AN ANALYSIS OF THE STATE OF MOBILE PHONE BANKING IN KENYA

A CASE OF SELECTED BANKS IN KENYA

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DECLARATION

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

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ABSTRACT

Mobile phone banking is a fast growing sector in the banking industry and has become a major global concern. Many banks in the world are trying to take advantage of the technology in mobile phones and introduce the service as means of providing fast and efficient service. Since owning a mobile phone is becoming prevalent, banks in Kenya are trying to adjust themselves to the use of mobile phone banking to serve their present customers. Several banks are introducing the use of mobile phone banking; these include Co-operative bank of Kenya, which has the M-banking, National Bank with the Simple banking, and the Equity bank among others. These banks have services such as easy access to check balances, payment and subscription through mobile phones using Short Message System (SMS). They are also in collaboration with the network providers to offer services such as topping up of credit and payment of utilities.

This study sought to establish the state of mobile phone banking in Kenya by determining type of mobile phone banking services that have come up, technologies and marketing strategies used by banks and to assess customer perception on the same. It targeted 15 banks in Kenya that have introduced mobile phone banking services and 150 customers (10 in each of the banks). The study also sought to find out if the banks are fully exploiting the mobile phone services and whether use of mobile phone banking has led to expansion of their clientele base hence increase profitability. The study should assist the policy makers to come up with feasible options and policies on mobile phone banking. It will also act as a basis for further research on mobile phone banking services for banks in Kenya. The sample population was determined using purposive and stratified random sampling. Two questionnaires one for the bank and the other for customers were used to collect data. Data was coded and entered into a computer for analysis through the help of statistical package for social sciences (S.P.S.S). Data was analysed using descriptive and inferential statistics with the help SPSS. Data has been presented in form of tables and graphs.

The study has yielded several insights from major initiatives dedicated to offering mobile phone banking services by banks to their customers. It shows that mobile phone banking services are valued by many people in Kenya and, for the mobile phone banking users surveyed, are more affordable than traditional banking. It also shows that early adopters of mobile phone banking are willing to use mobile phone and are using the SMS service as mode of banking. Further, mobile phone banking providers must build greater awareness of their services and must find the right balance between human interaction and technology to appeal to more customers. More important, the study identifies that perceptions about banking, mobile phone banking, and technology are important in determining the rate of adoption. Income alone is not a sufficient indicator. The study argues for a deeper exploration of these perceptions and how they may be used to segment the low-income market.
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I would not forget God for being with me through the process.
ACRONYMS AND ABBREVIATIONS

ATM: Automated Teller Machine

CDMA: Code Division Multiple Access

CDPD: Cellular Digital Packet Data

EDGE: Enhanced Data GSM Environment

GSM: Global System for Mobile Communications

GPRS: General Packet Radio Services

HSCSD: High Speed Circuit Switched Data

IVR: Intelligent Voice Recorder

PC'S: Personal Computers

PIN: Personal Identification Number

PKI: Public Key Infrastructure

SMS: Short Messages Services

TETRA: Terrestrial Trunked Radio

WAP: Wireless Application Protocol
OPERATIONAL DEFINITION OF TERMS

Mobile phone banking involves the use of highly technical terms. While they are everyday terms to the technician or insider, they may not make sense to the non-technicians. Some of the more common used terms are as follows:

**Code Division Multiple Access (CDMA)** - An air interface technology that was developed by the U.S. military and commercialized by the U.S. Company, Qualcomm plc. CDMA assigns a code to all speech bits, sends a scrambled transmission of the encoded speech over the air and reassembles the speech to its original form at the other end. CDMA supports SMS with a message length of 120 characters. With CDMA, each conversation is digitized and then tagged with a code. The mobile phone receives a signal to locate that particular code and it then deciphers the conversation off the airwaves. It codes each conversation expanding it 128 times, making it easy to decipher at the receiving end.

**Cellular Digital Packet Data (CDPD)** - An enhanced packet overlay on analog cell phone networks used to transmit and receive data. This technology allows data files to be broken into a number of packets and sent along idle channels of existing cellular voice networks. CDPD provides 19.2 Kilobytes per second (Kbps).

**Enhanced Data GSM Environment (EDGE)** – it is a digital phone technology which is designed to increase capacity and data rates in GSM networks. EDGE is a faster version of GSM wireless service. EDGE enables data to be delivered at rates up to 384 Kbps on a broadband. The standard is based on the GSM standard and uses Time Division Multiple Access (TDMA) multiplexing technology. It can operate on any network with GPRS
deployed and the only requirement is a software upgrade implementation. It's a superset of GPRS also known as enhanced GPRS (E-GPRS).

**General Packet Radio Service (GPRS)** - GPRS, which supports a wide range of bandwidths up to 115Kb/s, is an efficient use of limited bandwidth and is particularly suited for sending and receiving small bursts of data, such as e-mail and Web browsing, as well as large volumes of data. It is a part of the GSM standard and delivers “always on” wireless packet data systems. With GPRS you only pay for the amount of information you download rather than the duration of connection.

**Global System for Mobile Communications (GSM)** - is a digital system that allows you to make phone calls. This is one of the leading digital cellular systems. GSM uses narrowband Time Division Multiple Access (TDMA), which allows eight simultaneous, calls on the same radio frequency. GSM is different from analog predecessors as it has the ability to provide features like fax services, text messaging, call forwarding, caller ID, call waiting and multi-party conferencing. Users can use one phone and one phone number internationally.

**High-Speed Circuit Switched Data (HSCSD)** - The final evolution of circuit switched data within the GSM environment. HSCSD enables the transmission of data over a GSM link at speeds of up to 57.6kbit/s. This is achieved by concatenating consecutive GSM timeslots, each of, which is capable of supporting 14.4kbit/s. Up to four GSM timeslots are needed for the transmission of HSCSD. It is based on the same principle as ISDN line.
Interactive Voice Response (IVR) - A software application, typically used in conjunction with corporate telephony hardware, which recognizes spoken commands. Typically used for helping callers navigate corporate directories and phonebooks or for other types of menu-driven services. Usually limited in the number of commands that can be recognized.

Short Message Service (SMS) - The transmission of short alphanumeric text-messages to and from a mobile phone, fax machine and/or IP address. Messages must be no longer than 160 alphanumeric characters (recently increased to 459 characters in other GSM) and contain no images or graphics. Once a message is sent, it is received by a Short Message Service Center (SMSC), which must then get it to the appropriate mobile device.

Terrestrial Trunked Radio (TETRA) is a specialist Professional Mobile Radio and walkie-talkie standard used by police, ambulance and military.

