great value to commercial banks listed in the Nairobi Stock Exchange for it enlightens them on which factors influence their decisions to adopt alternative banking channels. The study variables may guide them in making informed decisions as a way of overcoming effects of competition relating to alternative banking channels in their marketplace. Commercial banks that the study focused on stand to gain from the documentation and analysis of their current alternative banking strategies and this may help them assess how effective their current strategy is and plan for the future in response to the changes in their working environment.

The study also contribute to the existing vast body of knowledge in factors influencing the adoption of alternative banking channels by commercial banks listed in stock exchange. Current and future researchers may also make use of the findings of this study in identifying gaps for further research.

1.7 Limitations of the Study

The study encounter challenges related to cost and time constraints that was mitigated by alterations to sample size and research design so as to maintain validity and reliability.

Respondents were usually not willing to unpack full information due to the sensitive nature of financial information. Validity of the research was maintained by crosschecking against records available to ensure reliability. .

1.8 Delimitation of the Study

The study only used respondents from Banks' I.T employees, Banks' branch managers and Kenya Bankers Association employees leaving out other people who may have relevant information. The scope of the study was eleven commercial banks listed in the Nairobi stock exchange. This study looked into how cost factors, clients' technological literacy factors, security factors, and regulatory policy factors influence the adoption of alternative banking channels by commercial banks.

1.9 Assumptions of the Study

The researcher assumed that respondents are aware of factors influencing the adoption of alternative banking channels and that banks' management and employees will not be barred by their employment contracts to freely talk on the topic of study. The study relied on information provided by the respondents and also the assumption that they were honest and available for the interview.

1.10 Definition of Significant terms used in the Study

Adoption: This refers to the uptake by commercial banks of non-traditional banking services delivery channels.

Alternative Banking Channels: It refers to new avenues and or platforms that mostly rely on information communication technology to offer and access banking services. They include; Automated Teller Machines (ATMs), mobile banking, internet banking, and use of debit cards and credit cards, electronic cheques clearance and agency banking (correspondence banking).

Cost Factors: These refers to expenses incurred by commercial banks in installing infrastructure required to facilitate the ease adoption of alternative banking channels and also charges to their clients which influences decisions by the commercial banks to adopt these channels.

Clients Technological Literacy Factors: This refers to the level of technological knowledge and skills to use alternative banking channels such internet banking, ATMs and mobile banking among commercial banks' clientele.

Nairobi Securities Exchange: This refers to a market in which shares of publicly held commercial banks are issued and traded either through exchanges or over-the-counter markets. It was previously called Nairobi Stock market but changed its name to Nairobi Securities Exchange on July 6, 2011 supporting trading, clearing and settlement of equities derivatives, debt as well as other associated instruments.

Security Factors :These relates to risk and trust issues such as; hacking, phishing and pin theft which are mostly associated to customers but can influence the decisions by commercial banks to adopt alternative banking channels the key determining factor being the number of customers adopting the channels.

Regulatory policy Factors: These refers to the laws, rules and principles laid down by the government to guide the governance and supervision of commercial banks adopting alternative banking channels. For instance, in Kenya guidance to Agency banking falls under Section 33(4) of the Banking Act.

1.11 Organization of the Study

This study is organized into five chapters. Chapter one is the introduction covering; background to the study, statement of the problem, purpose of the study explaining what the study intended to accomplish, research objectives, research question and significance of the study. The significance of the study justifies the reason for my study. This chapter also highlights delimitation and limitation of the study and assumptions of the study.

Chapter two reviews literature of the study. This chapter brings out what previous researchers have found out in the area of study. This chapter covers how various independent variables; Clients' Technological Literacy Factors, Costs Factors, Security Factors and Regulatory policy Factors influence the adoption of alternative banking channels by commercial banks from a global point of view narrowing down to the local level. It also covers theoretical and conceptual frameworks.

Chapter three is the Research methodology covering; research design, target population, sampling procedure which is discussed in detail how the sample for this study was selected. It also covers methods used for of data collection, validity and reliability of data collection instruments.

Chapter four covers data analysis, presentation and interpretation of findings, based on background information and on four variables under study which include; Clients' Technological Literacy Factors, Costs Factors, Security Factors, and Regulatory policy Factors.

Chapter five covers discussions of the findings, conclusions and recommendations. It also provides suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction to Literature Review

This chapter looks at previous literature on factors that influence the adoption of alternative banking channels by banks. The chapter also discusses the theoretical framework and the conceptual framework of the study.

2.2 Clients' technological literacy factors and adoption of Alternative Banking Channels

The decision to adopt a particular alternative banking channel that relies on ICT platforms by commercial banks is dependent on the perceived ease of use by commercial banks' clientele. These findings were supported by a study in Finland by Suoranta, (2003) who observed that clients' technology literacy levels did inform their use of mobile banking which in turn influenced commercial banks' decision in adopting this type of alternative banking channels.

In a comparative study, Laukkanen and Cruz (2009) did support these findings by pointing out that high level of technological literacy levels that enabled banks' customers to easily use mobile banking resulted to the rapid adoption of mobile banking by commercial banks in Finland as compared to the low technological literacy levels in Portugal that had a negative influence on the adoption of mobile banking by commercial banks in the country. In a study Loonam and O'Loughlin, (2008) did observe that ease of functionality of internet banking among banks' clientele did inform their use of this banking channel which in turn contributed to an increase in demand for these e-banking channel which resulted to the rapid adoption of this particular channel by commercial banks in Ireland.

Further, Georgi and Pinkl (2008) in their study did contend that high technological literacy rates among German commercial banks' clientele did lead to high rates of adoption of mobile banking by commercial banks in the country. This they argue was because of high demand for this type of e-banking channel (Georgi and Pinkl 2008). Clientele' level of technological literacy especially in relation to understandability and functionality was reported to influence the adoption of internet banking among commercial banks found in Estonia. Eriksson et al., (2008) did observe that commercial banks in Estonia had the highest number of internet banking (I.B) users in the

world due to the existence of high technological literacy levels among banks' customers. This they report did lead to the rapid adoption of internet banking among commercial banks in the country (Eriksson et al., 2008).

However, different findings were reported in Greece. Angelakopoulos and Mihiotis, (2011) in their study did report that one of the biggest barrier to the successful adoption by commercial banks e-banking challenges was perceived ease of use among their clientele. Most banks' clients shied away from the use of these new platforms which resulted to low demand for them contributing to the slow adoption of these banking channels by commercial banks as a result of fear of losses (Angelakopoulos and Mihiotis, 2011).

Studies in South America have put forward different findings. For instance, a study in Brazil by Cruz et al., (2010) through which they postulated that low levels of perceived ease of use among banks' clientele did slow the adoption of mobile banking by commercial banks. Cruz *et al.*, (2010) further pointed out that the fear of incurring losses resulting from low demand for mobile banking due to its perceived complexity by banks' customers resulted to a negative influence on the decision to adopt this alternative banking channel by most commercial banks.

Similar findings were reported in Chile on a different alternative banking channel; internet banking by Isuc (2009) who observed that ease of functionality and ease of understandability among banks' clientele did influence negative its adoption by commercial banks. Similarly in their study Burneo and Vallejo (2011) observed that the lack of ease of understandability among banks' clientele in Ecuador and the complexity associated with some e-banking channels did negatively influence the rate of adoption of mobile and internet banking commercial banks. These findings were echoed by Quispe-Agnoli and Elena (2006) who observed that perceived ease of use derailed both the roll out and adoption of alternative banking channels by commercial banks in Ecuador and El Salvador.

Chong et al., (2010) in their study did also report that non-existence of technological literacy among the rural populations did have a positive relation on the slow the adoption of internet banking by commercial banks in Vietnam. Further, Sharma and Vineet (2012) did observe that low perceived ease of use among farmers in India did lead to low demand for M-banking

services which resulted to slow adoption of this alternative banking channel by commercial banks. Most farmers could not understand M-banking functionality which meant that few did use it resulting to slow adoption by commercial banks in rural towns where these banks operated (Sharma and Vineet 2012). Low levels of understandability of the functionality of mobile banking among customers were reported to slow the rate of adoption of this alternative banking channel by commercial banks in Bahrain (Soufi and Ali 2014).

Soufi and Ali (2014) further contend that the innate features of information technology devices like mobile phones do have a negative influence on the perceived ease of use of financial services provided through these devices which results to rejection by customers thereby contributing to the slow adoption by commercial banks. In Hong Kong Yiu et al., (2007) also observed that adoption of alternative banking channels and in particular internet banking was high among commercial banks operating in areas with high literacy levels as compared to those that operated in areas with low literacy levels. This was informed by clientele demand levels (Yiu et al., 2007). Complexity associated with internet banking was reported to influence the slow adoption of this alternative banking channel by commercial banks in some parts of India and in particular the rural towns (Singh and Malhotra, 2004).

Low levels of technological literacy especially in relation to perceived ease of use and minimal mental effort required were reported to contribute to the slow adoption rates of internet banking by commercial banks in Mauritius (Padachi, et al., 2008). Similar findings were reported by Ayrga (2011) who did contend that there was a slow rate of adoption of alternative banking channels by commercial banks in the country and in particular; internet banking due to banks' clientele' technological literacy levels. The existing perceived ease of use among most banks' clientele, resulted to low demand for internet banking leading to few banks adopting this e-banking channel (Ayrga 2011). Frimpong (2010) in his study in Ghana did report that most commercial banks had adopted alternative banking channels though this was at a slow pace due to customers' technological literacy levels especially within banks operating in rural towns.

This was echoed by, Asante et al., (2011) who contend that competition among commercial banks in Ghana had necessitated them to adopt alternative banking channels but most clients did reject the adoption of internet banking due to its perceived level complexity and it was therefore

discovered that commercial banks in the country slowly introduced this innovative alternative banking channel. Further, Iddris, (2013) did observe that lack of knowledge on how to use Mobile banking among banks' clientele was reported to have a positive relationship to the derailed adoption of the alternative banking channel by commercial banks in Ghana. These findings were however disputed in an earlier study by Dankwah 2012 who had postulated that internet banking was in the right course in Ghana especially among the elite.

Similar findings were reported in a study by Agwu, et al., (2014) who argued that lack of knowledge on the use of mobile banking did have a negative influence on the adoption of this banking channel which exhibited positive relationship on the slow adoption of the same by commercial banks in Nigeria. This was echoed in a study by Thulani, et al., (2011) who observed that low understandability levels among banks' clientele that exhibited a positive relationship with wrong money transfers and transactions resulted to the low demand for mobile banking services in Zimbabwe resulting to adverse influence on the adoption rates of this alternative banking channel by commercial banks.

Studies in Eastern Africa point out that perceived ease of, ease of understandability and functionality were positively correlated to the slow adoption of alternative banking channels by commercial banks in this region (Nyaga, 2014). For instance, Bultum, (2012) did contend that lack of ease of functionality and understandability among banks' clientele on the use of e-banking channels such as Automated Teller Machines, internet banking and mobile banking has a positive relationship with the slow adoption of these alternative banking channels by commercial banks in Ethiopia.

Though adopted at a fast rate by commercial banks serving high end clients, Musiime and Ramadhan (2011) did contend that the adoption of internet banking by most banks found in Uganda and in particular those in rural towns was at very slow rates due to low clientele' understandability levels. Similar findings were reported on a different alternative banking channel in a study by Mwaikali, (2014) the lack of ease of functionality and understandability were major bottlenecks in the rapid adoption of ATMs by commercial banks in Tanzania. Most ATMs were first introduced with English as the functionality language putting off most banks'

clientele especially in rural towns which in turn slowed the adoption of ATMs by commercial banks (Mwaikali, 2014).

