

**IMPACT OF INTERNET BANKING ON FINANCIAL PERFORMANCE OF
COMMERCIAL BANKS IN KENYA**

BY

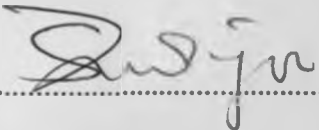
SOLOMON CHERUIYOT K.

**A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION (MBA), DEPARTMENT OF BUSINESS ADMINISTRATION, UNIVERSITY
OF NAIROBI**

2010.

DECLARATION

This Research project is my original work and has not been presented for a degree in any other University.


Signed.....

Date.....17/11/2010

Solomon C. Kirwa

D61/71435/2008

This research project has been submitted for examination with my approval as university supervisor.

Signed:.....

Date.....Nov 17, 2010

Mrs. Winnie Nyamute,

Lecturer, Department of Finance and Accounting

School of Business,

University of Nairobi.

DEDICATION

To my Sweetheart;

“Education is an ornament in prosperity and a refuge in adversity”.

ACKNOWLEDGEMENT

I wish to thank God for the strength of purpose he accorded me, to not only start but also finish this project.

Special thanks goes to my supervisor Mrs. Winnie Nyamute for her guidance and encouragement and for being readily available whenever I needed her help.

My sincere thanks goes to all those who supported me, especially colleagues in the MBA programme for their advice and suggestions. They include Mr. Keya, Mr. Toroitich and other classmates.

Last but not least I wish to thank all the very special people in my life - my family and friends who greatly assisted me in all ways and cheered me on in this very noble endeavor.

God bless you all.

ABSTRACT

The number of banks offering financial services over the internet is increasing rapidly in Kenya. By using transactional websites customers can check account balances, transfer funds, pay/receive bills, apply for loans, and perform a variety of other financial transactions without leaving their home or place of business. In other markets internet-only banks have struggled for profitability. These difficulties contrast with relatively recent predictions that they would come to dominate traditional branching banks. According to the standard internet based bank business model, low overhead expenses and access to larger geographic markets should allow internet-based banks to offer better prices (higher deposit rates, lower loan rates) than branching banks, grow faster than branching banks, and still earn normal profits. However, in practice the number of physical branch locations is growing, not shrinking.

This project describes the current state of Internet banking in Kenya and discusses its implications for the Kenyan banking industry. Particularly, it seeks to examine the impact of Internet banking on banks' performance and risk. Using information drawn from the survey of 43 scheduled commercial bank's websites, during the period of June 2010, the results show that 16 of Kenyan commercial banks are providing transactional Internet banking sites. This study estimates online banking intensity and bank financial performance indices using a combination of primary and secondary data. Online banking intensity is specified as a term construct INTERNET and estimated using web feature data collected from bank websites. An empirical function of a nonstandard Fourier flexible form is estimated using bank's financial data to derive a theoretically consistent performance measure. The actual impact of online banking on

performance is measured by regressing the ROA and ROE variables against a number of correlates including online banking intensity measure.

Using univariate analysis, the results indicates that Internet banks are larger banks and have better operating efficiency ratios and profitability as compared to non-Internet banks. Internet banks rely more heavily on core deposits for funding than non-Internet banks do. However, the multiple regression results reveal that the profitability and offering of Internet banking does have a small significant association(less than 5%), larger significant and negative association with risk profile of the banks(more than 10%) meaning that internet based banks become better off from risks such as the non performing loans. However, the advantage expected of internet banking is yet to show some significant positive financial gains but begs for future investigation beyond financial measures used in the study as technology continues to penetrate the market.

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
LIST OF TABLES	ix
Chapter One	1
1.0 Introduction	1
1.1 Background	1
1.1.1 Commercial Banks in Kenya	3
1.1.2 Performance Measures	4
1.2 Statement of the Problem	7
1.3 Research Objectives of the Study	8
1.4 Importance of the Study	9
Chapter Two	10
2.0 Literature Review	10
2.1 Introduction	10
2.2 Internet Banking Proposition	10
2.2.1 Adoption of Internet Banking	12
2.3 Empirical Studies on Internet Banking	14
2.4 Measurement of Performance	16
2.4.1 Financial performance	17
2.4.2 Efficiency measures	18
Chapter Three	21

3.0	Research Methodology	21
3.1	Introduction.....	21
3.2	Research Design	21
3.3	Population.....	21
3.4	Sample.....	21
3.5	Data Collection	22
3.6	Data analysis.....	23
3.7	Measurement Variables.....	24
Chapter Four	.....	27
4.0	Data Analysis, Results And Discussions	27
4.2	Data Collected	27
	Source: Research findings.....	30
4.3	Univariate Analysis.....	30
4.4	Asset Quality and Diversification.....	32
4.6	Cost of Operations	34
4.7	Multivariate Analysis	35
4.8	Conclusion.....	43
Chapter Five	.....	43
5.0	Summary, Conclusion And Recommendations	43
5.1	Summary	43
5.2	Limitations of this study.....	47
5.3	Suggestions for Further Research	48
REFERENCES	.....	49
Appendix I: Work Plan -2010	.....	i
APPENDIX II: Existing commercial banks	.....	ii

Appendix III: Questionnaire.....	iv
APPENDIX IV: Internet Banking Measures	viii

LIST OF TABLES

Table 4.1: Adoption Rates of Internet banking.....	36
Table 4.2: shows financial data summary for banks which have a transactional website.....	37
Table 4.3: Profitability, Operating Efficiency and Financing Pattern.....	39
Table 4.4: Asset Quality and Diversification Statistics for Internet and Non-internet	41
Table 4.5: Cost of Operations of Internet and Non-Internet Banks	42
Table 4.6: Showing description of variables	45
Table 4.8: Internet Adoption and Performance using ROA.....	46
Table 4.9: Internet Adoption and Performance using ROE.....	48

Chapter One

1.0 Introduction

1.1 Background

Pikkarainen et al (2004) defines internet banking as an ‘internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments’. Internet banking allows customers to perform a wide range of banking transactions electronically via the bank’s Web site. When first introduced, Internet banking was used mainly as an informational medium in which banks marketed their products and services on their Websites. With the development of secured transaction technologies, more banks are using Internet banking as a transactional as well as an informational medium. As a result Internet banking users can now perform common banking transactions such as writing checks, paying bills, transferring funds, printing statements and checking account balances online using a computer Acharya and Kagan, (2004).

Internet has changed the dimensions of competition in the retail banking sector. Following the introduction of PC banking, ATMs and phone banking, which are the initial cornerstones of electronic finance, the increased adoption and penetration of Internet has added a new distribution channel to retail banking: Internet/Online-banking. Allen et al (2002) define E-finance as “the provision of financial services and markets using electronic communication and computation” and today retail banks are switching to multi-channel distribution of financial services in hybrid platforms where the traditional services of banks are provided through both “bricks and mortar” branches and Internet.

Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. A comparison of online banking in developed and emerging markets reveal that in developed markets lower costs and higher revenues are more noticeable. While Sullivan (2000) finds no systematic evidence of a benefit of internet banking in US click and mortar banks, Furst et al. (2002) find that federally chartered US banks had higher ROE by using the click-and-mortar business model. Furst et al (2002) also examine the determinants of internet banking adoption and observe that more profitable banks adopt internet banking after 1998 but yet they are not the first movers. Jayawardhena and Foley (2000) show that internet banking results in cost and efficiency gains for banks yet very few banks are using it and only a little more than half a million customers are online in U.K.

The use of the Internet to effect banking transactions has also helped to reduce transaction costs and enhance bank profitability. Daniel and Storey (1997: 894) refer to the results of a survey in which the unit transaction cost for a non-cash payment is £1.08 for a branch, 54p for a telephone bank, 26p for a PC bank and just 13p for an internet bank.

Studies of the effects of internet based banking on profitability provide evidence of cost savings and better services for customers. Surveys of banks conducted by Abdullah (1985) in Malaysia and Shawkey (1995) in the USA, conclude that investing in e-channels reduces banking transaction costs, the number of staff and the number of branches. In addition, investing in e-channels increases the value of deposit accounts, which are cheaper in terms of costs of funds than other sources, such as borrowing money from other institutions, hence reducing the overall cost of funds. Booz et al. (1996) conducted a survey where the unit transaction cost for a non-cash payment is £1.08 for a branch, 54p for a telephone bank, 26p for a PC bank and just 13p for

an internet bank. Gupta (1998, p.1) refers to the results of the survey by the American Bankers Association in the USA (1998) that each deposit or cashing a cheque transaction costs the bank an average of \$1.07, while an ATM can process the same transaction for 27 cents only. This suggests that there is a role for IT investment in the explanation of bank profitability.

1.1.1 Commercial Banks in Kenya

The Companies' Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK), governs the Banking industry in Kenya. The banking sector in Kenya was liberalized in 1995 and exchange controls lifted. The CBK, which falls under the Minister for Finance's docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. The CBK publishes information on Kenya's commercial bank and non-banking financial institutions, interest rates and other publications and guidelines. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banks' interests and address issues affecting its members (Kenya Bankers Association annual Report, 2008).

There are forty-six (46) bank and non-bank financial institutions, fifteen micro finance institutions and forty-eight foreign exchange bureaus in Kenya. Thirty-five (35) of the banks, most of which are small to medium sized, are locally owned. The banking industry in Kenya is dominated by a few large banks most of which are foreign-owned, though some are partially locally owned. Six of the major commercial banks are listed on the Nairobi Stock Exchange. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banks' interests and addresses issues affecting member institutions. The commercial bank

and non-banking financial institutions offer cooperate and retail banking services but a small number, mainly comprising large banks, offer other services including investment banking (Kenya Bankers Association annual Report, 2008).