Wireless application protocol (WAP) - an open international standard for applications that use wireless communication. The main application based on WAP is Internet access from a mobile device, which can be used for things like banking, email exchange, ticket purchase, and news services. A secure specification that allows users to access information instantly via handheld wireless devices such as mobile phones, pagers, two-way radios, smart phones and communicators. WAP is supported by all operating systems. WAP’s that use displays and access the Internet run what are called micro browsers—browsers with small file sizes that can accommodate the low memory constraints of handheld devices and the low-bandwidth constraints of a wireless-handheld network.
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CHAPTER ONE

INTRODUCTION

1.0 Background information

Mobile phone services are increasing at an astounding rate. Subscribers in mobile phone networks in the world today are around 1 billion (CCK, 2006). With such a vast market reach, banks are trying to utilise mobile phone technology as way to reach their customers easily. Hi-tech devices are already very much a part of poor people's lives. In Africa alone, the number of mobile phone subscribers by June 2006 had reached 76.8 million, growing by an astonishing 58% annually in the past five years (CCK, 2006). Yet, despite being connected to a vast, efficient communications network, most of the world's poor lack access to a more crucial system - a system of formal financial services (Gautam, 2006). In Kenya alone we have over 5 million subscribers to the mobile phone networks and most of them have accounts with banks. Banks are now using the electronic technology in mobile phones to offer services that would have otherwise needed the full presence of customers through innovations in the mobile phone technology.

With the advent of e-commerce or e-business banks are now being forced to improve their services and make them easily accessible to customers. During the early days banks were using mobile vans to take services near to their customer who were not near the banks premises, which were usually situated in towns. They then moved to using the Internet and e-mail services to provide services to their customers, but with the innovation of mobile phone and its rapid growth (it sales have now surpassed the sales of television) banks are now being forced to change their strategies to mobile phone banking.
Several banks in Kenya are trying to exploit this vast market by introducing mobile phone banking as a package of services offered as part of their restructuring programs. Mobile phone subscription in Kenya is also increasing by the virtue that mobile phones are becoming cheap. Some of the services offered under this package include: enabling subscribers to access account balances through their mobile phones, wherever they are, subject to network availability, without having to visit the bank or the Automated Teller Machines (ATMs). Customers can also use funds available in their accounts to top up airtime, get SMS alerts immediately their salaries are credited into their accounts and obtain a mini-statement by simply requesting it through their mobile phones. Customers could also top up mobile phones of friends and relatives directly from their accounts using the service. Banks have now extended the service to the payment of utility bills: such as payment of electricity and water bills.

1.1 Problem Statement

In today’s world, the banking industry accounts for about 60% of financial transactions and capital flows (CBK, 2005). With liberalization of trade and easy and fast technological innovations, banks are being forced to change modes of providing service. Banks are aware of the growing competition in personal and retail banking segment in the banking business and believe the turf war could only be won through high-tech banking. Despite this general awareness, no empirical study has been carried to estimate the magnitude of exploitation of technology by banks and level of awareness among customers in the banks that offer mobile phone banking services. This study sought to establish the state of mobile phone banking among selected banks in Kenya.
1.2 Objectives

The general objective

The general objective of the study was to establish the state of mobile phone banking in Kenya with a view to providing data for the development of effective use of mobile phone banking technology in the sector

Specific objectives

The study sought to achieve the following:

I. To establish the level of awareness and customer perception on mobile phone banking.

II. To determine the type of mobile phone banking services offered by banks in Kenya.

III. To determine the type of mobile phone banking technologies used by banks.

IV. To assess the mode and type of marketing strategies used by banks on mobile phone banking.

V. To determine whether there is any significant difference in profitability between banks that have mobile phone banking and those that do not have.

1.3 Research questions

This study attempted to answer the following pertinent questions emerging within the domain of the study problem

a) To what level are customers aware on mobile phone banking and how do they perceive it?

b) What types of mobile phone banking services are available in Kenya banking sector?
c) What types of mobile phone banking technologies are available to banks offering mobile phone banking?

d) What kind or mode of marketing strategies do banks use to market this service?

e) What effect has the use of these services had on the banks' profitability?

f) What are the benefits and problems that accrue to banks that offer mobile phone banking?

1.4 Justification

Mobile devices, especially cellular phones, seem to be now the most reliable way to reach masses and to create loyalty among current customers, due to the possibility to provide services anytime, anywhere, with a high rate of penetration and potentiality to grow. In this regard, the study reviews the main benefits and assess the state of mobile phone banking.

The scarcity of information on state, impact and usage of mobile phone banking demands urgent attention, which therefore justifies the relevance of this study to provide guidance in mobile phone banking. Financial intermediaries are in most cases subject to regulations that limit the efficacy of external control mechanisms, such as the market for competition in the product market. Consequently, mobile phone banking issues have to be addressed in a broader manner. In order that this deficiency is addressed, this study will therefore provide information that will help meet this need.

1.5 Purpose of the Study

The purpose of this study was to establish the state and impact of mobile phone banking in Kenya and examine whether banks are fully using the available resources in the mobile
phone to increase their services. The focal point is the arguments that will generate a business model and the services that these delivery mechanisms can offer rather than the technology itself. Furthermore, if we consider the following factors, we can conclude that service rather than technology will generate revenue.

1) Having wireless access to critical financial information at anytime and anywhere creates convenience. This will result in an increase of the number of transactions per customer.

2) This increase of number of transactions will provide more income for fees.

3) The increased usage of the service will expand and enhance brand presence.

Finally, considering that there is no one standard in wireless banking and that each bank has its particular needs and infrastructure (legacy systems), the study examines some of the marketing strategies used by banks to create awareness to their customers.

1.6 Significance and anticipated outputs

It is envisaged that the result of the study will be of benefit to banks, as they will be able to focus on the mobile phone opportunities and hence increase their market share over their competitors. It will also help in the formulation of policies and strategies that will fully exploit mobile phone banking opportunities that are feasible in Kenya settings.

The study will form a basis for further research on use of mobile phone in the fast advancing technology and competitive business industry. The study will also help banks make assessment on the state and impact of mobile phone banking to their customers and its profitability.
1.7 **Scope of the study**

The study was carried at banks that offer mobile phone banking services to their customers. Employees in the relevant departments in the banks were interviewed. Customers in banks that offer mobile phone banking were also interviewed.

1.8 **Limitations of the study**

This study limited itself to banks with mobile phone banking services only. It did not cover other financial institutions, which would have been desirable for the study. The study was also limited on banking industry.

1.9 **Assumptions of the study**

The mobile phone banking providers and their customers will have known the existing opportunities in the use of mobile phones provided by available mobile network providers.
CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

The legal framework of banking in Kenya

The Companies Act, the Banking Act and the Central Bank Act and other prudential guidelines, which are normally issued by the Central Bank, govern the Banking industry in Kenya. The Central Bank is the main regulator of banks in Kenya. It is the regulating and supervising agency and the manager of monetary policy operations in Kenya. The Central Bank Act, Chapter 492 laws of Kenya empowers it to formulate and implement monetary policy and foster the liquidity, solvency and proper functioning of the financial system. The Capital Markets Authority regulates all companies, including banks that are listed in the Nairobi stock exchange.

The principal objects of Central Bank are to formulate and implement monetary policy directed at achieving and maintaining stability in the general level of prices, and foster the liquidity, solvency and proper functioning of a stable market-based financial system. In addition, one of the secondary objectives of the Bank is to license and supervise authorized dealers in the money market. The Bank also promotes a sound and stable banking system in Kenya by enforcing the requirements of the Banking Act and prudential regulations, fostering liquidity and solvency of banking institutions, ensuring efficiency in banking operations and encouraging high standards of customer service.
The Bank also works closely with the Institute of Certified Public Accountants of Kenya (ICPAK) to ensure that the banking sector leads the other sectors in the implementation of International Accounting Standards (IAS).