Clients' technological literacy levels were also reported to delay the adoption of mobile banking in Tanzania. Lin, (2011) did contend that lack of understandability on the use of mobile banking services did also derail the adoption of mobile banking among commercial banks in Tanzania. However, in Kenya Isaac (2011) pointed out that perceived ease of use and ease of functionality as factors that positively influenced the adoption of M-pesa a scenario that in turn contributed to the rapid adoption of M-banking by commercial banks in the country.

2.3 Costs Factors and adoption of Alternative Banking Channels

A study by the World Bank (2006), postulated that financial firms that use ICT experience rapid growth, invest more, and are more productive and profitable than those that do not. These findings were supported by Hernando and Nieto (2007) who did contend alternative banking channels have been celebrated as avenues of reducing commercial banks' overhead costs. However, this may take about one and a half years in terms of return on assets and about three years in terms of return on equity (Hernando and Nieto 2007).

For instance, in a study in Italy Hasan et al., (2010) did postulate that the adoption of retail banking or agency banking by commercial banks has had a positive influence on a reduction of their overhead costs. These findings were echoed through a study in Turkey by Onay, et al., (2008) who observed that most commercial banks that adopted internet banking had reported an improvement in profitability. Albeit accompanied by a lag of two years, the return on equity as result of the adoption of internet banking by commercial banks in Turkey had a positive influence on their financial performance in comparison to those that had yet to adopt the alternative banking channel but were still relying on traditional banking systems (Onay, et al., 2008). In addition to this, reduced overhead costs in terms of number of employees and paper work needed for operations were reported to have contributed to the rapid adoption of mobile banking by commercial banks in Turkey (Karahana and Yilgor, 2011).

Further, in a comparative study on the effects of internet banking on commercial banks profitability in Finland, U.K, Spain, and Italy Arnaboldi and Claeys (2008) did argue that online

banking had a positive impact on the financial performance of commercial banks that adopted it. These commercial banks had reported higher profits than those that had not introduced internet banking. These findings were however disputed through a study in the U.S by DeYoung et al., (2007) who observed that commercial banks that relied purely on online banking reported lower profits than those that had both alternative channels and traditional banking channels.

This was majorly because of high salaries for technical staff, low fee based revenues and difficulty in generating deposit funding (DeYoung et al., 2007). Gan et al., (2006) disputed these findings by arguing that the adoption of commercial banks in New Zealand was as a result of reduced costs associated with internet banking. Studies in Eastern Europe contend that commercial banks in Poland also did adopt internet banking at a fast rate due to its advantage of reduced costs (Polasik and Piotr Wisniewski, 2008). Reduced costs were reported to influence that rapid adoption of mobile banking by commercial banks in Germany (Tiwari and Buse 2007). In a separate study Scornavacca and Hoehle, (2007) argued that many banks found in Germany currently regarded mobile banking as a necessary tool for deterring negative differentiation versus rivals and to foster or retain an innovative image. According to Jerry (2005) the government of Canada did intervene to reduce barriers associated with high infrastructural costs. This did facilitate the rapid adoption of alternative of banking channels by commercial banks in Winnipeg city (Jerry 2005).

According to Kaleem and Ahmad (2008) high infrastructural and connectivity costs in Pakistan had at first derailed the adoption of e-banking channels by commercial banks in the country. However, in their study on the impact of alternative banking channels through e-banking had on the financial performance of commercial banks in Pakistan, Sumra et al., (2011) did contend that these new technologies did not only reduce costs but also improved the banks' revenue. This was echoed in a separate study by Acharya & Kshetri, (2012) who did report that mobile banking had been successfully adopted by commercial banks in Pakistan where Easy Paisa is successful and T-cash in Haiti. This they attributed to low costs of operations associated with mobile banking that also improves banks' profitability (Acharya & Kshetri, 2012).

Similar findings were reported in an earlier study by Gul et al., (2011) who observed that commercial banks that had adopted internet and mobile banking were posting better profits than

those that were yet to adopt these e-banking channels. Hua (2009) did contend that reduced costs associated with internet banking did lead to the adoption of this e-banking channel by most commercial banks in China. These findings were supported by Pooja and Singh (2009) who observed that commercial banks that had adopted internet banking in India had reported an improvement on performance than those that didn't. Yang, (2009) in his study did observe that commercial banks in Taiwan were adopting mobile banking at a first rate due to existing positive relationship between the high adoption rates among their clientele and reduced costs associated with mobile banking.

The other alternative banking channel that is reported to reduce operation costs in the banking industry and leads to improved financial performance of commercial banks is correspondence banking (agency banking). For instance, in a study McKay (2011) did postulate that commercial banks in Ghana did experience an improvement in their financial performance after the introduction of agent banking. This is because it reduced costs such as employees' costs and other bank branch development costs such as leasing buildings (McKay 2011). However, Dogbevi, (2008) in his study did blame high infrastructural and connectivity costs to the slow adoption of internet banking by commercial banks in Ghana. He further observes that most commercial banks chose to remain with their traditional models as opposed to the high costs of internet infrastructure that would not translate to profits in the short term (Dogbevi, 2008).

Hughes (2003) did observe that the biggest challenge to the adoption of alternative banking channels is the high costs of acquisition of required infrastructure. According to Carlos Gustavo (2011) high costs of marketing; infrastructure and connectivity were the biggest barriers to the adoption of alternative banking by some commercial banks in South America. These findings were echoed in a study in Colombia, by Lozano and Mandrile (2010) who argued that the high cost of marketing did derail the adoption of agency banking by commercial banks in the country. High costs of marketing of the new phenomena especially in the media did slow the adoption of agency banking by commercial banks in comparison to other countries in South America like Brazil and Bolivia (Lozano and Mandrile 2010).

Further, Maholtra and Singh (2003) did postulate that high costs of infrastructure had derailed the adoption of internet banking by commercial banks in India. Zeti Akhtar (2010) in her study

did re-emphasize the important role that government ought to reduce infrastructural costs associated with alternative banking channels. Further, Zeti Akhtar (2010) did contend that intervention by the Malaysian government to reduce costs associated with alternative banking channels did have a positive influence on the rate of adoption by commercial banks.

However, high costs are not a unique barrier to South America as observed by Andrianaivo and Kpodar (2011) in their study on the benefits of financial inclusion through ICT enabled alternative banking channels and development in Africa. High infrastructural costs were among the biggest bottlenecks for the adoption of e-banking channels in Africa. Further, Andrianaivo and Kpodar (2011) recommended that government had a key role in creating an enabling environment that would facilitate the acquisition of necessary infrastructure at affordable costs.

This was echoed by Thulani et al., (2012) who according their a study in Zimbabwe, the high costs of infrastructure needed for providing e-banking facility leads to the slow adoption of alternative banking channels. Thulani et al., (2012) further argue that these requires that banks have to have to automate front-end services and back office services, which involve high cost in terms of equipments and other computerized and communication facilities thus derailing the adoption of alternative banking channel. This was echoed through a study in Nigeria by Agwu (2011) who observed that high costs of infrastructure needed for the effective and efficient provision of alternative banking channels such as; internet banking and mobile banking but in particular internet banking had derailed the adoption of this banking channel by commercial banks.

2.4 Security Factors and adoption of Alternative Banking Channels

The perceived security factors especially among customers are reported to influence the slow adoption of alternative banking channels by commercial banks. This was echoed in a study by Grabner-Kra`uter and Faillant (2008) who observed that security issues such as; pin theft, phishing and hacking are the biggest hurdles to the rapid adoption of alternative banking channels by commercial banks. However, in a quick rejoinder Casalo et al., (2007) in their study did point out these are mostly challenges related to the adoption of internet banking. Nonetheless, Cruz, et al., (2011) in their study in Brazil did also contend that perceived risk was

a dissuading factor towards the adoption of mobile banking among banks' customers a situation that had adverse effects on the adoption of this channel by commercial banks.

These findings were supported through a study by Tanner, (2008) who observed that German banks that had already adopted mobile banking had reported a slow adoption of mobile banking by their competitors due to clientele perceived risk mostly associated with issues of privacy, confidentiality and PIN theft. Mobile banking was rejected by many U.S banks on grounds of security and privacy (Khan, 2008). These findings were supported by Sidel, (2013) who reported that it was after commercial banks had made customers comfortable with mobile banking that more and more customers were now interested with this alternative banking channel a situation that is positively influencing more commercial banks in the U.S to adopt mobile banking. Despite the advantages associated with mobile banking security and privacy issues still remain the biggest barriers to its rapid adoption; both by banks and their clients (Huili and Chunfang 2011).

Ekberg et al., (2007) in her study on four commercial banks in Sweden did report that there was a slow adoption of internet banking (I.B) by these banks due to issues related to security. The banks reported the biggest bottleneck was the threat of hacking (Ekberg et al., 2007). The fear of pin theft, phishing and hacking were among the greatest barriers that adversely influenced the adoption of E-banking channels by commercial in Romania (Moga et al., 2012). Internet banking and mobile banking were the two alternative channels that experienced the slowest adoption rates among the commercial banks in the country. According to a study by Shah (2012) ATM cards skimming, hacking and cheque payment fraud were the biggest barrier to the adoption of alternative banking channels by commercial banks in the U.K.

This was echoed by Amtul, (2011) who observed that phishing was costing commercial banks in the U.K losses amounting to millions of dollars a challenge that was dissuading new entrants from adopting internet banking. Further, apart from perceived usefulness, security issues such as phishing and hacking were reported to exhibit a negative influence on the adoption of internet banking by commercial banks in Greece (Angelakopoulos and Mihiotis, 2011). Though Estonia reported the biggest adoption of alternative banking channels by commercial banks and especially internet banking, Drigă, et al., (2009) did contend that emerging security concerns

such phishing and hacking were beginning to slow adoption by new entrants. Further, security threats such as phishing and hacking were reported to slow the adoption of internet banking (I.B) by commercial banks in Poland (Polasik and Wisniewski, 2009).

In their study Lichtenstein and Williamson (2006) also pointed out the slow adoption of internet banking by banks' customers had an adverse influence on its adoption by commercial banks. This they further argued was as result of the fear of incurring losses in the implementation process (Lichtenstein and Williamson 2006). These findings were supported by Laukkanen et al., (2007) in their study in Finland who reported that threats of phishing and hacking did have an adverse effect on the adoption of internet banking by banks' clientele which in turn resulted to the slow adoption by commercial banks. Challenges related to hacking and phishing did lead to the slow adoption of internet banking by commercial banks in the Caribbean (Robinson and Moore 2010).

In a study in India, Kumbhar (2009) reported that the biggest challenge for commercial banks in adopting alternative banking was the issue of perceived insecurity especially for internet banking among customers. These findings were supported in an earlier study by Singh (2007) who contended that phishing was the biggest hurdle to the fast adoption of internet banking among commercial banks in India. In addition, Prerna Sharma & Preeti (2011) postulated that issues related to fear of mobile malware and PIN theft had a positive relationship to the slow adoption of M-banking by banks' clientele in India which in turn had adverse influence on adoption rates by commercial banks.