1.1.2 Performance Measures

The efficiency and competitiveness of financial institutions cannot easily be measured, since their products and services are of an intangible nature. Many researchers have attempted to measure the productivity and efficiency of the banking industry using outputs, costs, efficiency and performance. There are variations of bank performance measurement. Revell (1980) uses interest margin as a performance measure for U.S. commercial banks. He defines interest margin as the difference between interest income and expense divided by total assets. Arshadi and Lawrence (1987) measure bank performance using normal correlation analysis. Their multidimensional indexes include indexes of profitability, pricing of bank services and loan market share. The scale and scope economies of banking have been one of the issues related to the competitiveness and efficiency of banks which have been studied extensively.

Murray and White (1983), recognized the multi-product nature of financial intermediaries and used a translog cost function to evaluate the scale and scope economies of credit unions in Canada. The technical efficiency of large banks was examined by Miller and Noulas (1996). Larger and more profitable banks have higher levels of technical efficiency. Cavallo and Rossi (2001) examined whether cost improvements in output efficiency of European banks are likely to emerge from the ongoing process.

The subject of financial performance and research into its measurement is well advanced within finance and management fields. It can be argued that there are three principal factors to improve financial performance for financial institutions; the institution size, its asset management, and the

operational efficiency. Generally, the financial performance of banks and other financial institutions has been measured using a combination of financial ratios analysis (return on assets (ROA) and return on equity (ROE), benchmarking, measuring performance against budget or a mix of these methodologies Arshadi (1987).

Egland et al. (1998) was the first important study, which estimated the number of US banks offering Internet banking and analyzed the structure and performance characteristics of these banks. It found no evidence of major differences in the performance of the group of banks offering Internet banking activities compared to those that do not offer such services in terms of profitability, efficiency or credit quality. However, transactional Internet banks differed from other banks primarily by size.

Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. A comparison of online banking in developed and emerging markets reveal that in developed markets lower costs and higher revenues are more noticeable. While Sullivan (2000) finds no systematic evidence of a benefit of internet banking in US click and mortar banks, Furst et al. (2002) find that federally chartered US banks had higher ROE by using the click-and-mortar business model.

Furst et al (2002) also examine the determinants of internet banking adoption and observe that more profitable banks adopt internet banking after 1998 but yet they are not the first movers. Jayawardhena and Foley (2000) show that internet banking results in cost and efficiency gains for banks yet very few banks are using it and only a little more than half a million customers are online in U.K.

DeYoung (2005) analyze the performance of Internet-only banks versus the brick and mortars in the US market and find strong evidence of general experience effects available to all startups. Yet there is little evidence that technology-based learning accelerates the financial performance of Internet-only startups. He finds that bank profitability is lower for pure-play (internet-only) banks in the US market.

However in a later study DeYoung et al (2007) analyze the US community banks market to investigate the effect of internet banking on bank performance. They compare the brick and mortar banks performance to click and mortar banks which do have transactional websites over a three year period. Their findings suggest that internet banking improved bank profitability, via increase in revenues from deposit service charges. Movements of deposits from checking accounts to money market deposit accounts, increased use of brokered deposits, and higher average wage rates for bank employees were also observed for click and mortar banks. While no change in loan portfolio mix was found, their findings confirm Hernando and Nieto (2007) that internet banking is seen as a complementary channel.

Locally Otieno (2006) investigated factors for adoption of internet banking among 43 commercial banks in Kenya. He found out that cost savings and competition was the primary factors of going e-banking. The study also found out that many banks were adopting internet banking to different levels i.e from informational to transactional websites and as a results some banks had cut down on staff.

Ombati et al. (2009) on the other hand sought to study the level of usage of internet banking by bank customers. The study found that, out of the respondents, 68% used branch banking while

32% used both branch and internet banking. On quality and availability of internet banking services, 70% said internet access and quality of service was available to them through computers and mobile phones. The study could not find out why the banking queues were still very long despite the advantages of internet banking capabilities.

Nyangosi (2009) studied in Kenyan banks to find out internet banking services provided by banks. He found out that banks with more internet banking services had high customer retention and less operating expenses. He also found out that banks had lower expenses incurred after a period of two years from the time implementation of transactional site was done. The study could not ascertain the financial performance realized by the banks on implementing of these technologies..

1.2 Statement of the Problem

Banking through internet has emerged as a strategic resource for achieving higher efficiency, control of operations and reduction of cost by replacing paper based and labour intensive methods with automated processes thus leading to higher productivity and profitability. However, to date researchers have produced little evidence regarding these potential changes. Nonetheless, recent empirical studies indicate that Internet banking is not having an independent effect on banking profitability, although these findings may change as the use of the Internet becomes more widespread.

More recently in Kenya too, a wider array of banking products and quality services have become available over the Internet Ombati et al. (2009), which has become an important distribution channel for a number of banks. Banks boost technology investment by spending strongly to address revenue, cost of operations, competitions and losses due to fraud cases. For these

activities, banks hope to improve service quality and see a near-term impact on profitability. Gikandi (2010) who investigated on adoption and effectiveness internet banking in Kenya found that on 25% of customers used the online services. Security was the main concern for customers preferring to queue. This leaves further questions to banks whether they are achieving value for their investments.

Many local researchers identified in the study have concentrated on reasons to adoption of internet banking and challenges faced by both customers and banks in using it. The investments involved in building e-channel as well as the downward trend in reliance on interest income has made banks to look at cost cutting measures such investing in internet banking. The purpose of this study is to analyze such effects of Internet banking in Kenya, where no rigorous attempts have been undertaken to understand this aspect on the banking performance. This study therefore, seeks to investigate the relationship between internet banking and financial performance of commercial banks which should reveal the need to promote internet banking usage and reduce congestion in banking halls, any significant cost/profit efficiency as well as impact on the banks' financial performance.

1.3 Research Objectives of the Study

1. To investigate the level of internet banking usage by Kenyan commercial banks
2. To investigate the effects of online banking on performance of the commercial banks in Kenya

1.4 Importance of the Study

By developing a deeper understanding of these phenomena, we can draw more insightful inferences about the impact of the Internet on banking business strategies, production processes and financial performance. Increasing this type of knowledge is vital for both academic literature and also for bank marketers who cannot count on the initial success achieved by the Internet banking investment. The study will enable the unearthing profitability issues of online banking by understanding cost factors, operational efficiency and other factors of performance of e-channel.

The study will be of use to the following people:

Managers – it will help managers to discover the type of internet banking investment and services to be offered in order to reduce cost of operation.

Academicians will gain on literature on different angles of performance measurement in relation to investments and diversification of e-banking channel.

Government and regulatory institutions will gain knowledge on in the new channel of internet banking. This could help in setting relevant strategies to promote internet banking so as to decongest banking halls and achieve secure transactions.

Financial analysts and consultants will also gain knowledge that could help them in the conduct of their business.

Chapter Two

2.0 Literature Review

2.1 Introduction

This chapter is organized as follows; section one covers the review of literature, where various factors affecting internet adoption brought out. The next section discusses the empirical studies which have been carried in international and local studies which intend to show evolution of research in internet banking in the changing competitive environments for commercial banks. The concepts performance measurements such as financial, operational efficiency, cost reduction have been highlighted. The last section is a summary of the chapter and the research gap and finally the theoretical models for determining performance.

2.2 Internet Banking Proposition

As a result Internet banking users can now perform common banking transactions such as writing checks, paying bills, transferring funds, printing statements and checking account balances online using a computer (Acharya and Kagan, 2004).

The increased efficiency that results from shifting from paper based to electronic payments will reduce the amount of transactions required by consumers. Consequently the shift from full service banking offices to more specialized delivery channels will streamline banking services as well. With the rapid diffusion of the Internet to all customer levels, banking online is fast becoming an alternate channel to provide banking services and products. It is believed that, in the future, Internet banking will continue to increase in importance as a strategic application and

will become a competitive necessity that must be adopted by financial institutions to remain in the banking sector (Bradley and Stewart, 2003).

The main goal of every company is to maximize profits for its owners and banks are not any exception. Automated e-banking services offer a perfect opportunity for maximizing profits. According to a survey by Booz, Allen and Hamilton, an estimated cost providing the routine business of a full service branch in USA is \$1.07 per transaction, as compared to 54 cents for telephone banking, 27 cents for ATM (Automatic Teller Machine) banking and 1,5 cents for Internet banking. In Nordea Bank, Finland, one online transaction costs the bank an average of just 11 cents, compared to \$1 for a transaction in the branch. The difference in a net cost between the USA and Finnish banks can be explained by smaller population in Finland and the scale effect in case of the USA. Comparing this information with price list fees, allows assuming the high profitability of e-channel banking services for banks. On the fee side (or income side from the bank point of view), average payment in Internet bank cost 4 times less, than payment in branch. On the actual cost side (or cost side from the bank point of view), payment in Internet bank cost 8 times less than payment in branch.

The main benefit from the bank customers' point of view is significant saving of time by the automation of banking services processing and introduction of an easy maintenance tools for managing customer's money. The main advantages of e-banking for corporate customers according to the recent research conducted in Estonia (Aarma and Vensel, 2001), bank customers use bank office services on average 1.235 times per month, and wait in queue in bank office on average for 0.134 hours. Simple calculation shows, that making payments via e-banking facilities

(for instance using Internet bank) rather than in the bank offices create overall economy savings in the amount of 0.93% of GDP.