2.1 The Banking system in Kenya

Kenya features a commercial banking system dominated by numerous commercial banks and a small number of non-bank financial institutions, which concentrate mainly on mortgage finance, insurance, lease hire and related financial services. Over the years the sector has grown into a more complex scene of banking institutions of different types and ownership. According to statistics by the Central Bank of Kenya by the end of the year 2005, there were 45 banking institutions including 95 foreign exchange bureaus broken down as follows:

- 45 commercial banks,
- 2 non-bank financial institutions,
- 2 mortgage finance companies,
- And 1 building societies, and;
- 95 foreign exchange bureaus.

Of all the banks, 40 are locally owned. The commercial banks and the non-banking financial institutions offer corporate and retail banking service but a small number, offer other services, which include investment banking. In addition there are 10 specialized organizations set up by the government to assist the specific sectors of the economy; these include:

- The Agriculture Finance Corporation,
• Agriculture Development Corporation,
• Industrial and Commercial Development Corporation,
• Kenya Industrial Estates, and;
• Industrial Development Bank

Table 2.0: Banks in Kenya

<table>
<thead>
<tr>
<th>Type of institution/Bureau</th>
<th>Nov 2002</th>
<th>Nov 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Commercial Banks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Operating</td>
<td>43</td>
<td>46</td>
</tr>
<tr>
<td>(b) Under CBK statutory management.</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>Building Societies</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>(a) Operating</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>(b) Under CBK statutory management.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortgage and finance companies</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Non Bank Financial Institutions</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>52</td>
</tr>
<tr>
<td>Foreign Exchange Bureaus</td>
<td>48</td>
<td>95</td>
</tr>
</tbody>
</table>

*Source: Central Bank of Kenya- 2005*

2.2 Bank performance indicators

Grigorian and Manole (2002) analyzing the performance of banks in transition observed that banking sectors in transitional economies have experienced transformations throughout the 1990s. While some countries have been successful in eliminating underlying distortions and restructuring their financial sectors, in some cases financial sectors remain underdeveloped and the rates of financial intermediation continue to be quite low. To fully assess the efficiency of bank operations it is necessary to model various types of functions performed by banks, and control the inputs necessary to
provide a certain level of utility to owners and depositors (whereby the utility to owners is profits and to depositors is services) while performing those functions.

Fries et al (2002) while examining the same phenomenon found out that bank performance differ significantly depending on the reform environment as well as the competitive conditions in which they operate. In the Kenyan context, the following indicators can therefore measure the performance of a bank:

(a) *Capital adequacy* – this is measured in terms of total capital to total risk weighted asset ratio, which shows the amount of capital and institutions holds relative to the risk profile of its assets. It provides the cushion to protect depositors and creditors in case of loss. In the Kenyan situation, institutions are required to maintain a minimum ratio of 12%. Additionally, banks are expected to satisfy the following capital requirements:

i. Minimum core capital (capital after adjustment for losses and excludes revaluation reserves and goodwill) of KSh. 300 million for banks and KSh. 225 for non-bank financial institutions,

ii. Minimum ratio of the core capital to deposits of 8%,

iii. Minimum ratio of core capital to total risk assets ratio of 8%.

(b) *Asset quality* – this is rated on the basis of the proportion of non-performing loans net of provisions to gross loans. It involves loans and advances which are categorized into five groups depending on the time past due: normal risk, watch, substandard, doubtful, and; loss.
(c) *Earnings and liquidity* – earnings are measured on the basis of return on assets while liquidity of the banking system is measured by the ratio of the net liquid assets to total deposits.

Other parameters may also include:

i. Market share and lending behavior

ii. Credit distribution and distribution of bank profitability

iii. Composition and changes in assets, liabilities, deposits, capital and reserve, profit and loss.

The increasingly advanced levels of information technology embraced by banks have had a positive impact in the sector. The new and dynamic information systems adapted by most banks have enabled them to process data faster and efficiently. This has enabled them to downsize their branch operations, thereby cutting on cost and improving service delivery to their customers. Some major developments that have taken place so far in the banking sector in Kenya include the implementation of risk-focused supervision by the Central Bank, amendments of banking legislation, off-site data processing and surveillance and inspections.

It is believed that the issues affecting banking in Kenya include:

a) Changes in the regulatory framework, where liberalization exists but the market still continue to be restrictive,

b) Declining interest due to customer pressure leading to mergers and reorganizations,
c) Increased demand for non-traditional services including the automation of a large number of services and a move towards emphasis on the customer rather than the product, and;

d) Introduction of non-traditional players who now offer financial services products.

2.3 History of mobile phone banking

The origins of mobile banking can be traced back to the Second World War, when field cash offices of US army provided all units and individual officers with the relevant currency of the country in which they were based and received money from army post offices and officers’ shops. One such unit, originally set up in a tent, is known to have been housed in a three-ton truck from which army-banking business was conducted. Similarly the United States army operated pay offices from vans, one of which, a Studebaker, was purchased by National Bank of Scotland to set up its first mobile banking service in 1837 (Couste, 2003).

The National Bank of Scotland, founded in Edinburgh in 1825, had an extensive network of branches spread over a wide geographical area. One problem it faced was how to provide banking facilities in remote areas, where the population was too scattered to warrant the establishment of a sub-office. The idea of introducing a ‘Traveling Bank”, was developed late in 1946.

After the traveling banks came the local branches: where banks were opening branches as a way of bringing services near to the people. Later due to financial and economic problems banks were forced to close or reduce staff in some of their branches. This
reduction in staff and branches came when transactions such as processing of loans or withdrawal of cash took long since banks had to communicate to the head office first before approving and disbursing of a loan. Cash withdrawals were to be done at the bank branch where an individual had an account. To overcome the inconveniences caused, banks exploited the computer technologies services available, which allowed them to network their branches to reduce transaction times and allow withdrawals at any bank branch. The Internet technology coming in the early nineties largely improved on this networking. It is a computer network consisting of a worldwide network of computer networks that use the network protocols to facilitate data transmission and exchange.

Today the Internet is revolutionizing the way the financial industry conducts business, empowering organizations with new business models and new ways to interact with customers. The ability to perform banking transactions online has created new players in the financial industry, such as online banks and brokers who offer personalized services through their Web portals. This increased competition is driving traditional financial institutions to find new ways to add value to their products and services, gain competitive advantage and increase customer loyalty while also attracting new, high-value clients.