Similar findings were reported in a study by Samphanwattanachai, (2007) who observed that hacking and PIN theft were the greatest threats to the adoption of internet banking by commercial banks in Thailand. These findings were echoed through a study on mobile banking adoption by Sripalawat et al., (2011) who pointed out that fear of hand set and PIN theft were major barriers to the adoption of mobile banking among banks' customers. This they argue had adverse effects on the rate of adoption of M-banking by commercial banks in the city of Bangkok. Further, Chong et al., (2010) did contend that incidents of hacking and phishing did have adverse effects on the adoption of internet banking by commercial banks in Vietnam. In their study in Bangladesh, Hassan et al., (2014) did observe the fear of mobile set and PIN theft,

and malware were reported to negatively influence the adoption of mobile banking by banks' clientele which in turn had exhibited a positive relationship with the slow adoption of this alternative banking channel by commercial banks. In their study in China Luarn and Lin (2005) did observe that issues of privacy and security were major barrier to the adoption of mobile banking by Chinese banks' clients. This they contend had a negative influence on the adoption of this alternative banking channel by commercial banks (Luarn and Lin 2005).

These findings were echoed by Zhou (2011) who argued that mobile banking was doing poorly in China due to issues relating mistrust among banks' clients. Further, Zhou (2011) argued that for improved adoption of mobile banking by commercial banks, the banks should assure their clients on transactions security of mobile banking. Deans and Gray (2010) celebrates the high rate of adoption of mobile banking by Malaysian commercial banks by contending that it was a result of security assurance to their clients which had a positive influence on the rate of adoption by both banks and clients.

Al Shibly, (2011) in a study in Jordan did postulate that, there was a slow adoption of alternative banking channels especially the electronic clearing of cheque and internet banking by commercial banks in the country due to perceived risk among banks' clientele. Similar findings were reported in the same country by Shannak, (2013) who observed that phishing, hacking and ATM cards frauds are the biggest security bottlenecks to the adoption of e-banking channels by commercial banks. Issues relating to confidentiality and fear of interference to privacy and threats to viruses were reported to be the main causes of rejection of alternative banking channels and in particular internet banking by commercial banks in Oman (Khalfan, et al., 2006).

Further, Almogbil (2004) did point out that challenges associated with hacking and phishing did exhibit a positive correlation to the derailed adoption of internet banking by commercial banks in Saudi Arabia. PIN theft and high frequency of wrong transactions was attributed to the slow adoption of mobile banking among commercial banks' clientele which was also positively correlated to the slow rate of adoption by Saudi commercial banks (Al-Somali, et al., 2009). Similarly Altintas and Gürsakal (2007) in their study observed that due to its high security risks such as phishing, internet banking had reported the slowest rates of adoption among commercials

banks in Turkey. This they argued was due to slow demands for this particular banking channel by banks' clientele (Altintas and Gürsakal 2007).

In a study in Tunisia Nasri, (2011) did contend that commercial banks did conduct a customer's survey before adopting internet banking, ATMs and Mobile banking and it is the customers perceived risks level associated with either of the channels that informed their decision to adopt one of the channels. In addition, high level of risk associated with internet banking especially through phishing and hacking was blamed for the slow adoption of internet banking by commercial banks in Tunisia (Nasri 2011). According to Akindele, (2011) fraud has the biggest bottleneck to the rapid adoption of new technology by commercial banks in Nigeria. This was echoed by Okafor and Ezeani (2012) who did postulate that ATM cards skimming and PIN theft created fear among banks' clientele resulting to the slow adoption of this alternative banking channels by commercial banks in rural towns Southern Nigeria.

Fear of PIN theft was reported to be a major barrier to successful adoption of mobile banking by banks' clientele in Nigeria resulting to the slow adoption of this banking channel by commercial banks (Agwu and Carter 2014). According to a study by Boateng and Molla (2006) the fear of internet malware, hacking and phishing were the major barriers to the adoption of internet banking by commercial banks in Ghana. These findings were supported by Ntsiful et al., (2013) who in their comparative analysis observed that less banks' clientele were adopting internet banking in Ghana as compared to Sweden due to issues related to; hacking and phishing which meant that commercial banks in Sweden were adopting this alternative banking channel because it was more secure there as compared to those in Ghana.

Though rampant in Western Africa security issues are not unique to North and Western Africa only there are also present in East Africa. For instance, in a study on the factors influencing the adoption of internet banking in Uganda, Kisaame, (2010) did put it forward that fear of comprising with confidentiality and privacy did lead the slow adoption of internet banking by banks' clientele. Further, Kisaame (2010) argues that fear of losses on investment associated with low demand of this alternative banking channel by the banks' customers had an adverse influence on the adoption rates by these commercial banks. Through their study in Kenya Gikandi and Bloor (2009) did observe that though alternative banking channels have been

successfully adopted by commercial banks in the country, some of these channels and in particular internet banking had experienced slow rates of adoption due security issues such as; hacking, phishing and confidentiality issues.

2.5 Regulatory policy factors and adoption of Alternative Banking Channels

This is the role of central banks to regulate and supervise commercial banks in their respective countries. However, this role can either have positive or negative impact on the rate of adoption of financial innovations such as agency banking, mobile and internet banking by commercial banks in their respective countries (Bolt and Uittenbogaarda, 2008). Lyman et al., (2008) however argued that the sole purpose of regulation should be to protect clientele and not to discourage the adoption of financial innovations by commercial banks.

For instance, on regulation that controls agency banking Mas and Siedek, (2008) did point out that these might include; the products that can be offered at the correspondent banking outlets, handling of cash transport by financial institutions, establishing customer requirements and consumer protection. Studies show that favorable regulation does lead to the adoption of multi-banking channels (Garau 2005). Further, Klein and Mayer, (2011) did point out that in countries such as Brazil, South Africa and Kenya where regulation was favorable the adoption of mobile banking by commercial banks was rapid in comparison to countries where regulation was unfavorable. This was unlike in India where regulations for mobile banking were at first not favorable resulting to the slow adoption by commercial banks (Rani 2006).

However, Rani (2006) cautions that though some regulation may be interpreted as retrogressive they play an important part in the financial industry as they minimize cases of fraud. In a study, Yin and Zhengzheng (2010) unfavorable regulation especially in terms of cash transportation by banks did slow the adoption of agency banking by banks in China. Further, Chong et al., (2010) did contend that unfavorable regulation by government did influence negatively the adoption of internet banking by commercial banks in Vietnam.

The role of regulation in either slowing or fast tracking the adoption of alternative banking channels is however not unique to these countries but it has also been reported to have an adverse influence in the Middle East. For instance, in a study Al-Sabbagh and Molla (2004) did

observe that an unaccommodating regulatory and supervisory environment created by the Omani government did negatively influence the adoption of alternative banking channels by commercial banks in the country. This was echoed by Al-Hajri (2008) who also postulated that lack by the Omani government to accommodate financial innovation channels such as internet banking due to fears associated to government spying and banks' clientele money safety slowed the adoption of internet banking by Omani commercial banks.

Salhieh et al., (2011) did also report that strict financial regulation did derail the adoption of alternative banking channels by commercial banks in Jordan. Most banks failed short of requirements demanded by the Jordanian Central Bank which meant that their process of adoption was cut short until they could meet the requirements (Salhieh et al., 2011). This was echoed by Al-Majali (2011) who through his study observed that the adoption of internet banking was regulated by strict laws and close supervisory played by the Jordanian Central Bank.

This is however not the case in the whole of Middle East as reported by Karahan and Yilgor, (2011) who argue that the fast rate of adoption of alternative banking channels by commercial banks in Turkey was as a result of favorable regulation and a cordial supervisory relationship between the banks and the Central bank of the republic of Turkey. Further, Karahan and Yilgor, (2011) put it forward that it is the creation of such an enabling environment that built confidence among banks' clientele leading to an increase in the demand for these services especially among high end clients resulting to the rapid adoption.

The enactment of favorable laws in Africa has also been celebrated as a positive factor in the adoption of alternative banking channels. For instance, as reported in a study by Oforu-Adarkwa (2012) who contended that laws enacted by the Ghanaian government such as the cyber security bill and the data protection bill had created an enabling environment for commercial banks to adopt both mobile and internet banking. This he argues was because the laws had created confidence among the banks' clientele on the banks' ability to safeguard their transactions details. It is with such confidence that he further contends that the demand for these channels by customers grew facilitating the rapid adoption by commercial banks (Oforu-Adarkwa 2012).

However, Ezeoha (2006) in his study did report a different situation in Nigeria where weak legislation in relation to cyber-crime was reported to derail the adoption of internet banking by banks' customers which had a negative influence on the adoption rates by commercial banks. These findings were echoed by Agboola and Salawu (2008) who observed that the realization of an optimized adoption and use of alternative banking by both banks' clientele and commercial banks would only be after the enactment of reliable legislation that protects the banks customers and the banks.

2.6 Theoretical Framework

This study will be hinged on one theory;, Diffusion of Innovation Theory and the Transactions Costs Innovation Theory.

Diffusion of Innovation Theory

Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions in this case alternative banking channels is adopted and becomes successful. Rogers, (2003) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. According to Rogers (2003) factors that are a determinant of adoption of an innovation include: complexity, relative advantage, and compatibility. This is believed that, an innovation with relative advantage, with less complexity and compatible will be adopted easily and faster by an individual.

The easiness of use and newness (in terms of persuasion, knowledge and the decision to adopt) of an innovation can determine the way an individual will respond to an innovation (Porteous, 2011). Rogers (2003) also points out that not all innovations are adopted even if they are good it may take a long time for an innovation to be adopted. He further stated that resistance to change may be a hindrance to diffusion of innovation although it might not stop the innovation it will slow it down (Rogers 2003).

This theory addresses research questions seeking to unpack the influence of clients' technological literacy levels factors and perceived security factors in the adoption of alternative

banking channels by commercial banks listed in Nairobi Securities exchange, the theory will explain the key roles that these two factors play as part of the overall system that makes up commercial banks and how these influence their operations in relation to alternative banking channels.

2.7 Conceptual Framework

The successful adoption of alternative banking by commercial banks listed in the Nairobi Securities Exchange is influenced by these factors: Clients' Technological Literacy Levels, Cost Factors, Security and Regulation policy Factors. A conceptual framework is a model of presentation where a researcher represents the relationship between variables in the study and showing the relationship diagrammatically (Orodho, 2009). The influences brought about by these factors either directly or indirectly are the study's independent variables and their correlation with the study's dependent variable .Successful Adoption of Alternative Banking Channels is as illustrated in Figure 1