2.2.1 Adoption of Internet Banking

Tan and Teo (2000) suggest that banks that fail to respond to Internet banking are likely to lose customers and that the cost of offering Internet banking services is often less than the cost of keeping branch banking. They note that challenges to expand and maintain banking market share have convinced many banks to invest more in the Internet and to rethink their IT strategies in competitive markets. This notion was also confirmed in a study conducted by Jasimuddin (2004) who examined the role of Internet banking in Saudi Arabia and indicated that the majority of Saudi banks had taken advantage of Internet technology to establish web sites but that few went on to offer Internet banking services.

Trust is a key factor that determines the success of Business to Consumer (B2C) e-commerce transactions. With the most mature of the Internet technique environment, the concept of trust has been the kernel of the matter when people interactions with e-commerce web portals. Over 4 in 5 users (80%) say that being able to trust a web site is very important for them in making a decision to interact with that site (Princeton Survey Research Associates, 2002). Unfortunately, there are 36% practitioners failed between 2003 and 2005 that inspire trust in the user (Market Intelligence Center, 2005). As a bank, being a victim of fraud can have a range of effects on your business. These effects include: Immediate financial loss due to stolen stock/earnings, damaged reputation, loss of customer trust, loss of investor confidence, lowered retail, extra costs of time/money to manage each fraud incident, lowered staff morale, possible legal costs, lowered

value of your stock/services, additional bank fees for transaction reversal and potential problems retaining your merchant's bank account after too many reversed transactions.

According to a survey of KPMG (1999) the evolution of Internet-banking can be analyzed within a five-stage conceptual framework, where the extent of services provided through Internet start from a promotional stage and extend to transaction-enabled business innovation stage in which institutions redesign their value-chain and offer highly personalized products and services. Analyzing the consumer side, Birch and Young (1997) show that consumers seek convenience, transactional efficiency, a choice of core banking products and non-core products, and access to competitive returns and prices. On the other hand, Wright (2002) mentions that Internet-banking has lifted the branch network as an entry barrier to the retail banking while introducing price transparency as customers can now easily compare prices online. Price transparency also brings faster commoditization of basic services and products. Wright also suggests that traditional retail banks have to develop new strategies to compete with Internet-only banks. Internet-only banks are pure-plays with no physical “bricks and mortar” branches.

Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. A comparison of online banking in developed and emerging markets reveal that in developed markets lower costs and higher revenues are more noticeable. While Sullivan (2000) finds no systematic evidence of a benefit of internet banking in US click and mortar banks, Furst et al. (2002) find that federally chartered US banks had higher ROE by using the click-and-mortar business model. Furst et al (2002) also examine the determinants of internet banking adoption and observe that more profitable banks adopt internet banking after 1998 but yet they are not the first movers. Jayawardhena and Foley

(2000) show that internet banking results in cost and efficiency gains for banks yet very few banks are using it and only a little more than half a million customers are online in U.K.

2.3 Empirical Studies on Internet Banking

A few empirical studies exist in the literature, which have examined the relative performance of banks offering Internet banking services. Using information drawn from banks in Italy, Hasan et al. (2002) found that the Internet banking institutions were performing significantly better than the non-Internet groups. Additionally, the risk variables associated with the Internet group continued to be lower relative to the non-Internet group. The asset-liability variables revealed that on average the banks in this Internet group were larger and had significantly higher trading and investment activities and less dependent on retail deposits (both demand and saving deposits) relative to the non-Internet group. The only category where the Internet group showed a lower performance was the noninterest expense category. It found a significant and positive link between offering of Internet banking activities and banks' profitability and a negative but marginally significant association between the adoption of Internet banking and bank risk levels particularly due to increased diversification.

Hernando and Nieto (2005) examined the performance of multichannel banks in Spain between 1994 and 2002. The study found higher profitability for multichannel banks through increased commission income, increased brokerage fees and (eventual) reductions in staffing levels and concluded that the Internet channel was a complement to physical banking channels. In contrast to earlier studies, the multichannel banks in Spain relied more on typical banking business (lending, deposit taking and securities trading). The adoption of the Internet as a delivery channel

had a positive impact on banks' profitability after one and a half years of adoption. It was explained by the lower overhead expenses and in particular, staff and IT costs after the same period.

Sathye (2005) investigated the impact of the introduction of transactional Internet banking on performance and risk profile of major credit unions in Australia. Similar to the results of Sullivan (2000), the Internet banking variable didn't show a significant association with the performance as well as with operating risk variable.

Thus, Internet banking didn't prove to be a performance enhancing tool in the context of major credit unions in Australia. It neither reduced nor enhanced risk profile.

DeYoung et al. (2006) observed the change in financial performance of Internet community banks in U.S. during 1999-2001. The results found that Internet adoption improved community banks' profitability, particularly through increased revenues from deposit service charges. Internet adoption was also associated with movements of deposits from checking accounts to money market deposit accounts, increased use of brokered deposits and higher average wage rates for bank employees. It found little evidence of changes in loan portfolio mix. The findings suggested that Internet adoption was associated with an economically and statistically significant improvement in bank profitability.

DeYoung (2001 and 2005) analyzed systematically the financial performance of pure-play Internet banks in U.S. The study found relatively lower profits at the Internet-only institutions than the branching banks, caused in part by high labour costs, low fee based revenues and

difficulty in generating deposit funding. However, consistent with the standard Internet banking model, the results indicated that Internet-only banks tended to grow faster than traditional branching banks. Internet-only banks have access to deeper scale economies than branching banks and because of this, they are likely to become more financially competitive over time as they grow larger. Delgado et al. (2004 and 2006) found similar results for Internet-only banks in the EU. Nevertheless, the magnitude of technology based scale economies found in Delgado et al. (2004 and 2006) was substantially larger than that estimated by DeYoung studies.

The evidence of the impact of the adoption of Internet as a delivery channel on financial performance is mixed at both sides of the Atlantic. Nevertheless, the latest studies seem to find a positive relationship with profitability. It can be argued that as the intensity and experience in the usage of Internet increases, the financial performance of multichannel banks is likely to improve. Kenyan context, many publications throw light over the adoption of Internet banking and also its prospects for the Kenyan banking industry. However these studies don't depict any empirical relationship between banks' profitability and Internet banking.

2.4 Measurement of Performance

Measuring the impact of the Internet on bank financial performance can be difficult, because in most cases the costs and revenues associated with Internet activities are not reported separately from the costs and revenues generated by the rest of the bank. As a result, there is little systematic evidence regarding the financial performance of the Internet banking channel. Most studies simply measure trends in market shares, numbers of accounts, market penetration rates, and similar phenomena using data from surveys of consumers, annual reports of banks, or bank

press releases. Recently, central regulatory agencies have begun to collect data on Internet banking in a more systematic fashion. Among other questions, examiners ask if the bank operates a website; whether that website is transactional; which products and services are offered on the website; whether the site is operated by an outside vendor or by the bank; and whether the bank plans to upgrade the website in the future. The resulting databases can be linked to the call report, allowing systematic financial analysis of various Internet banking strategies.

2.4.1 Financial performance

Return on assets (ROA) is a comprehensive measure of overall bank performance from an accounting perspective Sinkey (1992). It is a primary indicator of managerial efficiency. It indicates how capable the management of the bank has been converting the bank's assets into net earnings. (ROA) measure assesses the profitability performance of total assets, and could be treated as measure of financial performance in this study. As it is known, this measure contains two elements, efficiency (total assets turnover), and effectiveness (profit margin). As mentioned earlier, ROA reflects the bank management ability to generate profits by using the available financial and real assets.

ROE measures accounting profitability from the shareholder's perspective. It is also illustrate the rate if return flowing to the bank's shareholders. It approximates the net benefit that the stockholders have received from investing their capital Rose and Hudgins (2006)

Based on the central bank's regulation, all advances and loans are classified into two categories: performing assets/loans and non-performing assets/loans (NPL). NPL is the loans that have

overdue in the account and the due interest are not recovered regularly. The maximum NPL allows for a healthy bank is 5%, while net interest margin measures how large the spread between interest revenues and interest costs that management been able to achieve by close control over earning assets and the pursuit of the cheapest sources of funding Rose and Hudgins (2006).

In addition to revenue enhancement, Internet banking may enable banks to reduce costs of operation, in particular, by allowing them to reduce expenditures on “brick and mortar.” To the extent this may be so, Internet banking could be considered a causal factor in generating lower expenses related to maintaining physical branches. On the other hand, banks with relatively high expenses in maintaining their branch networks may be expected to have the incentive to adopt Internet banking. The adoption of Internet banking would thus be the effect of existing characteristics of banks (Furst et al., 2002).

2.4.2 Efficiency measures

Furst, Lang, and Nolle (2000) identify key differences between Internet banks and non- Internet banks. Within size classifications, banks that offer Internet banking have higher concentrations in business and credit card loans, rely less on deposits relative to purchased funds, and have higher ratios of noninterest income to net operating revenue. Taken together, these characteristics indicate that Internet banks are less reliant on traditional banking activities and take a more aggressive business posture relative to non-Internet banks of similar size.

Efficiency is the concept of doing more with little effort and its measurement according Farrell: first (1957) to propose a measure of efficiency for a firm using the following i) Technical: ability to achieve maximum output with a given set of inputs. ii) Allocative: ability to use optimal proportion of inputs among many sets. iii) X-inefficiency (loss of technical and allocative efficiency). Profit efficiency has to do with ability to achieve maximum profits for a given set of output.