Mobile and wireless technology, combined with the wide variety of portable devices available today, enables new revenue opportunities for financial services organizations. This provides a new channel that can be used to refresh and expand the customer base, attract prime customers and enhance loyalty. With mobile and wireless technology, banks can offer wide possibilities of services to their customers, from the freedom of paying bills while stuck in traffic, to receiving notification of a change in stock price while
having lunch, the convenience and time saving benefits of wireless financial services are huge. The challenge, then, is how to turn these possibilities into a reality for the customers. (Oyuke, 2005)

2.4 Mobile phone banking in Kenya

Mobile phone banking service in Kenya is a new phenomenon whose popularity and awareness is growing. Many banks are now introducing the use of mobile phone as a way to offer fast and efficient service. Banks in Kenya have noticed the potential in mobile phone technology and are now adjusting their services to the use mobile phones and are at par with banks in developed countries. Mobile phone banking service was first introduced in Kenya, in 2003, by Co-operative Bank of Kenya (M-banking). Many other banks have now introduced mobile phone banking as a package of products and services offered. The latest being the Kenya Commercial Bank (KCB connect) which introduced this package in August 2006. Other banks having this service include the National Bank with (simple banking), Trans- National Bank (SMS banking), Equity Bank (e-banking), CFC Financial Bank, Stanbic Bank, Barclays Bank of Kenya, Consolidated Bank of Kenya, Commercial Bank of Africa and City Finance Bank. Most of these banks offer services such as account balance checking, top up of airtime credit, payment of utilities such as Kenya Power and Lighting bills, cheque book request and mini statements issuance. Most of these services are supported by the SMS support systems (CCK, 2006). The most recent support system introduced in Kenya is the EDGE.
2.5 Trends and financial services

Over recent years, banking and a customer's access to financial services has changed pace beyond the belief of traditional retail banks. In just half a century, banks have moved from local branches, to branch networks, to ATM machines, to ATM inter-bank agreements, to home banking software, to call centres, to telephone banking and to internet banking. However, perhaps the most recent development for banking customers is the ability to use their mobile phone. This is completed using specialist software on a card inside your phone. With technology changing so rapidly and customers requiring different services, traditional banks have a great deal to do if they are to retain their competitive advantage.

Moreover, banks are not just banks anymore. They sell insurance, loans and help you manage your share portfolio. New products mean extra systems to store customer accounts or to help customer care agents, querying information for you. In fact, to sell to maximum effect, banks need to really know their customers: what products they have, why they have some and not others, what they might like to hear about etc.

According to research by the Gartner Group, customers that utilize wireless devices for banking and brokerage are more likely to stay with the institution. Once customers get used to the convenience of viewing accounts and making transactions at anytime, they are less inclined to switch institutions. Consequently, what services the bank can offer to add value to the customers is more important than what technology they should use.

The services that mobile banking can offer are the following:
I. Mini-statements and account history and exchange data message and email

II. Fund transfers, bill and commercial payments

III. Real-time stock quotes, check book request and general information

IV. Personalized alerts and notifications on security prices

These services can be offered using two different standards SMS (Short Message Services) or WAP (Wireless Application Protocol). The first one is a facility for sending short text messages on cell phones and the second one offers Internet browsing from wireless devices.

2.6 Future of mobile phone banking

More people around the world own a mobile phone than a personal computer. Every major software house, hardware manufacturer and network service provider in the world knows that all potential clients own mobile devices and therefore, the cheapest way to deploy new services from a central system to them is through the mobile phone. The only other device that might compete in popularity, as a customer touch point, is digital television, except it needs wires and is not portable, but with the new era of digital television services already interacting with customers, digital TV is likely to be the place where customers personalize their profiles rather than complete all tasks on the move.

The fundamental point here is that everyone in the next few years will have a mobile phone and nearly everyone with a mobile phone will have a bank account. Customers will want access to all their financial services from anywhere at anytime regardless of
who provides the service. In short, linking a portable device such as a mobile and a current account seems to be an obvious way forward.

Information is a commodity. Most banks know this, but the important point to remember here is how banks use this knowledge to their benefit, as well as to the benefit of the customer. Retailers have used loyalty cards to obtain knowledge about their customers. In turn this has allowed them to offer customers the products that they want. Pay-My-Bills, an American company is an example of how companies are trying to make life easier for customers. This organization pays all your bills for you and then invoices you the total amount once.

One of the next changes that we will see in the near future is the introduction of 'smart' banking cards. The magnetic strip on banking cards will be replaced by a small chip, which is about the same size as your fingernail. The chip will represent not only a method of identification but also it could store electronic cash — a value that matches coinage but without the weight. One of the main benefits of these new cards is that smart card readers or your mobile phone can also read them. Cellnet and VisaCash in Leeds in UK and Florida State University (USA) have both already been involved in trials using hybrid cards to enable a wireless cash machine in your pocket.

**One-stop**

Essentially, customers want portals for e-services, in a similar way to their preference for wanting hypermarkets in the physical world. Except this time, the distribution network is invisible and the goods are intangible. Managing the quality of service delivery is still
difficult however, because there are bottlenecks in electronic networks too (both mobile data and internet data).

Mobile Phone Banking Systems of the future will need to have the ability to communicate with customers on all wireless networks, wherever they are and whatever time of day it is (GSM, PCS, CDMA, CDPD, TETRA to name but a few). Mobile Phone Banking Systems will also be required to be able to support all types of mobile data as they proliferate e.g. SMS, HSCSD, GPRS, and EDGE. Banks must however avoid purchasing multiple middleware platforms; the solution purchased should be multi-channel hence supporting the Internet, collaborative browsing (call center integration), IVR, digital television and any new channels, which develop over the next few years.

Many banks in developed countries already support SMS, smart menus and now wireless Internet (WAP) content. Mobile digital signatures enable customers to sign transactions safely. Mobile phones can either have an application on the smart card inside the phone allowing customers access to banking services or, phones can have a browser to access services from a mobile phone banking system.

Voice recognition will be one of the next powerful interfaces that will be used to obtain financial services. Mobile Phone Banking Systems will understand instructions spoken to them. For example, you will say, "Please transfer 100 shillings to my personal VISA account" and the task will be completed. This technology already exists and banks in Europe are very much at the forefront of this. Mobile Phone Banking Systems will know when a customer is using IVR with a mobile telephone and hence will ask the following; "would you like me to (1) read it to you, (2) send you an SMS message with a summary,
(3) email you, (4) send it as a fax, (5) store it in your phone (6) send you a voicemail." A customer's mobile will know their current balance at any time and the Mobile Phone Banking System will alert a customer when certain credits and debits have occurred.

What's worth observing at this point is banks may not limit themselves to just financial services. It is easier than it ever was to move all your incoming and outgoing transactions to a new account. So, just like mobile network operators have been looking at value added services to increase loyalty, banks are doing the same. Similarly a network operator carries your voice and data calls in a secure manner. There is no question that if a bank can stay in touch with you via your mobile phone then they can probably stop you straying elsewhere, but only if they offer true value-added services. Anything they offer needs to be presented to you in a familiar way, with your favorite services easily accessible, at low cost (rather, no cost) and it must be 100% reliable. If a service is offered as a 24/7 one, they must deliver, because a couple of problems will leave that customer disgruntled and looking out for the next offer.