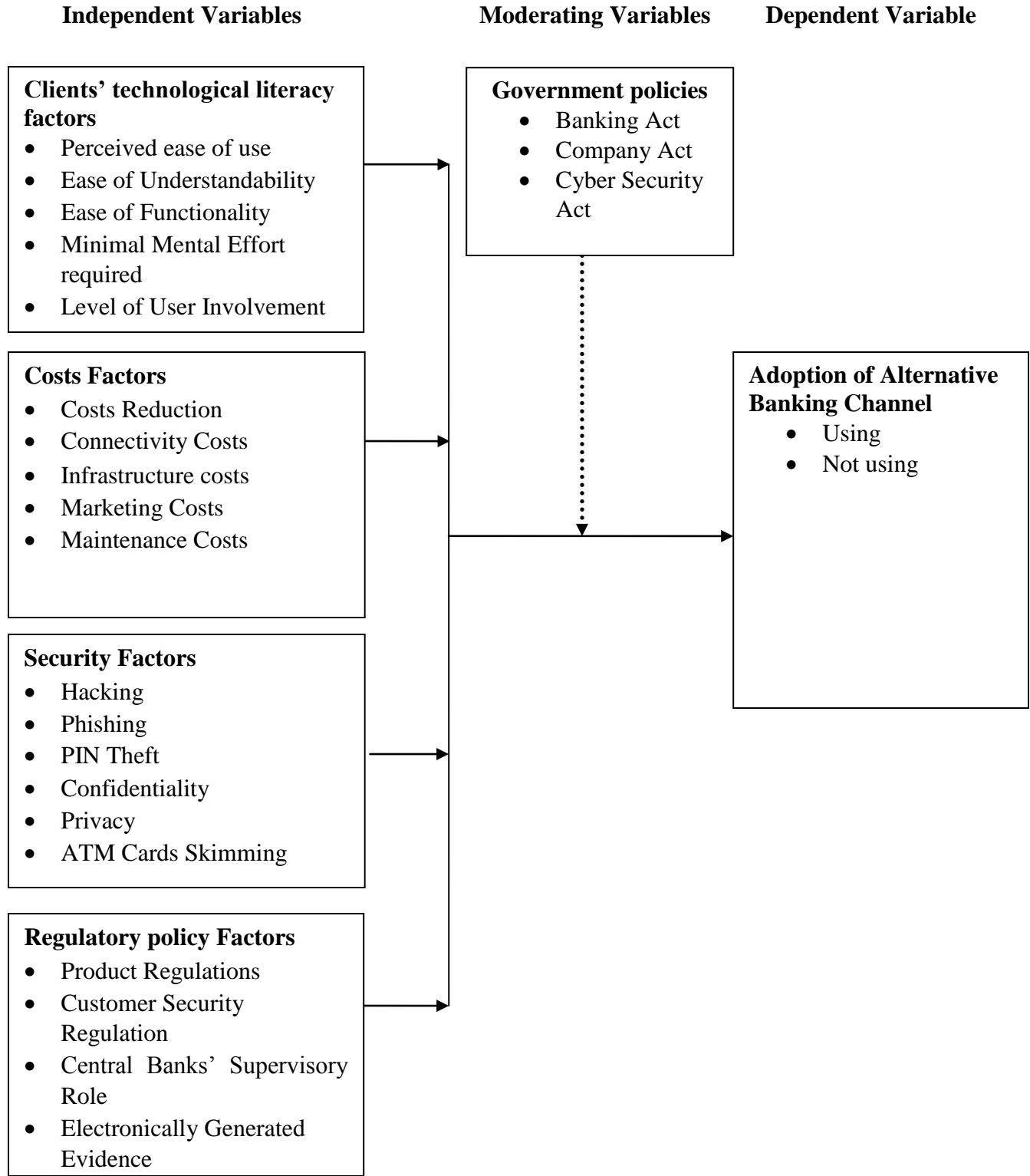


Figure 1: Conceptual Framework

Clients' technological literacy factors. These are dependent factors such as Perceived ease of use, Ease of Understandability, Ease of Functionality, Minimal Mental Effort required, Level of User Involvement and how they affect adoption of alternative banking channels.

Costs Factors. These are dependent factors that affect adoption in terms of Connectivity Costs, Infrastructure costs, Marketing Costs and Maintenance Costs.

Security Factors. These are dependent factors that influence adoption of alternative banking channels in terms of security. They include; Hacking, Phishing, PIN Theft, Confidentiality, Privacy and ATM Cards Skimming.

Regulatory policy Factors. These are governmental regulations and supervisions dependent factors. They include; Product Regulations, Customer Security Regulation, Central Banks' Supervisory Role and Electronically Generated Evidence.

Government policies-These are law moderating factors and they include; Banking Act, Company Act and Cyber Security Act.

Adoption of Alternative Banking Channel-This was the independent and was evaluated by either being used or not used.

2.8 Summary of the Chapter

Mwaikali, (2014) in his study did report that the lack of ease of functionality and understandability due to the language of functionality as a major bottleneck in the rapid adoption of ATMs by commercial banks in Tanzania in both major towns and rural towns. Similarly lack of perceived ease of use was reported to derail the adoption of alternative banking channels by commercial banks as reported by Iddris, (2013) and Angelakopoulos and Mihiotis, (2011) in Ghana and Greece respectively.

Boateng and Molla (2006) in their study in Ghana did put it forward that the fear of internet malware, hacking and phishing were the major barriers to the adoption of internet banking by commercial banks. Altintas and Gürsakal (2007) and Drigã et al., (2009) did report similar results in their studies in Turkey and Estonia respectively. However, Deans and Gray (2010) report different results in Malaysia where efforts by government to deal with security issues were reported to have a positive influence in the adoption of mobile banking.

Reduced costs associated with internet banking were reported by Hua (2009 to have a positive influence in its adoption by most commercial banks in China). Acharya & Kshetri, (2012) did report of the same effect on mobile banking having been successfully adopted by commercial banks in Pakistan where Easy Paisa is successful and T-cash in Haiti. However, Thulani et al., (2012) did observe that high infrastructural costs derailed the process of adoption in Zimbabwe while Zeti Akhtar (2010) did contend that government intervention did reduce costs associated with alternative banking channels which a positive influence on the rate of adoption by commercial banks.

Yin and Zhengzheng (2010) unfavorable did slow the adoption of agency banking by banks in China. However, Ofosu-Adarkwa (2012) observed that favorable regulation; cyber security bill and the data protection bill had created an enabling environment for the adoption of internet and mobile banking by commercial banks in Ghana.

This chapter has reviewed literature on how clients' technological literacy levels, cost factors, security factors and regulation policy factors influence the adoption of alternative banking channels by commercial banks. To this effect, the chapter also comes up with a theoretical framework and a conceptual framework.

2.9 Research Gap

The Mwaikali, (2014) study in Tanzania only looks at adoption of ATMs it does not look at other alternative banking channels like mobile and internet banking and how the adoption of this are influenced by perceived ease of use. The Eriksson et al., (2008) study also looks at the adoption of internet banking but doesn't look at how other alternative banking channels are influenced. This study seeks to fill this research gap.

The Lozano and Mandrile (2010) study in Colombia doesn't look at how government intervention to reduce costs would facilitate the adoption of alternative banking channels; it only looks at how costs derail the adoption process. Similarly the study by Agwu (2011) in Nigeria does look at how government intervention to reduce infrastructural costs would facilitate the adoption of alternative banking channels by commercial banks it only looks at how these costs derail the adoption process. This study seeks to fill this research gap.

The research also seeks to fill a research gap on whether the same findings by Deans and Gray (2010) in Malaysia and Ofosu-Adarkwa (2012) in Ghana can be replicated for the realization of successful adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.

This study the researcher seeks to fill a research study gap on the factors influencing adoption of alternative banking channels by commercial banks listed on Nairobi securities exchange.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the research design used in the study, the target population, sampling techniques used and determination of sample size, research instruments construction, pilot study, and methods of data collection, validity and reliability of research instruments used for data collection.

3.2 Research Design

This study adopted the descriptive survey research design. Research design is the plan adopted by a research which enables a researcher to carry out various research operations, hence creating a favorable environment to access sufficient information with very little expenditure on effort, time and financial resources (Creswell,2009).Descriptive survey research design was used because it assist the researcher to gather both qualitative and quantitative data on how study variables such as; cost factors, clients' technological literacy factors, perceived security factors, and regulatory and supervisory factors influence in the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange. Further, this design is more specific and accurate because it involves description of events in a conscientiously outlined way. This research design also portrays fully the characteristics of a population (Chandran, 2004).

3.3 Target Population

A population is the entire group of individuals or items under consideration in any field of inquiry and have a common attribute (Babbie,2010).The population of this study was 2,133 respondents and included; 1,220 Bank I.T. employees, 903 Banks' branch Managers and10 Kenya Association of bankers Management. It is these respondents that were used to collect the necessary data required for this study because they are familiar with the variables under study and how they influence the adoption of alternative banking channels by commercial banks in the study locale.

This is represented in Table 3.1 on target population

Table 3.1 Target Population

Respondents	Target Population
Banks' I.T Employees	1,220
Banks' Branch Managers	903
Kenya Bankers Association Management	10
Total	2,133

Source: Kenya Bankers Association and Nairobi Stock Exchange (2016)

3.4 Sample Size and Sampling Technique

A sample frame is a collection of information used to classify a sample population for statistical treatment (Christensen, et al., 2011). To obtain a good sample frame, the researcher had to include all individuals in the target population, excluded all individuals not in the target population and included accurate information that could be used to contact individuals selected. Cooper and Schindler (2006) explained that the basic idea of sampling is, selecting some of the elements in a population, so that the same conclusions can be drawn about the entire population. This resulted to reduced cost and greater accuracy of results.

The researcher adopted Mugenda and Mugenda (2003) sample size determination formula which advises the use of a sample of between 10% and 30% and concludes that 30% is adequate for any analysis. For this study 10% as recommended by Mugenda and Mugenda (2003) was used to determine the sample and therefore the sample for Banks' I.T. employees was 122, sample for Banks' branch Managers were 90 and sample for Kenya Association of bankers Management was 10 being 10% of each respectively. This is represented in Table 3.2.

Table 3.2 Sampling Frame

Respondents	Target Population	Sample Size
Banks' I.T Employees	1,220	122
Banks' Branch Managers	903	90
Kenya Bankers Association Management	10	10
Total	2,133	222

3.5 Methods of Data collection

Before collection, permission was sought from all organisations involved. The researchers then distribute questionnaires to relevant respondents with a brief introduction of the nature of the research; confidentiality was assured and only ID numbers were required. The respondents were given sufficient time allowance to answer the questionnaire. The questionnaires gathered contained all needed data for the study and was organised, summarized, analysed in an easy to interpret.

3.6 Research Instrument

The researcher used both questionnaires and an interview schedule to collect the data required for this study. Primary data was collected using a structured questionnaire was used by researcher to collect primary data that both closed and open ended questions were inclusive. Closed questions consisted of a fixed set of questions to be answered by banks' I.T employees in a specified sequence and with a pre-designated response options. Open ended questions were not restrictive to the respondents. Open ended questions provided respondents with opportunities to reveal information in a naturalistic way.

The questionnaire was divided in 5 sections. Section one requested the respondent to fill in his or her background information, whereas the remaining 4 sections consisted of variables which the researcher intends to research on. The sections were; Cost Factors, Clients Technological Literacy Factors, Security Factors, Regulatory Policy Factors and the adoption of alternative banking channels. The questionnaires were administered in person through the use of the drop

and pick later method to the sampled respondents. To ensure a good response rate is realized, a register of the questionnaires were maintained to facilitate tracking of the research collection instrument.

Primary qualitative data for this study was collected with the help of a properly designed and unstructured interview schedule. This gave the respondents freedom to fully express themselves without limitations and enable the researcher to gather more information which otherwise would be difficult to get. Personal interviews conducted with the help of the interview schedule gave the researcher an opportunity for close examination to gather more information and the respondents an opportunity to ask the researcher any questions regarding the research topic. The research prepared interview 10 guides for Banks' branch managers and Kenya Bankers Association managers. The researcher conducted the interviews in person and also with the help of research assistants.

3.7 Pilot Study

A pilot study was conducted in Kenya Commercial Bank Ltd, Equity Bank Ltd, Cooperative Bank Ltd, National Bank of Kenya Ltd and Diamond Trust Bank Kenya Ltd Meru Branch. The research instrument was piloted on a small representative sample but the group was not used in the actual study. It involved ten (2) random staff from each of the banks who were approached and interviewed. The respondents were not inclusive in the actual research sample size. The pilot study was used to enable the researcher check whether the items used were valid and reliable and as well as correct misunderstanding, check language level while eliminating ubiquity at the right time. The pilot also extracted comments from respondents which helped in improving the instruments, modifying and making clear the instructions given in order to avoid misinterpretation during the actual data collection.