The common methodologies namely Data Envelopment Analysis and Stochastic Frontier Analysis can be used to determine a bank's performance when implemented various strategies of operations. Application to internet banking can be measured using accounting ratios, DEA and SFA where DEA uses linear programming application by Charnes, C. (1998) and SFA uses econometric approach applied by Aigner and Chu (1990)

Efficiency of internet banking should mean saving resources for every other bank channels. Almost all efficiency research on banking on US and European banks: domestic vs foreign owned, minority vs majority owned, small vs large, branch vs internet, share-holder vs deposit financed, financial conglomerates vs universal, European vs American, Heavyweight Berger (1991 and 1993) found that X-inefficiencies in banking account for 20-25% which is about 4-5 times bigger than scope and scale inefficiencies in banking. With adoption of internet banking by Kenyan banks and the effects of internet frauds a measurement of performance is required to determine if internet based banks are really cost/profit efficient relative to adoption in the light of uptake challenges. Examining trends of internet banks usage, the progression, regression of efficiency of these banks is important.

Parametric cost efficiency analysis relies on estimating a standard cost function so differences in the unexplained residual among a cross-section of banking firms, relative to a bank that has the smallest residual, is presumed to indicate unspecified productivity and/or technological differences among banks at a point in time. Shifts in the cost frontier over time indicate productivity or technical improvements for the set of most efficient banks while changes in average internet banking costs over time (typically a simple function of time) should be able to separately identify the various external business environment, standard cost function, and internal productivity determinants of cost differences among banks at a point in time as well as over time.

Profit efficiency measurement has a similar interpretation but, with a standard profit function and where banks actually are price takers in competitive output and input markets, only underlying cost efficiency will be measured. Coelli (1995), Alternatively, if banks take output as given in the market and largely set output prices (which occurs for certain banking outputs but not others which do face a competitive market), then profit efficiency combines cost efficiency with revenue efficiency or the ability of banks to set differentially higher prices in imperfectly competitive markets. In either of these cases estimation of cost efficiency is preferred over profit efficiency (or revenue efficiency alone) to indicate productivity or technological change.

Chapter Three

3.0 Research Methodology

3.1 Introduction

This chapter details the methodology used in the study. The sections presented here include population, description of the sample, data collection and techniques used in data analysis.

3.2 Research Design

This research adopted a descriptive survey design. Descriptive research portrays an accurate profile of entities or events or situations (Robinson, 2002). Surveys allow collection of large amount of data from sizable population in highly economical way. It allows the collection of quantitative data which can be analysed using descriptive and inferential statistics. Survey allows investigation of critical factors that affect uptake of online banking by bank customers

3.3 Population

The target population constituted all the 45 commercial banks operating in Kenya. This was done to allow the determination of the proxies of internet banking over four year period. The actual respondents involved were the level managers of the banks for instance the finance managers, IT managers, operational managers and public relations managers.

3.4 Sample

The data set was limited to the banks that are operating as commercial banks as at end of June 2010. Stratified sampling was used so as to choose the most appropriate respondents in relation to the subject of internet banking. To analyse the effects of internet banking on bank performance, we collected a panel data from the commercial banks in Kenya that had adopted

internet banking for a sample period of between 2006 and 2009 this period covers the time when internet availability and web presence became largely available and thus the period would have impact in banks performance felt. A list of banks that were included in the analysis along with their respective years of internet banking adoption are were collected. The Internet related details were drawn from a survey of commercial banks' Websites.

3.5 Data Collection

Primary data was collected from the managers of the identified commercial banks in Nairobi. The data was collected using structured questionnaires with both open and closed ended questions. The researcher personally administered the questionnaire to respondents. The questionnaire intended to establish issues to do with internet banking for the INTERNET variable required for regression. It sought to find out when the web interface was created, the type of services that were available e.g. transactional and internet systems available on the web.

Secondary data was also heavily used. Data was also collected on other variables of interest and then regression analysis was conducted to establish the relationship between internet banking and financial performance. This method is preferred for various reasons.

First as argued by Saunders, Lewis and Thornhill (2004), this method is cheap in terms of time and resources especially when large data sets are involved. This allow one to remain with more time and energy to spend on data analysis and interpretation .Secondly, it is an unobtrusive method of data collection and as such it enable faster data collection. Another strength of this method is that it provide the only possibility of undertaking a longitudinal study (study of what have taken place over a given time as opposed to a snapshot.). Further it is important for research

questions that require regional or international comparison. Lastly, this method also allows the research to be more open to public scrutiny as the secondary data used is permanent.

3.6 Data analysis

Univariate analysis provided the form of analysis. Although, the univariate analyses depict a tremendously higher performance by banks with higher internet presence than relative less internet presence bank group, however, it was hard to make any conclusive statement on the actual impact of the Internet adoptions on firm performance without a multivariate analysis. Here a multivariate regression model was estimated to investigate whether there is a link between offering Internet banking and bank's performance. The general purpose of multiple regression (the term was first used by Pearson, 1908) is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. SPSS package was used to do the analysis. The following regressions was run:

Regression of ROA against INTERNET, SIZE, OPCOST, NIINCOME, COOPER, INF

Regression of ROE against INTERNET, SIZE, OPCOST, NIINCOME, COOPER, INF.

Regression of NPA against INTERNET, SIZE, OPCOST, NIINCOME, COOPER, INF

A linear equation, relating the performance measures to a variety of financial indicators was specified. Following model has been used to examine the relationship between the performance of banks and adoption of Internet banking after controlling the other variables affecting the performance and risk.

$$Y_{it} = c + \alpha * INTERNET_{it} + \sum \beta_i X_{it} + \epsilon_{it}$$

INTERNET is a dummy variable for Internet banks and the coefficient α provides the main static test. A statistically significant value for α indicates a financial performance gap between the

Internet banks and the non-Internet banks at the means of the data. The coefficients were estimated by employing OLS regressions on a sample of banks.

3.7 Measurement Variables

There are many variables that were required to test the relationship between internet banking and financial performance. These included variables on internet banking which were constructed to capture internet banking activity.

A dummy variable (INTERNET) was created and took a value of 1 if the bank had adopted Internet banking activities; otherwise it takes a value of zero. The coefficient associated with this Internet adoption dummy indicates the possible association between the internet adoption by banks and their overall performance. INTERNET variable was aggregated from other internet banking variables given below:

Following the work of Hernando and Nieto (2007) we employed a matrix of dummy variables, $INTERNET^1$, that are defined based on the time of adoption of a transactional website by the bank.

Thus, $INTERNET^1$ is a dummy variable that equals 1 if the bank introduced a transactional web site in year t (during the past 12 months). Similarly, $INTERNET^2$ equals 1 if the bank adopted online banking in year $t-1$. We go back as late as $t-2$ to capture changes in bank performance over time.

$INTERNET^3$ is a dummy variable that equals to 1 (General Information=1, Banking Services=3,

Core

Banking Services=5)

These categories refer to the following indicators:

General Information= (Privacy /Security Issues, Branch information, ATM locator, Customer support, and financial services)

Banking Services= (Express internet banking, Bill pay, and Bill pay. Merchant services)

Core Banking Services= (Commercial loans, Business line of credit, Business mortgage, Checking accounts, Saving accounts and Customer loans)

Key variables of interest are INTERNET measure of internet banking and accounting variables

It was necessary to control for other possible determinants of profitability not captured by the accounting variables. The control variables used in this study are in line with those employed in previous research. The other variables affecting the banks' performance have been developed from the available literature on determinants of banks' performance (DeYoung 2005; Hasan et al., 2002). Return on Assets and Return on Equity are used as performance measures and Ratio of Net NPAs to net advances has been used as a measure of bank risk Hernando and Nieto (2005). In selecting potential factors associated with performance and risk, various bank characteristics were used as proxies for the banks' internal measures, e.g., size, capital, risk management and expenses management ratio dummies while macro-economic indicators are used to represent the external measures. A linear equation, relating the performance measures to a variety of financial indicators is specified.

Dependent Variables

ROA= the ratio of Average Net Profits to Average Assets

ROE = the ratio of Average Net Profits to Average Equity

NPA = the ratio of net NPAs to Net Advances

Independent Variables

INTERNET= Dummy for the banks who have adopted Internet banking

SIZE = The natural log of the Total Assets.

OPCOST= The ratio of Non-interest Expense to Net Operating Revenue

Where, Net Operating Revenue = Net Interest Income + Non-interest income

NIINCOME= The ratio of Non-interest income to total income

INF = The Annual Inflation Rate

COOPER= Labour Cost+ Financing Cost (Cost of Funds =Interest expended/ Total Funds)+ Fixed Cost (Expenses on Fixed Assets/Fixed Asset)(%)

MACRO= Percentage Change in GDP capita over previous year

Chapter Four

4.0 Data Analysis, Results And Discussions

4.1 Data Analysis

This chapter presents analysis and findings of the study as set out in the research methodology. The results are presented in order of objectives i.e. to establish the impact of internet banking on financial performance. The data was gathered from a questionnaire, survey on bank website and financial data from CBK. To enhance the quality of data obtained, structured questions were used whereby interviewees were asked to give various measurement indicators on internet banking and other financial data.

4.2 Data Collected

Various data were collected to satisfy this study in accordance with the methodology. One type of information required was survey of the total population of banks to determine which ones had implemented a website as well as a transactional internet banking site. These type of banks with transactional sites were referred to as internet banks in this study while those without were referred to as non internet. A variable was determined known as INTERNET which was a measure of level of internet banking/channel implementation that a bank is operating at.