Mobile platform technology is here to support the majority of electronic distribution channels. Over the next year, perhaps 25% of mobile phone users will have the capability of completing transactions using their mobile phone. The market should now be driven by the innovative services that banks believe will give them a competitive advantage, rather than just technology.
2.7 Problems and Challenges

Security

Like in Internet banking, security is also a major concern in Mobile Banking. Banks and vendors have to resolve this issue if they want to increase transactions through these channels.

The main problem when conducting a transaction over a PC or wireless equipment is that the customer only needs a PIN to start the operation, and since the PIN itself does not guarantee that the person who is transacting is the real cardholder, additional security is needed. It is important to address the fact that many security violations occur within the institution or the service provider.

Currently, there is no security standard; companies have implemented many solutions even though the trend is to use smart cards as the utmost security technology. The solutions currently implemented are the following:

a) Limit in the type of transactions in order to reduce the risk of the cardholder. For example, funds transfer to third parties.

b) Use of a different PIN for mobile banking. For example, access to Citibank mobile banking is through MPIN (Mobile Banking Personal Identification Number).

c) Secure network architecture. The more common security used is PKI (Public key infrastructure) an encryption used for PDA's and smart phones, PKI consists of two keys, a public key and a private key, used to authenticated the user and encrypt the data.
d) Smart cards as a digital identification and mobile phone (card reader are the highest technology in terms of security). This is because they have PIN, which are only specific to one customer and will be hard to hack by most electronic thieves.

2.8 Benefits of Mobile Phone Banking

1. *Growth in new customer base and markets*- Developing wireless applications and services targeted at the mobile mass market will allow attracting new, high-value customers into mobile banking portal and expanding the reach to global markets.

2. *Increased share of customer wallet*- The convenience of having personalized wireless access to critical financial information is an invaluable service for customers on the move. Enabling the execution of time-sensitive financial transactions anywhere, anytime, provides the opportunity to strengthen the relationships with existing customers. This ultimately results in an increased share of the customers' transactions—preventing them from taking a portion of their financial business elsewhere

3. *Growth in assets; number of transactions and fees*- Granting customers flexible access to financial information and accounts enables them to perform transactions when it's most convenient for them. As a result, they have the opportunity to conduct transactions more frequently, driving increased revenue from fees.

4. *Expand and enhance brand presence*- Brand and reputation for convenience, service and innovation will be strengthened and enhanced each time customers on
the move stop to check their stock portfolio or to pay bills wirelessly. This also offers significant potential to grow the market awareness through word-of-mouth.
2.9 Conceptual framework

This framework attempts to examine and explain factors that affect and hence influence provision of mobile phone banking service by banks in Kenya. These factors include the mobile phone banking technologies available from mobile network operators, mobile phone banking services available, Banks' marketing strategy, customer perception and competitiveness in the banking industry. This will influence the bank on either to offer or not to offer mobile phone banking services. It is envisaged that mobile phone banking will have benefits to the bank, which include competitive advantage over competitors, increase in profitability, increased customer base, expanded and enhanced brand presence.

State of mobile phone Banking.

Customer perception

Mobile phone technologies

Mobile phone services availability

Banks marketing strategy

Use of mobile phone for banking

Results in

Benefits accruing from mobile phone banking

Dependent variable

Independent variables
CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction
This chapter includes: Research design, area of study, target population, data collection instruments, data collection procedure, and data analysis.

3.1 Research design:
A descriptive study was used to collect both qualitative and quantitative data. It was case study. This method was appropriate because it allowed for extensive data collection and in-depth investigation within a short time frame. (Mugenda and Mugenda, 1999).

3.2 Area of study
This study was carried out at banks that offer the mobile phone banking services to their customers in Nairobi, Kenya. Due to the fact that most banks have their headquarters in Nairobi, much information was gathered. Most Nairobi residents were also presumed to have good knowledge on the use of mobile phones and were aware of the services provided by mobile phone network providers.
Secondly Nairobi is an area that has the most network availability, though most areas in Kenya are covered, Nairobi as a region is widely covered and has the largest number of mobile phone subscribers. The study also presumed that it is in Nairobi that mobile phone banking services are needed more because most people are employed and are busy to be
queuing at the banks awaiting for services from ATM's. Therefore it was easy to access the target population.

3.3 Target population

This study targeted banks that offer mobile phone banking services to their customers. Customers to these banks were also be targeted. List of all banks in Kenya (see appendix IVA) and banks that offer mobile phone banks (Appendix IVB) are attached.

3.3 Sample size and sampling procedure

Purposive sampling was used to select a sample. There are many banks in Kenya and my sample size was 15 banks, which limited the one I could choose due to the fact this package is still new in Kenya. Purposive sampling was used to identify all banks that offer the mobile phone services. The population was stratified into banks that offer and those that do not offer mobile phone banking services.

As has been mentioned earlier, this study focused on commercial banks. A three-stage stratified random sampling technique was employed to select the banks for in the study. The following procedure was followed:

1) A comprehensive list of all commercial banks in Kenya was drawn – see Appendix IVA.

2) A dichotomised list consisting of all banks offering mobile phone banking and those that do not offer was prepared- see Appendix IV B.

3) Appropriate number of banks were then randomly selected from each sub-list as follows – see Appendix IV C:
A random numbers table was used to arrive at the indicated number of banks after each bank was given a number unique to itself. This procedure applied was considered effective as each bank will have a non zero chance of being included in the study. There was one respondent from each institution – operations manager or the Company Secretary whenever the manager was not available. An in-depth interview was conducted after a questionnaire had been filled. The Managers were targeted because the study intended to focus on respondents who were able to give an overall understanding of the banks’ management systems, functions, and procedures.

A sample of 10 customers from each bank that offers mobile phone banking services was randomly selected. Systematic random sampling was used to select the sample of the customers where every 5th member of the population was selected from the banks branches in a span of 3 weeks.

3.4 Data collection method and instruments

Questionnaires were used to gather data. A set of questions both closed and open ended was used to collect data from each respondent. The in-depth interviews provided information like services offered by banks, any significance to the bank, profitability. The respondents were accessed from banks information desk. Their consent was sought and assurance offered by the researcher on confidentiality. Secondary data was collected from published financial reports or any other document available.
3.6 Pilot Study

Pre-testing of the data collection instrument was done before the actual field research was carried out so as to evaluate the validity and reliability of the research instruments. This was achieved through a pilot study, which was carried out before the actual study. The pilot study was administered in selected banks in Nairobi. Mugenda and Mugenda (1999) caution the use of subjects in the actual sample in the pretext. The main purpose of the pilot study was to find out the following: Whether the questionnaire covered all the intended dimensions of the research, whether all the questions were clear and unambiguous and whether the space allowed for the answers was adequate. After the pretext, modifications and adjustments were made where necessary.

3.7 Data Collection Procedure

A 4-day preliminary survey in all selected firms was undertaken, so as to identify their location, to identify research assistants and arrangements with the administration for the actual data collection day. Questionnaires together with introduction and covering letters were distributed to subjects forming the study sample. They will then be collected in a span of a week.