3.8 Validity of the instrument

According to Leedy and Ormrod, (2005) the validity of a research instrument refers to the degree to which the instrument measures what it is expected to measure. This is echoed by Saunders, et al., (2009) who emphasize that validity is achieved when a research instrument measures what it is intended to measure. The researcher used content validity of the research instruments through

constant consultations with experts and supervisors. This helped the researcher in establishing whether the chosen measurement tools included a sufficient and indicative set of items to cover the concept under study. Consultations also assisted the researcher in making modifications to the structure of research tools as advised by experts.

3.9 Reliability of the instrument

A research instrument is considered reliable when it consistently generates the same results when the units being measured hasn't changed (Sekaran and Bougie, 2010). The study adopted internal consistency procedure, through which the researcher used Cronbach Alpha to check the reliability of instruments to be used in the study. Alpha values range from 0 to 1 and a coefficient of 0.7 is acceptable with 0.8 and or higher indicating good reliability of the instruments (Delafrooz, et al., 2009). Further, to check reliability of the research instruments and address any deficiencies in the research instruments, the researcher also conducted a pilot study using 10–20% of the main sample size as recommended by (Neuman, 2005). Therefore, the researcher conducted this study's pilot study on 44 respondents from the target population. The results of the pilot study were discussed with experts and supervisors to come to a conclusion on the reliability of the research instruments. For this study the data collection instruments had a coefficient of 0.83 and are therefore reliable for the purposes of conducting the study.

3.10 Data Analysis

Zikmund, et al., (2009) define data analysis as the technique that involves the packaging of collected information, formulating and arranging its main components to such a degree that it can be easily and effectively conveyed. The researcher sorted, edited, coded and analyzed primary data collected so as to ensure that errors and points of contradiction are eliminated. Quantitative data for each research question was also tabulated for purposes of providing the researcher with a comprehensive picture of how the data looked like and also assisting the researcher in identifying patterns.

For reliable analysis, SPSS version 21.0 was used to analyze collected data and was presented using descriptive statistic such as frequencies, mean, variance and standard deviation. Results of the analysis made it easy for the researcher to make valid conclusions on the topic of study. Content analysis was used to analyze data from the interview schedule and open ended questions

and the results from this analysis were presented in themes as per the study's objectives. Frequencies and percentages was used to summarize information.

The researcher also used a multivariate regression model to determine the relationship between the four variables and their influence on the topic of study. This is an adjustable method of data analysis that is appropriate in the occasion that the researcher seeks to examine the relationship between the dependent variable any other factors. The correlation may be linear which means that the degree to which the change in the dependent variable is related to the change in the independent variables (Hair et al., 2006).

The regression model was as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where:

Y = Adoption of Alternative Banking Channels by Commercial banks listed in NSE

β_0 = Constant Term

$\beta_1, \beta_2, \beta_3,$ and β_4 = Beta coefficients

X_1 = Clients' Technological Literacy Factors

X_2 = Cost Factors

X_3 = Perceived Security Factors

X_4 = Regulatory and Supervisory Factors

ε = Error term

3.11 Ethical Considerations

Consent was sought from intended research participants to indicate the willingness to participate; the researcher also ensured anonymity when it came to answering the study questionnaire. The researcher ensured that the information was used for research purposes only. To conduct this study, the researcher also sought a permit from the Commission for Science, Technology and Innovation and the Kenya Association of Bankers. The researcher also acknowledged secondary data from all literatures collected for the purpose of this study in the reference list.

3.12 Operational definition of variables

Denscombe, (2007) defines the operational definition of variable as the Actual method, tool, or technique which indicates how the concept will be measured. The variables are defined as showed on Table 3.3.

Table 3.3 Operationalization Table of Variables

Objective	Variable	Indicators	Measurement	Measurement Scale	Data Analysis
To assess the influence clients technological literacy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.	<u>Independent Variable</u> Clients' Technological Level Factors	Perceived Ease of Use	Number of I.T Employees, Bank and KBA managers reporting that perceived ease of use does influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
		Ease of Understandability	Influence of ease of understandability on the adoption of alternative banking channels by commercial banks.	Interval Scale	Descriptive Statistics
		Ease of Functionality	Number of I.T Employees, and Banks' managers reporting that perceived ease of use does influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
		Level of User Involvement	Number of I.T Employees, and Banks' managers reporting that perceived ease of use does influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
To establish the influence of costs factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.	<u>Independent Variable</u> Costs Factors	Operations Costs Reduction	Number of I.T Employees, Bank and KBA managers reporting that operations costs reduction does influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
		Infrastructure Costs	Number of I.T Employees, and Banks' managers reporting that infrastructure costs do influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
		Marketing Costs	Influence of marketing costs on the adoption of alternative banking channels by commercial banks.	Interval Scale	Descriptive Statistics
		Maintenance Costs	Number of I.T Employees, and Banks' managers reporting that maintenance costs do influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
		Connectivity	Number of I.T Employees, and Banks' managers reporting that maintenance costs do	Nominal Scale	Descriptive Statistics

		Costs Banks' Profitability	influence the adoption of alternative banking channels by commercial banks. Number of I.T Employees, Bank and KBA managers reporting that operations costs reduction does influence the adoption of alternative banking channels by commercial banks.	Nominal Scale	Descriptive Statistics
To determine the influence of security factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.	<u>Independent Variable</u> Security Factors	Hacking ATMs Cards Skimming PIN Theft Privacy Issues	Influence of hacking on the adoption of alternative banking channels by commercial banks. Number of I.T Employees, and Banks' managers reporting that maintenance costs do influence the adoption of alternative banking channels by commercial banks. Number of I.T Employees, Bank and KBA managers reporting that operations costs reduction does influence the adoption of alternative banking channels by commercial banks. Influence of hacking on the adoption of alternative banking channels by commercial banks.	Interval Scale Nominal Scale Nominal Scale Interval Scale	Descriptive Statistics Descriptive Statistics Descriptive Statistics Descriptive Statistics

<p>To establish the influence of regulatory policy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.</p>	<p><u>Independent Variable</u> Regulatory policy Factors</p>	<p>Product Regulations CBK's Supervisory Role Customers' Security Regulations Money transportation regulations</p>	<p>Influence of specific product regulations on the adoption of alternative banking channels by commercial banks. Number of I.T Employees, Bank and KBA managers reporting that CBKs supervisory role does influence the adoption of alternative banking channels by commercial banks. Influence of customers' security regulations on the adoption of alternative banking channels by commercial banks. Number of I.T Employees and Banks' managers reporting that money transportation regulations do influence the adoption of alternative banking channels by commercial banks.</p>	<p>Interval Scale Nominal Scale Interval Scale Nominal Scale</p>	<p>Descriptive Statistics Descriptive Statistics Descriptive Statistics Descriptive Statistics</p>
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CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter is on data analysis, presentation and interpretation. The first section in this chapter is on the response rate of the respondents. The second section of this chapter covers the profiles of respondents. The third section in this chapter covers analysis, presentation as well as interpretation of the relationships under investigation of the study. The presentation and interpretation was in line with the study's objective. The findings are presented in the form of tables showing frequencies and percentages. Since descriptive research design was used in this study, descriptive analysis was carried out in this chapter. For each research objective, descriptive analysis was first done by use of the percentiles and frequencies.

4.2 Questionnaire Response Rate

A sample size of 222 respondents from a research population of 2,133 was selected. Questionnaires were administered to a sample of 122 Banks' I.T. employees, 90 Banks' branch Managers and 10 Kenya Association of bankers Management as respondents. Out of the 222 questionnaires that were administered, 180 questionnaires were duly filled and returned and therefore regarded as the responsive instrument and formed the basis for data analysis. This formed a questionnaire return rate of 81.08%. Saunders et al. (2003) indicate that 30 to 50 percent response rate is reasonable enough for statistical generalizations.

4.3 Profiles of the Respondents

This section profiles the respondents in respect to age, gender, age, level of educational and duration of service in the organization. Profiling of the respondents was informed by the items in the research instruments used in the study.

4.3.1 Distribution of Respondents by Age Group

Respondents were asked to indicate their age group in years. This was done to understand the age distribution of the respondents and since an individual's age was not a consideration in the selection of respondents in this study an age groups were classified into eight categories: 20 – 29

years; 30 – 39 years; 40 – 49 years; and over 55 years. The responses were as shown in Table 4.1.

Table 4.1: Distribution of Respondents by Age Group

Age group	Frequency	Percentage
20 – 29 years	65	36
30 – 39 years	58	32
40 – 49 years	36	20
Over 50 years	21	12
Total	180	100

Table 4.1 indicates that 36% of the respondents were between the ages of 20 and 29 years; 32% between 30 and 39 years; 20% of the respondents between 40 and 49 years; and 12% of the respondents were above 55 years of age. This implies that majority of the majority of the respondents are youthful hence, more conversant with technological advancements in the banking sector.

4.3.2 Distribution of Respondents by Gender

Data was sought on whether respondents were males or females. The study found it important to analyze gender distribution of the respondent so as to compare the level of participation. The study gave no preferential consideration to none of the gender in the selection of respondents. Respondents were therefore asked to indicate their gender. The responses were as shown in Table 4.2

Table 4.2: Distribution of Respondents by Gender

Gender	Frequency	Percentage
Male	102	57
Female	78	43
Total	180	100

Table 4.2 indicates that 57% of the respondents were males while 43% were females. Thus, respondents in this study were skewed in respect to spread of gender. This implied that the men

dominate in such positions. The findings also indicated that the researcher observed gender balance during the administration of questionnaires.

4.3.3 Distribution of Respondents by Level of Education

The respondents were asked to indicate their highest education level. Respondent’s level of education was considered important in this study in respect to responding to the research instruments as well understanding the alternative banking channels by commercial ban. The options that were provided in this item were: certificate; diploma; degree; post graduate degree; and others. The responses were as shown in Table 4.3.

Table 4.3: Distribution of Respondents by Level of Education

Highest education level	Frequency	Percentage
Certificate	3	2
Diploma	24	13
Degree	108	60
Post graduate	45	25
Other (specify)	0	0
Total	160	100

The results in Table 4.3 indicate that 2% of the respondents had certificate, 13% had diploma, 60% had bachelor degree while 25% had post graduate qualification. The level of education for the respondents was considered important for this study because the respondents were required to fill in the questionnaire on their own. Therefore the data collection procedures used in the study were based on the assumption that the respondents were literate and with basic understanding of the importance of research and therefore they would willingly act as the respondents in the study.

4.3.4 Distribution of Respondents by Duration of Service in the Organization

Respondents were asked to indicate how long they had worked in their organizations. The study found it important to analyze the duration for which the respondent had worked. The data was clustered and categorized as shown in Table 4.4.

Table 4.4: Distribution of Respondents by Tenure of Service in the Organization

Duration of service	Frequency	Percentage
5 years and below	30	17
5 – 9 years	89	49
10 – 19 years	46	26
20 years and above	15	8
Total	180	100

The results in Table 4.4 indicate that 17% of the respondents had worked in their current organization for five years and below, 49% had worked for a period of 5-9 years, 26% had worked for a period of 10-20 years while 8% had worked for a period above 20 years. This implies that opinions from respondents was sought for those who had been in occupation long enough to understand the factors under study and their influence on the adoption of the alternative banking channels.