The next type of data were the financial data. These were used to develop the independent and dependent variables in multivariate analysis. Two types of analysis were carried out which include univariate and multivariate which enabled better conclusions to be made.

The variables measuring banks' website features and online banking services that were used in the variable construct is listed in appendix while table one shows the number of banks with internet banking. The sample used in the study were 16 banks.

Table 4.1: Adoption Rates of Internet banking

Bank	Number of banks	Number of banks with website
Foreign banks	6	1
Local	34	11
Gov	3	3
Listed (all)	12	12

Source: research findings

The survey results revealed that, during the period of June 2009, 20 banks in Kenya had Web sites, of which 16 allowed transactions to be initiated through the Internet. However, the adoption rates across individual bank categories were not uniform. Adoption rates for transactional web sites were highest in large sector and lowest in foreign banks.

Table 4.2: shows financial data summary for banks which have a transactional website.

	NET PROFIT	ASSETS	EQUITY	NON PERFORMING ASSETS	NET ADVANCES	TOTAL LOANS	NON INTEREST EXPENSE	NON INTEREST INCOME	NET OPERATING REVENUE	TOTAL OPERATING INCOME
	1,410,772	65,687,419	6,882,135	382,725	34,478,744	1,415,321	2,361,051	1,116,520	1,964,383	2,189,561
Bank	1,222,935	12,969,712	1,222,935	365,193	165,865	525,083	739,494	387,932	318,136	1,057,630
Bank	555,878	15,358,108	2,246,842	663,508	9,676,110	10,399,447	62,783	522,700	555,878	1,027,266
	3,332,393	51,404,408	7,907,692	379,525	1,783,136	1,621,114	3,577,197	2,404,245	2,159,441	5,736,638
Bank	13,993,841	8,870,556	13,993,841	9,433,591	53,293,245	5,869,019	6,291,554	3,954,482	3,358,819	9,650,373
	8,088,198	66,679,080	6,998,163	206,773	41,518,135	163,235	885,259	526,480	1,805,560	1,870,902
Bank	22,988,870	100,811,750	22,908,870	4,841,846	63,378,232	9,483,873	10,456,349	6,506,103	5,219,820	15,676,163
Bank	8,088,000	66,679,000	8,088,000	504,402	42,452,000	42,451,000	18,488,098	1,552,000	2,075,621	5,071,000
Bank	1,094,435	8,471,792	1,201,681	2,661,000	5,109,958	311,454	178,870	170,683	124,249	334,268
Bank	22,803,925	195,011,548	22,803,925	4,105,337	9,834,883	611,721	2,115,553	3,145,967	9,147,043	19,517,893
Bank	6,792,254	47,558,241	6,792,254	1,411,457	385,506	32,511,082	441,075	372,244	1,526,793	3,841,071
Bank	3,469,393	40,233,199	3,469,393	906,147	7,998,743	18,475,203	9,455,761	2,011,154	961,498	1,408,839

19,983,275	109,120,905	19,207,682	8,015,955	784,188	62,264,938	22,388,008	2,284,008	4,174,210	4,469,560
8,645,137	14,525,163	10,972,660	2,145,860	546,210	21,455,120	356,155	401,236	996,580	2,651,081
12,654,259	18,300,221	9,456,257	1,122,541	4,956,188	545,251	3,014,553	4,145,967	5,048,043	11,967,882
4,125,980	9,357,260	5,987,320	312,171	907,233	12,009,211	6,055,061	1,880,974	561,990	1,004,922
12,211,590	64,875,000	3,543,000	1,125,450	5,366,050	1,002,365	3,651,200	4,302,710	779,675	1,065,346
9,855,660	14,001,955	4,769,820	699,014	1,107,630	14,056,910	5,045,269	894,620	489,120	990,655

Source: Research findings

4.3 Univariate Analysis

Univariate analysis uses one variable such as profitability, operating efficiency and financing to compare pattern of Internet banks with non-Internet banks. The SAS/STAT allows one to compare and find any statistical difference on a variable. Table 4.4, shows comparison of internet and non internet bank within the each group. On an average, Internet banks are more profitable than non-Internet banks and are operating with lower cost as compared to non-Internet banks, thus, representing the efficiency of the Internet banks. The results are similar Hernando and Nieto (2005).

Table 4.3: Profitability, Operating Efficiency and Financing Pattern of Internet and Non-Internet Banks

	Profitability	Operating Efficiency	Financing Pattern
--	---------------	----------------------	-------------------

	(Return on Assets)			(Operating Cost)			(Deposits)		
	(%)			(%)			(%)		
	Mean	Mean	"t"	Mean	Mean	"t"	Mean	Mean	"t"
	(N1)	(N2)		(N1)	(N2)		(N1)	(N2)	
All Banks	.898	.697	2.06** (0.039)	50.790	56.448	-3.07** (.002)	77.441	71.144	4.17*** (.000)
Big Size Bank	.935	.647	4.65** (.000)	48.766	59.764	-7.25* (.000)	82.177	85.354	2.00*** (.050)
Medium Size Banks	.870	.924	-.76* (.450)	47.885	51.680	-1.97* (.054)	80.419	79.863	.69 (.491)
Small Size Banks	.714	.694	.162* (.871)	53.584	55.320	-.57 (.567)	79.095	86.182	-4.36* (.000)

N1 = Observations for Internet banks

N2 = Observations for non-Internet banks

*** = Significant at the 1 percent or better level; ** = significant at the 5 percent level; and * = significant at the 10 percent level.

Note: Big banks are those with an asset base of Ksh. 50 billion

Medium banks are those with an asset base of Ksh. 10 billion

Small banks are those with an asset base of Ksh. 1 billion

Table 4.4 also shows major financing characteristics of Internet and non-Internet banks. The Internet banks in Kenya are able to generate more deposits or customer accounts than non-Internet banks. The results are consistent with Hernando and Nieto (2005). Internet banks in Kenya rely more on traditional source of financing i.e. deposits as compared to borrowing financing.

As far as categories of the banks are concerned, the Internet banks fund less of their assets from traditional sources, such as deposits. It appears as these banks have begun to view the addition of Internet banking as a way to offer products that will reduce their dependence on core deposits.

4.4 Asset Quality and Diversification

Asset quality indicators measure the changes in the bank's loan quality. The Internet banks showed higher asset quality as compared to non-Internet banks (Table 4.5). Internet banks had lower net Non Performing Assets (NPAs) to net advances as compared to non- Internet banks. Differences in the business strategies of Internet and non-Internet banks also are evident in Table 4.4. The second column shows the ratio of non-interest income to total income, which is a rough proxy for the amount of revenue generated by "nontraditional" activities.

Internet banks generated a lower proportion of their income from non-traditional activities compared to non-Internet banks. However, the difference is not statistically significant.

Table 4.4: Asset Quality and Diversification Statistics for Internet and Non-internet

	Asset Quality (Net NPAs to net advances) (%)			Diversification (Net- Interest income /Total Income) (%)		
	Mean (N1)	Mean (N2)	"t" 	Mean (N1)	Mean (N2)	"t"
All Banks	2.497	6.889	-9.64** (.000)	18.747	18.902	-.19** (.848)
Big Size Banks	2.010	7.013	-9.70* (.000)	15.985	14.249	2.81** (.005)
Medium Size Banks	2.136	5.920	- 6.28**(.000)	16.312	16.632	-.28(.776)*
Small Size Banks	1.957	7.468	-8.05** (.000)	15.850	13.256	3.79* (.000)

N1 = No. of observations for Internet banks

N2 = No. of observations for non-Internet banks

*** = Significant at the 1 percent or better level; ** = significant at the 5 percent level; and * = significant at the 10 percent level

4.6 Cost of Operations

In addition to revenue enhancement, Internet banking may enable banks to reduce costs of operation, in particular, by allowing them to reduce expenditures on “brick and mortar.” To the extent this may be so, Internet banking could be considered a causal factor in generating lower expenses related to maintaining physical branches. On the other hand, banks with relatively high expenses in maintaining their branch networks may be expected to have the incentive to adopt Internet banking. This difference may indicate that these banks with high costs of maintaining a branch network are motivated to adopt Internet banking by the prospect of future cost savings.

Table 4.5: Cost of Operations of Internet and Non-Internet Banks

	Labour Cost (Salary exp/Employees) (Rs Crs)			Financing Cost (Cost of Funds =Interest expended/ Total Funds) (%)			Fixed Cost (Expenses on Fixed Assets/Fixed Asset) (%)		
	Mean (N1)	Mean (N2)	“t”	Mean (N1)	Mean (N2)	“t”	Mean (N1)	Mean (N2)	“t”
All	0.0427	0.0461	-1.01	5.153	8.003	-1.23	106.04	155.79	3.8***

Banks			(.312)			(.219)			(.001)
Big Size Bank	0.0324	0.0228	8.96*** (.000)	4.942	6.691	- 11.29*** (.000)	98.926	93.409	.94** (.345)
Medium Size Banks	0.0312	0.0211	6.77** (.000)	5.243	6.805	-4.84** (.000)	126.054	139.958	-1.47 (.146)
Small Size Banks	0.0329	0.0235	6.80** (.000)	4.817	6.644	-10.54** (.000)	87.678	74.014	2.35** (.021)

N1 = No. of observations for Internet banks

N2 = No. of observations for non-Internet banks

*** = Significant at the 1 percent or better level; ** = significant at the 5 percent level; and * = significant at the 10 percent level

4.7 Multivariate Analysis

Although, the univariate analyses depicted a tremendously higher performance by banks in the Internet group(s) relative to non Internet bank group, it is hard to make any conclusive statement on the actual impact of the Internet adoptions on firm performance without a multivariate analysis. Here a multivariate regression model was estimated to investigate whether there is a link between offering Internet banking and bank's performance.