3.8 Data analysis and procedure

Upon completion of data collection, the interview schedule was scored and data edited, coded and entered into the computer for analysis. The statistical Package for the Social Sciences (SPSS) was used to help in analysis.
Statistical procedures were applied to the data and used to express concepts and relationships. The researcher used descriptive and inferential statistics for data analysis. Measures of central tendency: mean, mode, and median were used to describe the population. Chi square test was used to determine the statistical significance of relationships between profitability and mobile phone banking services. The statistical difference was measured at the 0.05 level of significance.
CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter presents the research findings in a study on the Analysis of the State of Mobile Phone Banking in Kenya: A Case of Selected Banks in Kenya. The results and findings of the study are presented according to the objectives of the study, which include establishing the state of mobile phone banking in Kenya, the level of awareness and customer perception on mobile phone banking. Others are determining the type of mobile phone banking services offered by banks in Kenya, the type of mobile phone banking technologies used by banks and assessing the mode and type of marketing strategies used by banks on mobile phone banking. This chapter also discusses the whether there is any significant difference in profitability between banks that have mobile phone banking and those that do not have. The data were collected from 150 face-to-face interviews with customers to banks that offer mobile phone banking and 15 banks that offer the services.

4.2 Background Information on the Banks

There are only 45 banks in Kenya and 33.3% were sampled for the survey. The banks have been in Kenya for a period ranging from three to 86 years. The services offered by the banks include commercial retail banking, corporate banking and investment banking. Most of the banks were operating as retail and corporate banks. Fifteen (33.3%) banks in Kenya were offering mobile phone banking services. This was still a new phenomenon
in the banking sector having been in operation for a short time, with Co-operative Bank being the longest operating mobile phone banking for 5 years now.

4.2.1 Socio Demographic Characteristics of Study Participants (Customers)

A total sample of 150 customers participated in the study. Table 4.1 shows the distribution of the respondents in terms of gender, educational level and occupation. Ninety (60%) of the participants were male and 40% (60) being female. Most of the respondents had higher educational level, with the highest level being in the diploma/certificate level, followed by degree/university level, then secondary level. Most the account holders were employed, while others were in business and self-employment.

<table>
<thead>
<tr>
<th>Educational background</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Graduate</td>
<td>30</td>
<td>60%</td>
<td>20</td>
</tr>
<tr>
<td>Diploma</td>
<td>55</td>
<td>68.75%</td>
<td>25</td>
</tr>
<tr>
<td>Secondary school</td>
<td>5</td>
<td>25%</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>60%</td>
<td>60</td>
</tr>
</tbody>
</table>

Source: Researcher 2007

Most of the bankers were operating salary accounts, followed by saving accounts. The salary account was widely used by those in employment while those in self-employment or business used the savings and current accounts. Most the customers were aware of the provision of mobile phone banking by their respective banks but were not using the service due to different perceptions.
4.3: **Level of Awareness and Customer's Perception**

Three main findings emerged from the survey. First, most people among users of mobile phone-banking services give it high ratings for convenience, cost, and security. Second, although users and nonusers say they are open to using new technology, they still value human interaction. Finally, beyond high awareness, some potential customers do not use mobile phone banking services because they also perceive themselves as ineligible for mobile phone bank accounts and see mobile phone banking as expensive and insecure. These findings are not unexpected. The people using mobile phone banking services today look like early adopters, with higher incomes, education, and technological sophistication. This reflects what one would expect for people adopting new technologies anywhere. However, the findings confirm that there is a market for mobile phone banking among bank account holders. Providers (Banks) must increase awareness of mobile phone banking services, however, and overcome several strongly beliefs, if more people are to use them.

The study found out that most customers were aware of the mobile phone banking services offered by their prospective banks but were not using the service. Most of the respondents were aware of the airtime top up service, followed by mini statements and account balance and history enquiries, followed by the utility bill payments. Real time stock quotes were not popular among the respondents. A minimum number of respondents were however using the services provided by the banks; this is because most the respondents felt that the banks had not provided them with sufficient information on the use of the services. Among those utilizing the services, top up of airtime and mini
statements enquiries were the widely used services. Also in use was Utility bill payment thanks to the e-bill electricity payment by the Kenya power and lighting company.

Customers surveyed use mobile phone banking services because it is “cheaper” (70 percent), “safe” (69 percent), “convenient” (68 percent), “fast” (68 percent). Customers report spending an average of 45 minutes and KSh. 50 to reach a bank branch or other bank ATM teller agencies. Although customers must still visit branches for cash deposits, with mobile phone banking they can use their mobile phones to check their account balance, payments, or transfer money to friends and family—without expending valuable time and financial resources. Table 4.2 shows the banking transactions mobile phone banking services conduct, on average, each month and the number of transactions performed by mobile phone banking users.

Table 4.2 Average basket of transactions by mobile phone banking users per month

<table>
<thead>
<tr>
<th>Banking transactions</th>
<th>All transactions</th>
<th>All banking channels</th>
<th>Mobile phone banking transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy and top up airtime</td>
<td>3.7</td>
<td>2.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Balance inquiry</td>
<td>2.7</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Cash withdrawal</td>
<td>1.7</td>
<td>1.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Cash deposit</td>
<td>0.8</td>
<td>0.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Money transfers</td>
<td>0.8</td>
<td>0.5</td>
<td>0.0</td>
</tr>
<tr>
<td>Utility payment</td>
<td>0.7</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Mini-statement</td>
<td>0.7</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Pay store accounts</td>
<td>0.5</td>
<td>0.5</td>
<td>0.2</td>
</tr>
<tr>
<td>Electronic bank transfer</td>
<td>0.4</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Check deposit</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12.1</strong></td>
<td><strong>9.0</strong></td>
<td><strong>5.7</strong></td>
</tr>
</tbody>
</table>

Note: figures based on average number of transactions of each type conducted monthly, weighted by the number of users who say they conduct them. Not all users conduct all types of transactions. The “average basket” should be viewed as the mean usage among surveyed users, rather than a profile of a typical mobile phone banking user. Column two shows all transactions via all mobile phone banking channels, including mobile phone, ATM, and partner bank branches. Column three shows only mobile phone banking transactions conducted via mobile phone.