4.5. Clients’ technological literacy levels factors and alternative banking channels

The study sought to determine the influence of the clients’ technological literacy levels on the adoption of the alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses are presented in Table 4.5 to Table 4.9.

4.5.1. Ease of functionality

The study sought data whether ease of functionality influence the adoption of the alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.5

Table 4.5: Ease of functionality

Ease of functionality	Frequency	percentage
Yes	150	83
No	30	17
Total	180	100

The results in Table 4.5 indicate that 83% of the respondents agreed that ease of functionality while 17% disagreed. This implies that alternative banking channels with easy functions are more likely to be adopted.

4.5.2. Ease of understandability

The study sought data whether the ease of understandability influence the adoption of the alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.6.

Table 4.6: Ease of understandability

Ease of understandability	Frequency	percentage
Yes	168	93
No	12	7
Total	180	100

The results in Table 4.6 indicate that 93% of the respondents agreed while 7% disagreed that ease of understandability influence the adoption of the alternative banking channels. This implies that alternative banking channels which are easy to understand how they operate are more likely to be adopted.

4.5.3. Ease of use of alternative banking channels

The study sought data whether ease of use of alternative banking channels influence their adoption by the clients. The study found out that majority of the clients perceived alternative banking channels which are easy to use are more likely to be adopted.

Table 4.7: Ease of use

Ease of understandability	Frequency	percentage
Yes	165	92
No	15	8
Total	180	100

The results in Table 4.7 indicate that 92% of the respondents agreed that that ease of use of the alternative banking channels influence the adoption of such channels with 8% disagreeing. This implies that alternative banking channels which are easy to use are more likely to be adopted.

4.5.4. Level of user involvement of alternative banking channels

The study sought data whether the level of user involvement of alternative banking channels such as ATMs influence institution’s adoption of alternative banking channels. The responses were as shown in Table 4.7.

Table 4. 8: Level of user involvement

Level of user involvement	Frequency	percentage
Yes	170	94
No	10	6
Total	180	100

The results in Table 4.8 indicate that 94% of the respondents agreed that that involving the clients in alternative banking channels influence the adoption of such channels. However, 6% disagreed that user involvement has no influence on the adoption of the alternative banking channels. This implies that when the users are involved in the adoption of alternative banking channels then such alternative channels are more likely to be adopted as the clients are more acquainted with them.

4.5.5. Extent of the clients’ technological literacy levels factors influence the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange

The study data on the extent of influences of the clients’ technological literacy levels factors on the adoption of alternative banking channels by commercial banks. The responses were as shown in Table 4.8.

Table 4.9: Clients’ technological literacy levels

Clients’ technological literacy level	VG	G	M	L	VL
Clients’ perceived ease of use	86	65	20	7	2
Ease of understandability	96	54	18	8	4
Ease of Functionality	82	48	37	8	5

Level of user involvement	85	53	35	4	3
Minimal mental effort required	92	45	29	10	4
Total	441	265	139	37	18

The results in Table 4.8 indicate that 48%, 36% and 11% asserted that the clients' perceived ease of use very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 4% and 1% showed that clients' perceived ease of use has low and very low influence on the adoption of alternative banking channels respectively. 53%, 30% and 10% indicated that the ease of understandability very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 5% and 2% showed that ease of understandability has low and very low influence on the adoption of alternative banking channels respectively.

The results also showed that 46%, 27% and 20% asserted that the ease of functionality very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 4% and 3% showed that ease of functionality has low and very low influence on the adoption of alternative banking channels respectively. 47%, 30% and 19% asserted that the level of user involvement very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 2% and 2% showed that level of user involvement has low and very low influence on the adoption of alternative banking channels respectively.

The results also indicated that 51%, 25% and 16% asserted that the minimal mental effort required very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 6% and 2% showed that minimal mental effort required has low and very low influence on the adoption of alternative banking channels respectively. Generally, 49%, 30% and 15% asserted that the clients' technological literacy level very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 4% and 2% showed that the clients' technological literacy level has low and very low influence on the adoption of alternative banking channels respectively.

4.6. Costs factors and alternative banking channels

The study sought data to determine the influence of the cost factors on the institution's adoption of alternative banking channels. The responses are presented in Table 4.10 to Table 4.13.

4.6.1 Operations costs reduction

The study sought data whether the operations costs reduction influences institution's adoption of alternative banking channels. The study found out that one of the driving agendas of the adoption of the alternative banking channels is its association with reduction of cost of operation. Even though the initial cost of acquiring the infrastructure is high, the cost of operation is reduced in the long terms as such channels reduce the number of personnel required, fast track operations, increase market growth and enhance accessibility. Thus, the alternative channels are more likely to be adopted due to the perceived operation costs reduction.

4.6.2. Infrastructure costs

The study sought data whether the infrastructure cost influences adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.9.

Table 4.10: Infrastructure costs

Infrastructure costs	Frequency	percentage
Yes	180	100
No	0	0
Total	180	100

The results in Table 4.9 indicate that all the respondents (100%) concurred that the cost of the infrastructure influences the institution's adoption of alternative banking channels. This implies that the cost of the acquiring the infrastructure must be considered when adopting any alternative channel.

4.6.3. Marketing costs

The study sought data whether marketing costs influence adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.10.

Table 4.11: Marketing costs

Marketing costs	Frequency	percentage
Yes	108	60
No	72	40
Total	180	100

The results in Table 4.10 indicate that the marketing costs influence the adoption of alternative banking channels as affirmed by 60% of the respondents. However, 40% felt that marketing costs have no influence on the institution's adoption of alternative banking channels. This implies that the marketing costs must be considered when adopting any alternative channel.

4.6.4. Maintenance costs

The study sought data whether maintenance costs influence adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.11.

Table 4.12: Maintenance costs

Maintenance costs	Frequency	percentage
Yes	160	89
No	20	11
Total	180	100

The results in Table 4.11 indicate that 89% of the respondents agreed that maintenance costs influence the institution's adoption of alternative banking channels. However, 11% of the respondents disagreed that maintenance costs influence the institution's adoption of alternative banking channels. This implies that the maintenance costs must be considered when adopting any alternative channel.

4.6.5. Connectivity costs

The study sought data whether the connectivity costs influence the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The study found that that connectivity costs influence the institution's adoption of alternative banking channels. This implies that the connectivity costs must be considered when adopting any alternative channel.

4.6.6. Extent of the cost factors influence on the adoption of alternative banking channels by commercial banks

The study sought data to assess the extent to which the cost factors influence the adoption of alternative banking channels by commercial banks. The responses were as shown in Table 4.12.

Table 4.13: Cost factors

Cost factor	VG	G	M	L	VL
Costs Reduction	120	36	10	9	5
Connectivity Costs	85	34	22	20	19
Infrastructure costs	160	15	5	0	0
Maintenance Costs	140	25	10	3	2
Marketing Costs	80	45	24	18	13
Total	585	155	71	50	39

The results in Table 4.12 indicate that 67%, 20% and 5% asserted that the operation costs reduction very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 5% and 3% showed that operation costs reduction has low and very low influence on the adoption of alternative banking channels respectively. 47%, 19% and 12% indicated that the connectivity costs very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 11% and 11% showed that connectivity costs has low and very low influence on the adoption of alternative banking channels respectively.

The results also showed that 89%, 8% and 3% asserted that the infrastructure costs very greatly, greatly and moderately influence adoption of alternative banking channels respectively. 78%,

14% and 5% asserted that the maintenance costs very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 2% and 1% showed that maintenance costs has low and very low influence on the adoption of alternative banking channels respectively.

The results also indicated that 45%, 25% and 13% asserted that the marketing costs very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 10% and 7% showed that marketing costs has low and very low influence on the adoption of alternative banking channels respectively. Generally, 65%, 17% and 8% asserted that the cost factors very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 6% and 4% showed that the cost factors have low and very low influence on the adoption of alternative banking channels respectively.

4.6.7. Costs factors influence on the adoption of alternative banking channels

The study sought data whether costs factors influence the adoption of alternative banking channels and the eventual profitability of your financial institution. The study found out that the adoption of the alternative banking channels greatly increase the productivity of the commercial banks by lowering the operation costs while increasing the volume of sales. This implies that when adopted any alternative channel, the associated cost factors must be factored in.

4.7. Security factors and alternative banking channels

The study sought data to determine the influence of the security factors on the adoption of alternative banking channels by commercial banks listed in Nairobi Securities Exchange. The responses are presented in Table 4.14 to Table 4.16.

4.7.1. Fear of hacking influence

The study sought data whether fear of hacking influence the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.13.

Table 4.14: Fear of hacking influence

Fear of hacking influence	Frequency	percentage
Yes	156	87
No	24	13
Total	180	100

The results in Table 4.13 indicate that 87% of the respondents agreed that fear of hacking influence the institution's adoption of alternative banking channels. However, 13% of the respondents disagreed that fear of hacking influence the institution's adoption of alternative banking channels. This implies that when the adopting alternative channel the probability and impact of hacking must be considered.

4.7.3. Fear of PIN theft influence

The study sought data whether the fear of PIN theft influence on the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.14.

Table 4.15: Fear of PIN theft influence

Fear of PIN theft influence	Frequency	percentage
Yes	115	64
No	65	36
Total	180	100

The results in Table 4.14 indicate that 64% of the respondents agreed that fear of PIN theft influence the institution's adoption of alternative banking channels. However, 36% of the respondents disagreed that fear of PIN theft influences the institution's adoption of alternative banking channels. This implies that when the adopting alternative channel the probability and impact of PIN theft must be considered.

4.7.4. ATM cards skimming influence

The study sought data whether the ATM cards skimming has influence on the institution's adoption of alternative banking channels. The study found out that ATM cards skimming greatly influence the institution's adoption of alternative banking channels given that such occurrence

pose great loss to the banks and clients. This implies that when the adopting alternative channel the probability and impact of ATM cards skimming must be considered.

4.7.5. Privacy factors influence

The study sought data whether the privacy factors influence on adoption of internet banking channels by commercial banks listed in Nairobi securities exchange. The study found out that any privacy infringement greatly influences the institution’s adoption of internet banking channels. Such infringements results in clients shy away from using internet banking. This implies that when the adopting alternative channel the individual and corporate privacy must be considered.

4.7.6. Security factors influence

The study sought data how the security factors influence the adoption of alternative banking channels and the eventual profitability of your financial institution. The study found out that any security threat hampers the institution’s adoption of alternative banking channels given that such security threat pose great loss to the banks and clients. Thus, security threats lower the profitability of the commercial banks as many clients are hesitant in adopting such alternative banking channels. This implies that when the adopting alternative banking channel the security factors must be considered.

4.7.7. Extent of the security factors influence on the adoption of alternative banking channels by commercial banks

The study sought data to assess the extent to which the security factors influence the adoption of alternative banking channels by commercial banks listed on Nairobi Securities Exchange. The responses were as shown in Table 4.15.

Table 16: Security factors

Security factor	VG	G	M	L	VL
ATMs Cards Skimming	99	36	26	10	9
PIN Theft	88	44	14	20	14
Confidentiality	102	41	17	12	8
Hacking	96	43	24	10	7
Phishing	82	35	16	27	20

The results in Table 4.8 indicate that 55%, 20% and 14% asserted that the ATMs cards skimming very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 6% and 5% showed that ATMs cards skimming has low and very low influence on the adoption of alternative banking channels respectively. 49%, 24% and 8% indicated that PIN Theft very greatly, greatly and moderately influences adoption of alternative banking channels respectively. However, 11% and 8% showed that PIN Theft has low and very low influence on the adoption of alternative banking channels respectively.