Return on Assets and Return on Equity were used as performance measures and Ratio of Net NPAs to net advances were used as a measure of bank risk. In selecting potential factors associated with performance and risk, various bank characteristics were used as proxies for the banks' internal measures, e.g., size, capital and expenses management ratios and internet banking dummies while macro-economic indicators were used to represent the external measures.

A linear equation, relating the performance measures to a variety of financial indicators were specified. The following model was used to examine the relationship between the performance of banks and adoption of Internet banking after controlling the other variables affecting the performance.

$$Y_{it} = c + \alpha * INTERNET_{it} + \sum \beta_i X_{it} + \epsilon_{it}$$

INTERNET is a dummy variable for Internet banks and the coefficient α provides the main static test. A statistically significant value for α indicates a financial performance gap between the Internet banks and the non-Internet banks at the means of the data. The coefficients were estimated by employing a multivariate regressions on a sample of banks.

Table 4.6: Showing description of variables

Independent variable	NAME	
Y1	ROA	The ratio of Average Net Profits to Average Assets

Y2	ROE	The ratio of net Average Net Profits to Average Equity
Independent Variables		
X1	INTERNET	Dummy for the banks who have adopted Internet banking
X2	SIZE	The natural log of the Total Assets.
X3	OPCOST	The ratio of Non-interest Expense to Net Operating Revenue
X4	NPA	The ratio of net NPAs to Net Advances
X5	EQUITY	The ratio of Equity Capital to Total Assets
X6	INF	The Annual Inflation Rate

Tables 4.8, Table 4.9 presents the results of 16 ordinary least square regressions for Kenyan banks with internet banking. As stated above, in addition to bank-level variables, the explanatory variables used included control variables like inflation for macroeconomic indicators. The estimation technique used was panel data method.

Tables 4.8 through Table 4.9 report the estimated coefficients of the panel regressions for ROA and ROE respectively.

Table 4.8: Internet adoption And Performance with ROA

	Co-op	Equity	KCB	DTB	Standar	Nationa	Barclay	Citibank
Variables	Parameters(β)	Parameters	Parameters	Parameters	Parameters	Parameters	Parameters	Parameters
Intercept	-	34.62**	27.71***(.007)	16.69(.152)	56.20**	18.45(.220)	69.63**	-
SIZE	1.22** *(.003)	-.529 (.280)	.398 (.678)	-.152 (.777)	-1.88** (.010)	.727 (.031)	- 1.57*** (.000)	1.61** (.020)
OPCOST	-	-	-.335 (.000)	-.271*** (.002)	-	-	-.58*** (.000)	-4.330E-02** (.021)
NIINCOME	.241** *(.000)	.193* (.067)	-5.967E-02 (.678)	.653*** (.000)	5.471E-02 (.654)	.329 (.275)	- 9.538E-02 (.488)	.277*** (.000)
NPA	-	-9.467E-02 (1.93)	-.108 (.183)	.410 (.198)	-	-	-	-3.22*** (.000)
INTERNET	-.686 (.592)	-.703 (.524)	-.413 (.771)	-.682 (.646)	.126** (.950)	-3.150 (.398)	.293** (.703)	5.34 (.105)

INF	.968** *(.003)	.814*** (.005)	.681* (.065)	.777** (.048)	2.16** *(.000)	3.38** *(.001)	1.84*** (.002)	.592 (.348)
-----	-------------------	-------------------	-----------------	------------------	-------------------	-------------------	-------------------	----------------

Note: *** = Significant at the 1 percent or better level; ** = significant at the 5 percent level; and * = significant at the 10 percent level

Further, table 4.8 shows regression of dependent variable ROA and other independent variables including INTERNET whose significance were of interest in this statistical analysis. The results showed a very small significance within two large banks and a small and negative significance by other banks. This could be attributed to the infancy and high capital investments still being employed by many banks in ensuring that internet banking is embraced by its customers.

Table 4.9: Internet Adoption and Performance using ROE

	Gulf	transnational	Imperial	Guardian	Chase	Nic	CBA	Mid east
Variable	Parameters	Parameters	Parameters	Parameters	Parameters	Parameters	Parameters	Parameters
Intercept	25.89** *(.000)	13.40** *(.177)	-650*** (.964)	35.55*** (.000)	36.34* **(.00)	13.48* **(.00)	40.99** *(.000)	27.61** *(.000)
SIZE	-.503**	-.154	.474	-.777***	- 1.03**	- 3.668E-	- 1.00***	-.687**

	(.042)	(.729)	(.614)	(.000)	*(.000)	02(.98)	(.000)	(.214)
EQUI TY	.152*** (.000)	-.168 (.229)	-.111 (.530)	.546*** (.008)	.181** (.024)	-.863E- 02(.56)	.118*** (.188)	.158*** (.000)
LOAN S	-8.209E- 02*** (.000)	-5.490E- 02 (.331)	*4.066E- 02 (.632)	-.126*** (.004)	- 1.078E- 02(.66)	3.316E- 02 (.450)	- 7.349E- 02**(.7)	-8.813E- 02** (.022)
OPCO ST	2.977E- 02***(.)	.144*** (.000)	.162*** (.000)	.111*** (.000)	2.264E- 02 (.044)	1.623E- 02 (.234)	2.566E- 02** (.050)	2.476E- 02 (.104)
NIINC OME	-.282*** (.000)	-.210 (.217)	-3.443E- 02(.885)	-.567*** (.000)	- .409** *	-.219** (.022)	- .402**(. 000)	-.265*** (.000)
INTE RNET	-1.82** (.019)	- 2.58*** (.009)	-3.26** (.019)	-1.20** (.025)	-1.25** (.026)	-1.14 (.110)	-2.55 (.723)	2.268 (.395)
INF	-.131 (.505)	-.114 (.656)	-.106 (.766)	-.137 (.341)	- 7.737E- 02(.604)	-.318* (.099)	- 1.846E- 02	-.397 (.420)

Note: *** = Significant at the 1 percent or better level; ** = significant at the 5 percent level; and * = significant at the 10 percent level

A notable result revealed that Internet banking has positive affects on the performance of foreign banks in terms of ROE at nearly 10 percent level of significance. This was attributed to the fact that foreign banks have higher electronic transactions e.g. electronic payments and e-transfers. On the other hand, the INTERNET is negatively and significantly associated with risk variable NPA. Hence, Internet banking has helped the banks in reducing non performing loans.

The adoption of online banking does not seem to have a significant impact on the performance of Kenyan banks measured in terms of ROA, ROE for banks with year of adoption. However, for the banks with 2 years of adoption, we see a significant decrease in the profitability. This could be attributed to the increase in IT expenditures following the adoption of the new technology.

Only for those with more than 2 years following the adoption of the internet banking, we see a positive coefficient of the variable on the ROE estimation. This indicates that the process is gradual. The sign of the coefficient on the ROA for the same period is also positive but this variable is not significant. This finding is in line with those of Hernando and Nieto(2007) who have done the same analysis using a larger pool of Spanish banks. Their study found that the technology has a positive impact on bank profitability also in the third year following its adoption.

The present study was an attempt to present the current status of Internet banking in Kenya and its implications on the Kenyan banking industry. A survey of commercial banks websites during the period of June, 2010 reveals that only 53 percent of the commercial banks operating in

Kenya offers Internet banking. Using data on the financial performance, this study also analyzed the performance of an Internet group in comparison to non-Internet banking group and impact of Internet banking on banks' performance.

The analysis indicated several significant differences in the profile of banks that offer Internet banking and banks that do not. Broadly speaking, on an average, Internet banks are larger, more profitable and are more operationally efficient than non-Internet banks as confirmed by this study. Internet banks have higher asset quality and are better managed to lower the expenses for building and equipment. In contrast to developed countries Internet banks in Kenya rely substantially on deposits, the traditional source of financing. Last, but not the least, an attempt was made to find out if there is any association between adoption of Internet banking and the banks' performance.

The evidence revealed a small, not so significant, association between adoption of Internet banking by banks and their performance of 1% and 10%. Thus, adoption of Internet banking was a reason behind the lower profitability of these banks, while Internet banks in new private sector were operating with higher cost of operations, including fixed cost and labour cost, thus affecting negatively the profitability of these banks.

Banks which had implemented internet banking for a longer time tend to have a higher positive significant association of significance of 10%. On the other hand, internet banking has a negative and significant impact on risk, which shows that, the adoption of Internet banking does reduces the risk profile of banks.

substantially on deposits, the traditional source of financing. Last, but not the least, an attempt was made to find out if there is any association between adoption of Internet banking and the banks' performance.

The evidence revealed a small, not so significant, association between adoption of Internet banking by banks and their performance of 1% and 10%. Thus, adoption of Internet banking was a reason behind the lower profitability of these banks, while Internet banks in new private sector were operating with higher cost of operations, including fixed cost and labour cost, thus affecting negatively the profitability of these banks.

Banks which had implemented internet banking for a longer time tend to have a higher positive significant association of significance of 10%. On the other hand, internet banking has a negative and significant impact on risk, which shows that, the adoption of Internet banking does reduce the risk profile of banks.

4.8 Conclusion

These results are consistent with the prior studies. As expected, our variable of interest, the online banking index is positive in the return on equity equation and negative in the overdue asset ratio equation. In particular, a one unit increase in the online banking index would have a positive impact if the period of implementation is 4 years and above, and negative if otherwise. On the other hand, online banking also helps commercial banks in reducing their poor assets. Online banking is expected to provide better information as all transactions are digitized and can be easily analyzed before making lending decisions.