Source: Researcher 2007
Lower cost may be one reason mobile phone banking services users give the service high ratings. Of all banking channels, mobile phone banking falls closest to what mobile phone banking services users surveyed say is their ideal way of doing banking. Mobile phone banking was most associated with statements such as “more affordable,” “makes banking more convenient,” “easy to access,” and “you pay less service fees.” Nine out of 10 users surveyed say the mobile phone banking service is “not expensive” or is “inexpensive” for the benefits it gives them. In contrast, bank branches and ATM’S are strongly associated with having high fees, taking up too much time because of long queues, providing poor customer services, and being unsafe because of risk of robbery. The appeal of mobile phone banking may be drawing customers away from ATM and branch channels. Table 4.3 shows where the 60 mobile phone banking services customers surveyed do their banking and where the 90 nonusers with bank accounts conduct transactions.
Table 4.3 Percent of transactions conducted at each banking channel

<table>
<thead>
<tr>
<th>Action</th>
<th>Non users (90)</th>
<th>Users (60)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shop/ store 75%</td>
<td>Cell phone 17%</td>
</tr>
<tr>
<td>Buy and top up airtime</td>
<td>ATM 25%</td>
<td>Shop/ outlet 81%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATM 4%</td>
</tr>
<tr>
<td>Pay utility bills</td>
<td>Municipal/ utility payment center (POS) 77%</td>
<td>Cell phone 19%</td>
</tr>
<tr>
<td></td>
<td>Bank 23%</td>
<td>Utility payment center 66%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bank 15%</td>
</tr>
<tr>
<td>Check account balance</td>
<td>ATM 79%</td>
<td>Cell phone 24%</td>
</tr>
<tr>
<td></td>
<td>Bank 33%</td>
<td>Bank 16%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATM 49%</td>
</tr>
<tr>
<td>Mini statements order</td>
<td>ATM 65%</td>
<td>Cell phone 26%</td>
</tr>
<tr>
<td></td>
<td>Bank 45%</td>
<td>Bank 22%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATM 43%</td>
</tr>
<tr>
<td>Transfer cash between accounts</td>
<td>Bank 74%</td>
<td>Cell phone 8%</td>
</tr>
<tr>
<td></td>
<td>ATM 26%</td>
<td>Bank 82%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATM 10%</td>
</tr>
<tr>
<td>Make electronic bank transfer</td>
<td>Bank 70%</td>
<td>Cell phone – none (0)</td>
</tr>
<tr>
<td></td>
<td>ATM 30%</td>
<td>Bank 85%</td>
</tr>
<tr>
<td>Pay store/ supermarket accounts</td>
<td>POS 85%</td>
<td>Cell phone 0</td>
</tr>
<tr>
<td></td>
<td>ATM 15%</td>
<td>POS 85%</td>
</tr>
<tr>
<td></td>
<td>Bank 12%</td>
<td>Bank 12%</td>
</tr>
</tbody>
</table>

Note. Term POS is used to denote the point of sale or service provision.
Source: Researcher 2007

Although users and nonusers say they are open to using new technology, they still value human interaction. Almost all mobile phone banking services users surveyed (97 percent) said that they are “prepared to use technology,” and less than one-third of nonusers surveyed felt that “cell phone banking is (or would be) difficult or confusing to use.” Figure 4.1 shows responses to several statements about technology from mobile phone banking services users, and nonusers who own mobile phones. Kenyans in general—and banking customers in particular—may be more comfortable with technology than individuals in other developing countries.
Banks in Kenya aggressively deploy ATMs and self-service kiosks to serve customers. Of the 41 percent of nonusers surveyed who have a bank account, 94 percent have an ATM card, and 71 percent use the ATM as their primary banking channel. But other survey results suggest that users and nonusers still have difficulty with technology and may prefer human interaction: 51 percent of nonusers and 49 percent of users agree with the statement “you would rather deal face to face with a person rather than an electronic device, even if the device is faster.” Still, there is little evidence from this study that suggests some non-users have trouble using mobile phone banking. While the study did not set out to survey individuals who have stopped using mobile phone banking services users, 22 were encountered during sampling. They have education and employment levels similar to current users and were more likely to live in households with higher
incomes. Their main reason for not using mobile phone banking services is because they “don’t understand the technology” (27%). The third most common reason is that the service is “too complicated” (23%). Training in how to use the mobile phone banking service—for all customers—may help reduce the number of “drop-outs.”

Few nonusers have heard of mobile phone banking, and most have negative perceptions about banking and mobile phone banking that may restrict their adoption of the service. Given mobile phone banking services early stage of development, it is not surprising that 65 percent of the nonusers surveyed were not familiar with the term “cell phone banking,” although they live in the same municipalities as mobile phone banking services users. This lack of awareness may be responsible, in part, for the fact that nonusers see mobile phone banking as more expensive and less secure than other banking services, while users are far more positive about the service. When asked what a mobile phone banking transaction would cost, nonusers guessed an average of KSh 50, although mobile phone banking service providers actually charges much less—between KSh 15 and KSh 30 per transaction. Seventy-four percent of these respondents then agreed that paying Ksh15 per transaction for banking (what mobile phone banking services providers estimates most of its customers pay)—is “affordable” or “inexpensive,” suggesting that mobile phone banking services users could have powerful appeal if more people knew about it.
you are prepared to use technology

cell phone banking will make banking affordable

with cell phone banking money is secure

cell phone banking can be trusted if offered by bank

cell phone banking can be trusted if offered by mobile phone provider

if u had a cell phone a/c you still will use existing bank a/c

cell phone banking is difficult to use

Figure 4. 2 views on mobile phone banking among respondents

Source: Researcher 2007

Most respondent using the services were using it weekly and the most used support system was SMS (95%). This was due to the fact that other support systems such as EDGE (4%) and WAP (1%) were still new in the country having been introduced just last year (2006) by the mobile phone service providers. SMS service was widely used because most low-end phones in the market are having this support service, while others such as EDGE, GPRS and IVR needed specific phones, which are expensive to Kenyans. Majority of the respondents said that lack of knowledge on the usage of mobile phone service was the biggest challenge they were facing in the use of mobile phone banking services, followed by fast improvement in technology. This is because new technologies in the support systems are invented every day. Security and confidentiality was third.
Customers were still not at ease to use the mobile phone banking services due to fact they were not assured of their funds being in safe hands while making the transactions.

Besides a general lack of awareness among consumers, mobile phone banking services must compete with perceptions about traditional banking channels. Nonusers who use banks perceive ATMs as convenient and affordable and bank branches as secure, although they have negative feelings about “high fees” and “long queues.”

4.4: Mobile Phone Banking Services

Most banks in Kenya were either retail or corporate banks. Investment banks were also available. Out of the 45 banks in Kenya only an average of 15 banks were offering the mobile phone banking services. Among the banks offering mobile phone banking services, services available included airtime top-up, mini-statements, and account balance history. Services such as utility bills payment are offered in collaboration with utility providers such as the Kenya Power and Lighting Company and the City Councils. CFC Bank and Barclays Bank were offering the real time stock quotes and personalized alerts and notifications. Equity Bank and Co-operative Bank of Kenya were also having salary deposit or other deposit notifications to their customers.
4.5: Mobile Phone Banking Technologies

On support systems for mobile data used by the banks, the study noted that the SMS was the most preferred system by the banks. This is due to the fact as discussed earlier because of the compatibility of phones having other mode of support systems. EDGE and WAP were being used too, but they are still at their infancy and most customers are not having phones that are compatible with the support systems. The study also found out that the most mobile phone banking information system used was the GSM; this is attributed to the fact that the phones and mobile phone service providers have licenses on the GSM. CDMA was available but not widely used since it was a new phenomenon being offered by Telkom Kenya only.