The results also showed that 57%, 23% and 9% asserted that confidentiality very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 7% and 4% showed that confidentiality has low and very low influence on the adoption of alternative banking channels respectively. 53%, 24% and 13% asserted that hacking very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 6% and 4% showed that hacking has low and very low influence on the adoption of alternative banking channels respectively.

The results also indicated that 46%, 19% and 9% asserted that phishing very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 15% and 11% showed that phishing has low and very low influence on the adoption of alternative banking channels respectively. Generally, 52%, 22% and 11% asserted that the perceived security factors very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 9% and 6% showed that the perceived security factors has low and very low influence on the adoption of alternative banking channels respectively.

4.7.8. Measures that can be put in place to reduce incidences of security risk

The study sought data on measures that can be put in place to reduce incidences of security risk. The following measures were suggested by the respondents: conduct penetration testing at least annually; establish network surveillance and security monitoring procedures with the use of network scanners, intrusion detectors and security alerts; install intrusion detection-prevention devices; install firewalls between internal and external networks as well as between

geographically separate sites; perform review of the applied security using a combination of source code review, stress loading as well as exception testing to identify insecure coding techniques and systems vulnerabilities; and engage independent security specialists so as to assess the strengths and weaknesses of internet-based applications, systems and networks.

4.8. Regulatory policy factors and alternative banking channels

The study sought data to determine the influence of the regulatory factors on the adoption of alternative banking channels by commercial banks listed in Nairobi Securities Exchange. The responses are presented in Table 4.17 to Table 4.20.

4.8.1 Legislation

The study sought data whether the legislation influences the adoption of alternative banking channels by commercial banks listed on Nairobi Securities Exchange. The responses were as shown in Table 4.16.

Table 4.17: Legislation

Legislation	Frequency	percentage
Yes	127	71
No	53	29
Total	180	100

The results in Table 4.16 indicate that 71% of the respondents agreed that legislation influences the institution’s adoption of alternative banking channels. However, 29% of the respondents disagreed that legislation influences the institution’s adoption of alternative banking channels. This implies that the legislation in place must be considered when adopting alternative banking channels.

4.8.2 Product regulations

The study sought data whether product regulations influences the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The study found out that the specific product regulations to an extent influences the institution’s adoption of alternative banking channels. This implies that the specific product legislation in place must be considered when adopting alternative banking channels.

4.8.3 CBKs supervisory role

The study sought data whether CBKs supervisory role influence adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The study found out that the CBKs supervisory role has an influence on the institution's adoption of alternative banking channels. This implies that the CBKs supervisory role must be considered when adopting alternative banking channels.

4.8.4. Customer security regulations

The study sought data whether customer security regulations influence the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.17.

Table 4.18: Customer security regulations

Customer security regulations	Frequency	percentage
Yes	130	72
No	50	28
Total	180	100

The results in Table 4.17 indicate that 72% of the respondents agreed that customer security regulations influence the institution's adoption of alternative banking channels. However, 28% of the respondents disagreed that customer security regulations influence the institution's adoption of alternative banking channels. This implies that the customer security regulations in place must be considered when adopting alternative banking channels.

4.8.5. Money transportation regulations

The study sought data whether money transportation regulations influence the adoption of alternative banking channels by commercial banks listed in Nairobi securities exchange. The responses were as shown in Table 4.18.

Table 4.19: Money transportation regulations

Money transportation regulations	Frequency	percentage
Yes	135	75
Yes	45	25
Total	180	100

The results in Table 4.18 indicate that 75% of the respondents agreed that money transportation regulations influence the institution's adoption of alternative banking channels. However, 25% of the respondents disagreed that money transportation regulations influence the institution's adoption of alternative banking channels. This implies that the money transportation regulations in place must be considered when adopting alternative banking channels.

4.8.6. Extent of the regulatory policy factors influence on the adoption of alternative banking channels by commercial banks

The study sought data to assess the extent to which the regulatory and supervisory factors influence the adoption of alternative banking channels by commercial banks. The responses were as shown in Table 4.19.

Table 4.20: Regulatory policy factors

Regulatory and supervisory factor	VG	G	M	L	VL
Central Bank's Supervisory Role	68	56	16	29	11
Customers' Security Regulations	76	44	30	20	10
Specific Product Regulations	86	41	28	15	10
Banks' Money Transportation Regulations	75	53	28	15	9
Total	305	194	102	79	40

The results in Table 4.19 indicate that 38%, 31% and 9% asserted that the central bank's supervisory role very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 16% and 6% showed that central bank's supervisory role has low and very low influence on the adoption of alternative banking channels respectively. 42%, 24% and 17% indicated that the customers' security regulations very greatly, greatly and moderately influences adoption of alternative banking channels respectively. However, 11% and

6% showed that the customers' security regulations have low and very low influence on the adoption of alternative banking channels respectively.

The results also showed that 48%, 23% and 16% asserted that specific product regulations very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 8% and 5% showed that specific product regulations have low and very low influence on the adoption of alternative banking channels respectively. 42%, 29% and 16% asserted that banks' money transportation regulations very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 8% and 5% showed that the banks' money transportation regulations has low and very low influence on the adoption of alternative banking channels respectively.

Generally, 42%, 27% and 14% asserted that the regulatory and supervisory factors very greatly, greatly and moderately influence adoption of alternative banking channels respectively. However, 11% and 6% showed that the regulatory and supervisory factors have low and very low influence on the adoption of alternative banking channels respectively.

4.9. Regression Analysis

Regression analysis was conducted to determine the influence of factors under study on the adoption of alternative banking channels by commercial banks listed in Nairobi Securities Exchange as shown in Table 4.20.

Table 4.20: Regression Analysis

Variable	Unstandardized		Standardized		
	B	Std. Error	Beta	t	Sig.
(Constants)	1.222	.115	1.126	1.126	.348
Technological literacy	.222	.082	.219	2.477	.043
Cost factors	.309	.091	.303	3.390	.061
Perceived security factors	.310	.086	.307	3.270	.072
Regulatory factors	.114	.076	.100	1.139	.030

According to the analysis, the equation ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$) becomes:
 $Y = 1.222 + 0.222X_1 + 0.309X_2 + 0.310X_3 + 0.114X_4$. The regression equation indicates that taking all the four variables constant at zero, the adoption of alternative banking channels by commercial banks was 1.222. The findings also indicate that taking all other independent variables at zero, a unit increase in clients' technological literacy led to 0.222 efficiency in the adoption of alternative banking channels by commercial banks. In addition, an increase in cost factors led to 0.309 efficiency in the adoption of alternative banking channels by commercial banks. An increase in perceived security factors led to 0.310 efficiency in the adoption of the alternative banking channels by commercial banks while regulatory factors led to 0.114 efficiency in the adoption of alternative banking channels by commercial banks.

Table 4.20 also shows the unique contribution of the independent variable. This is shown by the beta values under the standardized coefficients column. The standardized coefficients assess the contribution of each independent variable towards the prediction of dependent variable, since these values have been converted in the same scale to enable comparison. At 5% level of significance and 95% level of confidence, clients' technological literacy had a beta value of 0.219, at 5% level of significance cost factors had a beta value of 0.303, at the same 5% level of significance security factors produced a beta value of 0.307, while at 5% level of significance and regulatory factors had a beta value of 0.100 at the same level of significance.

According to the findings it can be concluded that, all the four variables were significant ($p < 0.05$) with regulatory factors being the least significant and security factors being the most significant. The study therefore concluded that all the four variables had an influence on the adoption of alternative banking channels by commercial banks. The t-test statistic showed that all the B coefficients of clients' technological literacy, cost factors, perceived security factors and regulatory factors were significant (since $p < 0.05$).

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents and discusses briefly the summary of findings, then offers a conclusion and recommendations from the findings, and finally gives suggestions for further research.

5.2 Summary of findings

The purpose of this study was to investigate on factors that influence the adoption of alternative banking channels by commercial banks listed in Nairobi Securities Exchange. The research objectives were used to guide the collection of required data from the respondents. The study had four main objectives which were: to assess the influence of the client's technological literacy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange; to establish the influence of costs factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange; to determine the influence of security factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange; and to establish the influence of regulatory factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange.

The study found out that 94% of the respondents felt that client's technological level has significant influence on the adoption of alternative banking channels. However, 6% showed that the client's technological level has low influence on the adoption of alternative banking channels. The study further showed that the clients' perceived ease of use, the ease of understandability, the ease of functionality and level of user involvement have significant influence on the adoption of alternative banking channels as supported by 95%, 93%, 83%, and 94% of the respondents respectively. However, 5%, 7%, 17% and 6% showed that the clients' perceived ease of use, the ease of understandability, the ease of functionality and level of user involvement has low influence on the adoption of alternative banking channels respectively.

The study also found out that 90% of the respondents indicated that the cost factors have significant influence on the adoption of alternative banking channels. However, 10% showed that the cost factors have low influence on the adoption of alternative banking channels. The study further showed that the cost of the infrastructure, the marketing costs, the maintenance costs and connectivity costs have significant influence on the adoption of alternative banking channels as supported by 100%, 60%, 89%, and 78% of the respondents respectively. However, 40%, 89% and 22% showed that the marketing costs, the maintenance costs and connectivity costs has low influence on the adoption of alternative banking channels respectively. 92% of the respondents also showed that operation costs reduction significantly influence adoption of alternative banking channels.

The study found out that 85% of the respondents felt that the perceived security factor has significant influence on the adoption of alternative banking channels. However, 15% showed that the perceived security factor has low influence on the adoption of alternative banking channels. The study further showed that the fear of hacking, the fear of PIN theft, the ATMs cards skimming, confidentiality, and phishing have significant influence on the adoption of alternative banking channels as supported by 87%, 64%, 89%, 89%, and 74% of the respondents respectively. However, 13%, 36%, 11%, 11% and 26% showed that the fear of hacking, the fear of PIN theft, the ATMs cards skimming, confidentiality, and phishing have low influence on the adoption of alternative banking channels respectively.

The study found out that 83% of the respondents indicated that the regulatory factors have significant influence on the adoption of alternative banking channels. However, 17% showed that the regulatory factors have low influence on the adoption of alternative banking channels. The study further showed that the legislation, the customer security regulations, the money transportation regulations and the specific product regulations have significant influence on the adoption of alternative banking channels as supported by 71%, 72%, 75%, and 89% of the respondents respectively. However, 29%, 28%, 25% and 11% showed that the legislation, the customer security regulations, the money transportation regulations and the specific product regulations has low influence on the adoption of alternative banking channels respectively.

The regression analysis gave an equation of $Y = 1.222 + 0.222X_1 + 0.309X_2 + 0.310X_3 + 0.114X_4$. The study found out that the beta values for clients' technological literacy, cost factors, perceived security and the regulatory and supervisory factors were found to be 0.219, 0.303, 0.307, and 0.100 respectively. All these beta values were positive thus, all the four variables were significant ($p < 0.05$) with regulatory factors being the least significant and perceived security factors being the most significant. The study therefore concluded that all the four variables had an influence on the adoption of alternative banking channels by commercial banks. The t-test statistic showed that all the B coefficients of clients' technological literacy, cost factors, perceived security factors and regulatory factors were significant (since $p < 0.05$).