Chapter Five

5.0 Summary, Conclusion And Recommendations

5.1 Summary

Evaluating bank performance is a complex process that involves assessing interaction between the environment, internal operations and external activities. In general, a number of financial ratios are usually used to assess the performance of banks. Financial performance has been studied under different yardsticks of performance i.e., size, profitability, financing pattern, economic efficiency, operational efficiency, asset quality, diversification and cost of operations. In particular, the positive coefficient associated with net interest margin in both the earnings measure as well as the asset quality measure shows that banks that take more risk earn a higher return and may acquire some bad loans as part of the process.

The study found out that out of the scheduled 43 commercial banks on 16 had transactional internet websites. Despite the growth in internet connectivity including access through mobile phones, it shows that most banks are keeping wait and see from larger banks to try out internet banking channels before they follow suit. All banks that had not implemented internet banking which were 57% had small asset base as well as the profit margins reported. In the univariate analysis the results drawn from different categories were used to remove bias of size in since banks that have implemented internet banking were large. Banks in all categories showed 1% to 10% significance in the impact of internet banking to their profitability, operating efficiency and financing pattern. Internet banks do not seem to reap any particular competitive advantages from initial investments in internet banking such as R&D spending. The effect seems spread out among all banks, showing a generalized benefit from these investments. Expenditure on

information technology does not lead to automatic higher performance in the banking sector. On the contrary, it reduces returns as it boosts costs. This has been explained by higher significance by those banks with 4 to 5 years of internet banking beating those of less than 2 years. Therefore it means as time goes banks will start reaping from internet banking investments.

In asset quality the results shows that the banks loan quality as net non performing Assets for the internet banks had a lower NPAs to net advances to those of non internet and with a significance of between 5% and 10%. This showed that internet banks are able to monitor their loan book as well as achieve diversification as shown by lower percentage of interest income to net profits as with a difference of 2% in the means.

The adoption of online banking does not seem to have a significant impact on the performance of kenyan banks measured in terms of ROA, ROE for banks with year of adoption of one. However, for the banks with 2 two years of operation of internet banking, we see a significant decrease in the profitability. This could be attributed to the increase in IT expenditures following the adoption of the new technology.

Only for those with more than 2 years following the adoption of the internet banking, we see a positive coefficient of the variable on the ROE estimation. This indicates that the process is gradual. The sign of the coefficient on the ROA for the same period is also positive but this variable is not significant. This finding is in line with those of Hernando and Nieto(2007) who have done the same analysis using a larger pool of Spanish banks. Their study found that the technology has a positive impact on bank profitability also in the third year following its adoption.

If we consider the scale of bank operations we find evidence in favour of economies of scale. The larger the bank, the better is performance. This effect is slightly more pronounced for internet banks. An increase of total assets by 1% would increase the return on assets by 1.16% for internet banks, and 1.13% for non internet banks. Further increasing assets could be even more rewarding for internet banks in terms of return to equity. The result, which is consistent with De Young's (2005) findings on internet bank size, might be explained by the specific features of online banking. Since its major activity is based on deposits and their related products, an increase in size would lead to higher revenues. Regarding costs, once the IT platform is set and the basic system is working, personnel and other expenses increase less proportionately as the dimension of the bank increases. We do not find a significant impact of scale on the cost/income ratio, however. This may be due to the relatively small size of internet banks as compared to the overall banking group. A cost reduction in the internet bank may not be large enough to affect the balance sheet of the group as a whole.

If an online bank is to prove profitable it would appear necessary for it to address itself towards more rewarding activities, to support other bank products or reduce fixed costs on deposit accounts. As anticipated, non-interest income is an important factor in driving/promoting a bank's performance. Whether we measure performance in terms of return on average assets or on equity, there is always a significant positive impact on performance. Curiously, this effect can be entirely attributed to internet banks. This may seem a bit counterintuitive as internet banks mainly handle deposit-based products. However, groups that encompass internet banks probably perform better on average than other groups that use the web as a mere delivery channel.

Possibly banking groups that have set up internet banks (a) are more advanced in their management, keeping an eye on client needs and being able rapidly to adapt to them; (b) have at their disposal other resources from activities not related to intermediation, which makes it possible to invest in internet banking technologies; (c) are able to acquire new clients via internet bank and exploit synergies with internet banks to attract more clients that stream into activities with higher value (cross selling of products). As the effect of non-interest income is to raise the cost to income ratio, these three different rationales may be relevant.

Websites are a powerful and interactive way to give information on various products (e.g. personal loans, mortgages). Pure online banks may then direct clients to the bank holding to complete the transaction. Besides, the information collected online may help banks to reduce credit risk exposure, since current account movements, money transfers and payments are currently tracked. This information may be an early warning on clients' repayment capacity. The effect of loan provisions on performance for the entire group suggests that the creation of an internet bank seems to be more likely if there is a large share of intermediation activities. Banking groups with few loan activities may consider internet banks as a means of reducing costs on standard transactions.

5.2 Limitations of this study

The major challenge in this study was with data collection. It was not easy to secure interviews with most commercial bank managers and staff. This was due to the bureaucracy involved in booking appointments. Getting personal interviews would have provided richer form of data.

Accessing historical data was also a big challenge. This due to poor records which were hardly accessible within the time that was available in this project.

The study also found out that a small number of less than 50 percent of banks had internet sites and that made the sample size too small as compared to other researches in developed countries. This makes generalization of the conclusions to be limited. Thus a larger study period of more than 10 years as done in other studies abroad would give better results as impact of such period of investments would have been felt.

The study also utilized return on equity and return on assets as measures of performance. Other measures performance with availability of time could bring better results such as using of accounting and non accounting measures. The common methodologies namely Data Envelopment Analysis and Stochastic Frontier Analysis can be to used determine a banks performance when implemented various strategies of operations.

5.3 Suggestions for Further Research

The study discovered that there exists a small significance between internet banking and financial performance for Kenyan banks. This is attributed to the short period internet banking has been in place. Research consisting of a longer period of time as well as larger sample size should be done.

This study also concentrated on financial performance. therefore, further research on non financial benefits or other forms of performance measures e.g. efficiency should be undertaken. Also research should be undertaken that looks into the factors impeding the benefits of internet banking on Kenyan commercial banks than it is in other developed markets. Of key interest would be factors affecting usage/unit of sale on the internet/e-channel and using break-even

analysis to determine profitability. This includes costs of implementation, technology based banking frauds and user awareness of these products.

REFERENCES

- Aarma, et. al (2001). "Banks' Retail Customer Satisfaction and Development of Bank-Customer relationships,"
- Abdullah, Z. (1985) A Critical Review of the Impact of ATMs in Malaysia. *Banker's Journal Malaysia*, 28, 13-16.
- Acharya, R. N., and A. Kagan. (2004): Community Banks and Internet Commerce. *Journal of Internet Commerce* 3(123-30).
- Arshadi, N. and E. C. Lawrence, 1987, "An Empirical Investigation of New Bank Performance", *Journal of Banking & Finance*, 11, 33-48.
- Berger, A. N., R. S. Demsetz, and P. E. Strahan. (1999): "The consolidation of the financial services industry: Causes, consequences, and implications for the future."
- Bradley, L. and K. Stewart. (2003). "The Diffusion of Online Banking." *Journal of Marketing Management* 19. P 1087-1109.
- Cavallo, L. & Rossi, S., 2001, "Scale and scope economies in the European banking systems", *Journal of Multinational Financial Management*, 11, 515-531.
- Daniel, E. and Storey, C. (1997). On-line Banking: Strategic and Management Challenges. *Long Range Planning*, 30/6:890-98.

Delgado, J., Hernando, I. and Nieto, M. J. (2006), "Do European Primarily Internet Banks Show Scale and Experience Efficiencies?" *European Financial Management* (forthcoming).

DeYoung, R. (2005). The performance of Internet-based business models: Evidence from the banking industry. *Journal of Business* 78 (3), 893–947.

DeYoung, R., Lang, W.W. and Nolle, D.L., (2007), How the Internet affects output and performance at community banks, *Journal of Banking & Finance* 31 1033–1060

Egland, K. L., Furst, K., Nolle, D., E. and Robertson, D. (1998). "Banking over the Internet", *Quarterly Journal of Office of Comptroller of the Currency*, Vol.17 No 4, December.

Furst, K., E, H. Lang and N. Nolle (2000). The adoption of transactional websites among US chartered banks.

Furst, K., Lang, W.W. and D.E. Nolle (2002) Internet Banking, *Journal of Financial Services Research*, 22: 1/2 95-117.

Gikandi, J. W. (2009). Adoption and effectiveness of electronic banking in Kenya. *Journal of Electronic Commerce Research and Applications* Volume 9 , Issue 4 (July, 2010)

Gupta, M. (1998). Strategic Implications of Technology on Operations of the Banking Industry. *Production and Inventory management Journal*, Second Quarter: 1-5.

Gupta, U.G. and W. Collins. (1997) "How Small Medium and Large Banks Use Computers." *Journal of Retail Banking Services* 19(4) 25-31.

Hernando, I. and Nieto, M. J. (2005), "Is the Internet Delivery Channel Changing Banks' Performance? The Case of Spanish Banks".

Jasimuddin, S. 2004. "Saudi Arabia Banks on the Web." Retrieved 15 July 2010, from www.arraydev.com/commerce/jibc/0103-02.htm.

Jayawardhena, C. and P. Foley (2000), Changes in the banking Sector: the case of Internet banking in the UK, *Internet Research: Electronic Networking Applications and Policy* Volume 10. Number 1. pp. 19±30

Miller S., and A. Noulas, 1997, "Portfolio Mix and Large-Bank Profitability in the USA", *Applied Economics*, 29, 505-512.

Murray, J. D. and R. W. White, 1983, "Economies of Scales and Economics of Scope in Multiproduct Financial Institutions: A Study of British Columbia Credit Unions", *Journal of Finance*, 38, 887-902.

Nasser, L., Edward C., (1987) "Data envelopment analysis and commercial bank performance: a primer with applications to Missouri banks

Njenga, A. (2009). "Mobile phone banking: Usage experiences in Kenya" Accessed 27 Aug. 2010. http://www.w3.org/2008/10/MW4D_WS/papers/njenga.pdf

Nyangosi R. (2009). Emergence of Information Technology in the Kenyan banking Sector: An empirical study. *International Journal of Electronic Finance* Volume 3

Ombati, T. O. (2009). Technology and service quality in the banking industry. *African Journal of Business & Management (AJBUMA)* Vol 1

Otieno, M. (2006) An investigation into internet banking technology adoption among commercial banks in Kenya. Unpublished MBA Project Report, School of Business, University of Nairobi.

Pikkarainen, T., et. Al, (2004), "Consumer acceptance of online banking: an extension of the technology acceptance model", *Internet Research*, Vol. 14 No. 3, pp. 224-35.

R. N. Acharya, A. Kagan, and S. R. Lingam, (2005). "Online banking and profit efficiency: Implications for community banking," *Journal of Money, Credit, and Banking*, submitted for publication.

Rose, Peter S. & Hudgins, Sylvia C., (2006). *Bank Management & Financial Services*, 6th ed. McGraw-Hill, New York.

Sathye, M. (2005), "The Impact of Internet Banking on Performance and Risk Profile: Evidence from Australian Credit Unions", *The Journal of International Banking Regulation*, Vol. 6 No. 2, February.

Saunders, M., Lewis P. and Thornhill, A., (2007) *Research Methods for business*

Students; (fourth ed.), pp.1-624, Pearson Education Ltd:

Simpson, J. (2002). The impact of the Internet in banking: observations and evidence from
Developed and emerging markets *Telematics and Informatics* 19 315–330

Simpson, J. (2002). The Impact of the Internet in Banking: Observations and Evidence from
Developed and Emerging Markets. *Telematics and Informatics*, 19, pp. 315-330.

Sinkey J. Jr. (2002). *Commercial Bank Financial Management in the Financial-Services
Industry*, Sixth Edition, Prentice Hall.

Sinkey, Jr., Joseph F., (1992). *Commercial Bank Financial Management: In the Financial-
Service Industry*, 4th Ed, Macmillan Publishing Company, Ontario.

Sullivan, Richard J., (2000). How has the adoption of Internet banking affected performance and
risk at banks? A look at Internet banking in the tenth Federal Reserve district,

Tan, M. and T. Teo. (2000). "Factors influencing the adoption of Internet banking." *Journal of
The AIS* 11–42.

Appendix I: Work Plan -2010

	2010					
Monthly/activity	March	April	May	June	July	August
Project proposal writing						
Corrections						
Data collection						
Data analysis						
Report writing						
Submission of Report						
Finalizing of report						

APPENDIX II: Existing commercial banks

- 1. ABC Bank**
- 2. Bank of Africa**
- 3. Bank of baroda**
- 4. Bank of india**
- 5. Barclays bank of Kenya**
- 6. Chase bank**
- 7. Citi bank**
- 8. City finance bank**
- 9. Cfc stanbic bank**
- 10. Co-operative bank of kenya**
- 11. Commercial bank of Kenya**
- 12. Consolidated bank of Kenya**
- 13. Credit bank**
- 14. Development bank of Kenya**
- 15. Diamond trust bank**
- 16. Dubai bank Kenya**
- 17. Equatorial commercial bank**
- 18. Equity bank**
- 19. Ecobank**
- 20. Family bank**
- 21. Fidelity comm.. bank**
- 22. First community bank**

- 23. Fina bank**
- 24. Guardan bank**
- 25. Giro commercial bank**
- 26. Gulf African bank**
- 27. Habib A.G. zurich**
- 28. Habib bank Kenya**
- 29. I&m bank**
- 30. K-repbank**
- 31. Kenya commercial bank**
- 32. Middle east bank**
- 33. National bank of Kenya**
- 34. N.I.C. bank**
- 35. Oriental commercial bank**
- 36. Paramount universal bank**
- 37. Prime bank**
- 38. Prime Meridian Bank**
- 39. Southern credit bank**
- 40. Standard chartered bank**
- 41. Trans-national bank**
- 42. UBA bank**
- 43. Victoria commercial bank**

Appendix III: Questionnaire

University of Nairobi

Department of finance and accounting

P.O Box 30197 - 00100 ,

Nairobi

Dear respondent,

Re: Collection of Survey Data on Internet Banking

I am a master's program student at university of Nairobi, school of business. In order to fulfill the masters program requirements. I am undertaking a research project on "internet banking and bank financial performance".

I kindly request your assistance in collecting data by filling in the accompanying questionnaire.

The information provided will be exclusively provided for academic purposes and will be held in strict confidence. Thank you

Yours faithfully,

Solomon cheruiyot

Kindly fill in the questionnaire below. The following question are required to show the level of internet banking activity in your bank

QUESTIONNAIRE

1. What is the name of the bank?
2. Does it have an website site
3. If yes when did the bank go online?

Year when internet banking/website started	Tick
Before	
2006	
2007	
2008	
2009	

The type of services fall under the three categories listed below

- (a) Information only

(b) Information exchange

(c) Transactional

4. Tick the type of services that are available on your website from the list provided

Type of service	Tick	
Customer care and support		
Seeking product and rate information		
Download personal bank transaction activity		
Download loan applications		
Check balances on-line		
On-line bill payments		
Inter-account transfers		
Apply for consumer loans		

Use credit cards online		
Calculate loan payment information		
brokerage account summary		

Average yearly budget on system		
The initial cost of the system in place		

APPENDIX IV: Internet Banking Measures

	City finance	website	Ownership	Financial	INTERNET 1 Has		INTERNET 2 years	INTERNET 3 level
1	City finance	no	Foreign/L	no	0		0	0
2	Dubai	yes	Nairobi	yes	0		0	0
3	Oriental	no	Nairobi	no	0		0	0
4	paramount	no	Nairobi	no	0		0	0
5	Mid east bank	yes	Nairobi	yes	1	<input type="checkbox"/>	1	1
6	Transnational	yes	Nairobi	yes	1	<input type="checkbox"/>	3	2
7	credit	no	Nairobi	0	0		0	0
8	First comm..	yes	Nairobi	0	0		0	0
9	Equatorial	no	Nairobi	0	0		0	0
10	Habib bank	yes	Foreign	no	0		0	0
11	Fidelity	no	Nairobi	0	0		0	0

27	Bank of Africa	Yes	Nairobi	Yes	1	<input type="checkbox"/>	4	4
28	Imperial bank	yes	Nairobi	yes	1	<input type="checkbox"/>	3	4
29	Cfc Stanbic	Yes	Nairobi /L	yes	1	<input type="checkbox"/>	2	3
30	National bank of k	Yes	Gov/L	yes	1	<input type="checkbox"/>	1	3
31	Bank of baroda	No	Nairobi	Yes	0		0	0
32	NIC	Yes	Nairobi	Yes	1	<input type="checkbox"/>	2	2
33	Barclays bank	Yes	Nairobi/L	Yes	1	<input type="checkbox"/>	5	5
34	KCB	Yes	Gov/L	Yes	1	<input type="checkbox"/>	3	3
35	Investment & moortgages	Yes	Nairobi	Yes	0		0	0
36	Standard bank	Yes	Nairobi/L	Yes	1	<input type="checkbox"/>	4	4
37	Diamond trust	Yes	Nairobi	Yes	1	<input type="checkbox"/>	2	3

12	Southern credit	No	Nairobi	0	0		0	0
13	Victoria	No	Nairobi	0	0		0	0
14	Consolidated	Yes	Gov	Yes	1	<input type="checkbox"/>	1	2
15	Giro bank	No	Nairobi	No	0		0	0
16	Guardian	Yes	Nairobi	Yes	1	<input type="checkbox"/>	2	3
17	Gulf African	No	Foreign	Yes	0		0	0
18	Habib AG zurich	yes	Foreign	No	0		0	0
19	k-rep	No	Nairobi	No	0		0	0
20	Development bank k	No	Nairobi	No	0		0	0
21	ABC	Yes	Nairobi	Yes	0		0	0
22	Fina	No	Nairobi	0	0		0	0
23	Chase	No	Nairobi	0	0	<input type="checkbox"/>	0	0
24	Family bank	No	Nairobi	0	0		0	0
25	India	No	Foreign	0	0		0	0
26	Ecobank	No	Foreign	No	0		0	0

39	Co-operative bank	Yes	Nairobi/L	Yes	1	<input type="checkbox"/>	2	2
40	Prime bank	Yes	Nairobi	no	0		0	0
41	Commercial bank of Africa	Yes	Nairobi	yes	1	<input type="checkbox"/>	3	2
42	Equity bank	Yes	Nairobi/L	yes	1	<input type="checkbox"/>	1	3
43	Citi bank	Yes	Nairobi	No	1	<input type="checkbox"/>	2	1