5.3 Conclusion

The study sought to establish the factors influencing the adoption of alternative banking channels by commercial banks listed in Nairobi Securities Exchange. The study examined four factors and was guided by four objectives. Research objective one in this study was to assess the influence of the client's technological literacy factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange. The study found out that 94% asserted that the client's technological level has significant influence on the adoption of alternative banking channels with a beta value of 0.219. However, 6% showed that the client's technological level has low influence on the adoption of alternative banking channels.

The clients prefer alternative banking channels which are easy to use, easy to understand and have easy functionality are more likely to be adopted. Moreover, clients embrace alternative banking channels which they have been involved. Thus, the decision to adopt a particular alternative banking channel is dependent on the perceived ease of use, ease of understandability, level of clients' involvement and, ease of functionality by commercial banks' clientele. When these factors are favourable, the commercial banks experience rapid adoption of mobile banking.

Research objective two in this study was to establish the influence of costs factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange. The study found out that 90% asserted that the cost factor has significant influence on the adoption of alternative banking channels with a beta value of 0.303. However, 10% showed that the cost factors have low influence on the adoption of alternative banking channels

respectively. The adoption of retail banking or agency banking by commercial banks greatly reduces overhead costs leading to improved profitability. However, the high infrastructural and connectivity costs derail the adoption of e-banking channels by commercial banks but the biggest challenge to the adoption of alternative banking channels remains the high costs of acquisition of required infrastructure. In addition the high costs of marketing and connectivity negatively impact the adoption of alternative banking by commercial banks.

The driving agenda of the adoption of the alternative banking channels is its association with reduction of cost of operation. Even though the initial cost of acquiring the infrastructure is high, the cost of operation is reduced in the long terms as such channels reduce the number of personnel required, fast track operations, increase market growth and enhance accessibility. Thus, the alternative channels are more likely to be adopted due to the perceived operation costs reduction. However, all the costs associated with the acquisition, installation, operation and maintenance of such alternative must be considered when adopting any alternative channel.

Research objective three in this study was to determine the influence of security factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange. The study found out that 85% asserted that the perceived security has significant influence on the adoption of alternative banking channels with a beta value of 0.219. However, 15% showed that the perceived security has low influence on the adoption of alternative banking channels. The security issues such as PIN theft, phishing, ATM skimming and hacking are the biggest hurdles to the rapid adoption of alternative banking channels by commercial banks. Whenever the perceived risk is high associated with issues of privacy, confidentiality, PIN theft, phishing, ATM skimming and hacking the adoption of the alternative banking becomes very slow as the banks as well as the clientele fear losing money.

This means that the aforementioned threats must be considered when adopting any alternative channel. Their probability of occurrence and impact of their occurrence must be well analyzed. Moreover, privacy infringement to the clientele associated with such alternative banking channels must be taken into consideration. Whenever clientele perceive an infringement on their privacy, they may turn away from using such alternative banking channels. It is no doubt that security threats lower the profitability of the commercial banks as many clients are hesitant in

adopting such alternative banking channels. Therefore, perceived security factors must be seriously taken into consideration whenever deliberating on the adoption alternative channel the perceived security factors must be considered.

Research objective four in this study was to establish the influence of regulatory factors on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange. The study found out that 83% asserted that the regulatory and supervisory factors have significant influence on the adoption of alternative banking channels with a beta value of 0.100. However, 17% showed that the regulatory and supervisory factors have low influence on the adoption of alternative banking channels.

When the regulations protect clientele and encourage the adoption of financial innovations by commercial banks, there will be rapid adoption of the alternative banking channels both by the banks and the clientele as they have confidence on such banking channels. Thus, there is a positive correlation between favorable regulation and adoption of the alternative banking. Moreover, rapid adoption of alternative banking channels result from cordial supervisory relationship between the banks and the Central bank. However, unfavorable regulations especially on cash transportation, specific products and clientele slow the adoption of alternative banking channels.

5.4 Recommendations

Based on the findings of this study and the conclusion made, the study makes the following recommendations for commercial banks and stakeholders: Conduct penetration testing at least annually; Establish network surveillance and security monitoring procedures with the use of network scanners, intrusion detectors and security alerts;

The commercial banks should consider the clients technological level when coming up with new products; The banks should consider all the costs associated with such alternative banking channels as well as the perceived benefits; Install intrusion detection-prevention devices; install firewalls between internal and external networks as well as between geographically separate sites; perform application security review using a combination of source code review, stress loading and exception testing to identify insecure coding techniques and systems vulnerabilities;

and Engage independent security specialists to assess the strengths and weaknesses of internet-based applications, systems and networks.

There should be greater stakeholder's participation in the adoption of alternative banking channels. This will reduce resistance from stakeholders and promote ownership.

5.5 Suggestions for further research

The empirical study has specified a number of relevant issues that the research project did not investigate, but which might be important for further research on the adoption of alternative banking channels. The following areas are suggested for further research: The influence of organisational culture on the adoption of the alternative banking channels, The influence of organisational infrastructure on the adoption of the alternative banking channels and The influence of clientele charges on the adoption of the alternative banking channels

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APPENDICES

Appendix I: Letter of transmittal of data collection instruments

Bundi Josepeter Njeru

P.O Box 3297- 60200,

Meru- Kenya.

Dear Sir /Madam,

RE: Letter To The respondents

I am currently a student at The University of Nairobi pursuing a Masters degree in Project Planning and Management to meet the requirements of the programme. I am undertaking a study on ***FACTORS INFLUENCING ADOPTION OF ALTERNATIVE BANKING CHANNELS BY COMMERCIAL BANKS LISTED ON NAIROBI SECURITIES EXCHANGE***

Kindly provide data which I require for this study through the provided study instruments.

The data you provide will be used for research purpose only and your identity will be held confidential.

Thank you.

Yours Faithfully,

Bundi Jospeter Njeru

L50/71762/2014

Appendix II: Banks' I.T employees and branch managers questionnaire

This questionnaire is to collect data for purely academic purposes. You are kindly requested to answer the questions as sincerely as possible. The information you will give will only be used for research purposes and your identity will be treated with confidentiality.

Fill the questionnaire by putting a tick \checkmark in the appropriate box or by writing your response in the provided spaces.

PART A: BACKGROUND INFORMATION

1. Kindly indicate your age bracket?

20-29 () 30-39 () 40-49 () 50 and above

2. Kindly Indicate your Gender.

Male () Female ()

3. What is your level of education?

Certificate () Diploma () Degree () Masters and Above

Any other please specify _____

4. How long have you served in these financial institution?

5 and below () 5-9 () 10-19 () 20 and above

PARTB: CLIENTS' TECHNOLOGICAL LITERACY LEVELS FACTORS AND ALTERNATIVE BANKING CHANNELS

5. Does clients' ease of functionality of alternative banking such as mobile banking channel influence your institution's adoption alternative banking channels?

Yes No

Explain your answer _____

6. Does clients' ease of understandability of alternative banking channel such as internet banking influence your institution's adoption alternative banking channels?

Yes No

Explain your answer _____

7. How does clients' perceived ease of use of alternative banking channels influence your institution's adoption alternative banking channels?

8. Does level of user involvement of alternative banking channels such as ATMs influence your institution's adoption alternative banking channels?

Yes No

Explain your answer _____

9. What is the extent to which the following influences the adoption of alternative banking channels by commercial banks?

Parameter	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Clients' perceived ease of use					
Ease of understandability					
Ease of Functionality					
Level of user involvement					
Minimal mental effort required					

PART C: COSTS FACTORS AND ALTERNATIVE BANKING CHANNELS

10. How does operations costs reduction influence your institutions adoption of alternative banking channels?

11. Do infrastructure costs influence your institution's adoption of alternative banking channels?

Yes No

Explain your answer _____

12. Do marketing costs influence your institution's adoption of alternative banking channels?

Yes No

Explain your answer _____

13. Do maintenance costs influence your institution's adoption of alternative banking channels?

Yes No

Explain your answer _____

14. How do connectivity costs influence your institution's adoption of alternative banking channels?

15. What is the extent to which the following influences the adoption of alternative banking channels by commercial banks?

Parameter	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Costs Reduction					
Connectivity Costs					
Infrastructure costs					
Maintenance Costs					
Marketing Costs					

16. How has costs factors influenced the adoption of alternative banking channels and the eventual profitability of your financial institution?

PART D: PERCEIVED SECURITY FACTORS AND ALTERNATIVE BANKING CHANNELS

17. Which security factors influence the adoption of alternative banking channels by your financial institution?

18. Does fear of hacking influence the adoption of internet banking by your financial institution?

Yes No

Explain your answer

19. Does fear of PIN theft influence the adoption of mobile banking by your financial institution?

Yes No

Explain your answer

20. How does ATM cards skimming influence the adoption of Automated Teller Machines by your financial institution?

21. How do privacy factors influence the adoption of internet banking by your financial institution?

22. How has perceived security factors influenced the adoption of alternative banking channels and the eventual profitability of your financial institution?

23. What is the extent to which the following influences the adoption of alternative banking channels by commercial banks?

Parameter	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
ATMs Cards Skimming					
PIN Theft					
Confidentiality					
Hacking					
Phishing					

24. Suggest measures that can be put in place to reduce incidences of security risk that negatively influence the adoption of alternative banking channels by commercial banks.

PART E: REGULATORY AND SUPERVISORY FACTORS AND ALTERNATIVE BANKING CHANNELS

25. Does legislation negatively influence the adoption of alternative banking channels by your financial institution?

Yes No

Explain your answer

26. What is the influence of specific product regulations on the adoption of alternative banking channels by your financial institution?

27. How does CBKs supervisory role influence the adoption of alternative banking channels by your financial institution?

28. Do customer security regulations influence the adoption of alternative banking channels by your financial institution?

Yes No

Explain your answer

29. Do money transportation regulations influence the adoption of alternative banking channels by your financial institution?

Yes No

Explain your answer

30. What is the extent to which the following influences the adoption of alternative banking channels by commercial banks?

Parameter	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Central Bank's Supervisory Role					
Customers' Security Regulations					
Specific Product Regulations					
Banks' Money Transportation Regulations					

Thank you for Your Cooperation

Appendix III: Kenya bankers association managers' interview guide

1. Kindly tell me about yourself?
2. How many commercial banks listed in Nairobi Securities Exchange and are your members have successfully adopted alternative banking channels?
3. Which cost factors influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange, how do they influence bank's profitability and what would be your advice on dealing with these?
4. Does clients' technological literacy factors influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange and in which ways can banks deal with this?
5. What would you say is the influence of perceived ease of use on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange and in which ways can banks deal with this?
6. What would you say is the influence of perceived security on the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange and in which ways can banks deal with this?
7. What measures would you suggest to commercial banks to reduce incidences of security risk that negatively influence the adoption of alternative banking channels by commercial banks?
8. Does regulation influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange and how can this be made more accommodative?
9. How does CBKs' supervisory role influence the adoption of alternative banking channels by commercial banks listed in the Nairobi Securities Exchange and what would you advise?
10. In what ways does your office work closely with commercial banks listed in the Nairobi Securities Exchange on improving the adoption of alternative banking channels?

Appendix IV: Commercial banks listed in NSE

1. Barclays Bank Ltd
2. CFC Stanbic Holdings Ltd
3. Diamond Trust Bank Kenya Ltd
4. Equity Bank Ltd
5. Housing Finance Co Ltd.
6. I&M Holdings Ltd
7. Kenya Commercial Bank Ltd
8. National Bank of Kenya Ltd
9. NIC Bank Ltd
10. Standard Chartered Bank Ltd
11. The Cooperative Bank of Kenya Ltd