4.6: Challenges and Benefits of Mobile Phone Banking

On the challenges faced by the banks, the study found out that fast improvement in technology was the biggest challenge. Technology seems to be revolutionizing the mode of doing business, and to attract customers banks are forced to adapt to these changes in technology. In a decade alone technology has changed from inter banking, to Internet and now mobile phone banking. Due to these changes, banks are being forced to spend more on technology to adapt to the market forces. Changes in support systems is also a problem banks are introducing CDMA, GPRS, EDGE and WAP technologies with IVR to be the demand something. To adapt to this provisions banks are buying multi channel equipment and continuously training the staff on these new improvements.
The second challenge after the technology was compatibility of mobile phones. Most customers were able to own phones that can handle the SMS services yet the banks were now in position to offer the EDGE services. As stated earlier this is because these other support systems were just introduced and need phones that are still quite expensive to the customers. The third challenge was on security and fraud, though fraudsters are still not many in Kenya as compared to other economies. Many customers were not willing to use this service thinking that it might be hacked or lead to giving out information to the wrong individual masquerading as banks’ agents. To handle this problem most banks were using a different PIN number for mobile phone banking services. Also used was the limitation on the type and number of transactions. This limits fraudsters from getting to withdraw high amounts of money from transactions by confirming first with the account holders through alerts sent to their mobile phones.
5.0: Introduction

This chapter gives a summary of the findings, conclusion and recommendations of the study.

5.1: Summary of the study

This research was designed to establish the state of mobile phone banking in Kenya. The target population was banks that offer mobile phone banking and their customers in Nairobi. The purpose of this study was to establish the state and impact of mobile phone banking in Kenya and examine whether banks are fully using the available resources in the mobile phone to increase their services. A descriptive design was used to collect both qualitative and quantitative data. The study participants were interviewed using pre-tested questionnaire with closed and open-ended questions. Data was coded, checked and entered using statistical package for social scientist (SPSS). Data was then analyzed and results presented using tables, graphs.

5.1.2: Background and Demographic Characteristics of Respondents

There are only 45 banks in Kenya and 33.3% were sampled for the survey. The banks have been in Kenya for a period ranging from three to 86 years. The services offered by the banks include commercial retail banking, corporate banking and investment banking. Most of the banks were operating as retail and corporate banks. Fifteen (33.3%) banks in Kenya were offering mobile phone banking services. A total sample of 150 customers
participated in the study. Table 4.1 shows the distribution of the respondents in terms of gender, educational level and occupation. 90 (60%) of the participants were male and 40%(60) being female. Most of the respondents had higher educational level, with the highest being in the diploma/certificate level, followed by degree/university level, then secondary level. Most the account holders were employed, while others were in business and self-employment.

5.2: Conclusion

It is clearly evident that state of art technologies (mobile phone banking) offer immense potential for banks to redefine their processes, re-position themselves as agile, fleet-footed organizations and enable them to achieve their strategic and financial imperatives in cost effective manner. Further, mobile phone banking is still in early stages of adoption in Kenya and hence carries a far lower risk of obsolescence, thereby protecting the banks technology investment. All the same banks must appreciate that technology is an enabler and not a panacea. As illustrated in the research, financial success in banks is dependent on the potential of new technology and alignment to fully leverage the technology capabilities. It would be extremely clichéd to state that technology is one of the most, if not the most, critical factors in achieving differentiation and global leadership in the banking arena. Whether large or small, or at the incipient stage, banks must be quick to embrace the idea of technology enabling their businesses and playing a pivotal role in taking them to the next level.
The key imperatives that typically drive the bank's business strategy are profitability, customer loyalty, market share, overall process efficiency, risk management and building a flexible, committed and responsive organization. These forces have in numerous instances forced banks to leapfrog the competition and redesign the competitive landscape by revolutionizing the way banking is done through radical, innovative practices by providing a clearly differentiated value proposition and delightful customer experience in operationally efficient and cost effective manner.

Mobile phone banking, applied correctly, has the ability to transform banks through greater efficiency, cost effective, agility and customer focus. There is no doubt that banks stand to gain enormously from mobile phone banking, which explains the heightened level of interest in this mode of service over the last few years. However, industry experts caution against firms getting carried away in the hype that always surrounds new technology trend. As stated earlier banks need to realize that mobile phone banking is definitely not a panacea that can solve problems instantly, nor can it transform overnight a costly or failing bank into an efficient and successful one. Before adopting mobile phone banking technology, banks need to first thoroughly examine their existing processes, define the main requirements for current and anticipated applications, and optimize the technologies and relationships that are already in place and then identify the right solution that best meets their future and current requirements,

Mobile phone banking though a new technology in Kenya has the potential to drive banks success. Many banks are adapting to the technology and increase competitiveness in
provision of service. The ministry of information and communication, mobile phone service providers and banks must work in collaboration in provision of this service.

5.3 Recommendations

Recommendations to policy makers

1. The mobile phone banking services (products) applied/ offered in the banking sector in Kenya have been effective to some extent in achieving the goals and objectives upon which they were set, but it is still in its infancy. On a scale of 1 to 5, this study has graded the mobile phone technology of banks in Kenya at 3.

   a) It is therefore recommended that strategic training and implementation for use of mobile phone to offer banking services be done to staff and senior bank managers, be intensified by stakeholders in mobile phone technology industry to promote good usage and exploitation of technology by these institutions. They should be guided to understand that "to remain competitive in a changing world, banks must innovate and adapt their technology practices so that they can meet new demands and grasp new opportunities and the government has an important responsibility for shaping an effective regulatory framework that provides for sufficient flexibility to allow markets to function effectively and to respond to expectations of shareholders and other stakeholders" - Banks should be assisted to develop principles, practices on provision of mobile phone banking services that cut across all the functions of the banks.
2. The existing mobile phone banking opportunities within the banks as established by this study are still not effectively implemented. There is need for stakeholders to play an effective role in assisting the banks with necessary professional and technical assistance towards the implementation of these opportunities. The stakeholders especially the mobile phone services providers should provide more avenues on data support systems to the banks apart from the use of SMS, which is the most used technique at the moment.

3. The Central Bank of Kenya, Capital Markets Authority and the Communications Commission of Kenya have issued the regulatory and supervision systems directives. Some banks have also developed own in-house systems to ensure this. More in-house systems are further recommended so that those systems that have been introduced through statutes can be supplemented by the in-house systems and enforcement.

Recommendations for practice

1) **Marketing:** banks should market more on the use of mobile phone banking since most customers were not aware on the provision of these services by their banks. Other marketing strategies such as promotions should be used to increase awareness.

2) **Technology:** banks management should be able to use equipments that can be able to cope with the fast changes in technology by buying multi channel equipment and continuous training of support staff on the mobile phone technologies as they evolve.
3) **Security**: since most of the respondents were not secure with the use of mobile phone banking, banks should device security and fraud measures that can build more consumer confidence, e.g. limit number of transactions or use of different PIN Number.

4) A team approach involving all bank workers, policy makers, customers, and community is needed.

**Suggestion for further research**

1. An in-depth, boarder-based study, covering a wider geographical region and embracing greater demographic, ethic, political, economic and social diversity than what was achievable in this study would be valuable, to establish whether the conclusions can be generalized.

2. Further studies should be conducted to verify this study and determine which variables are most strongly associated to the use of mobile phone banking technologies and services.

3. Research is needed on the impact and effectiveness mobile phone banking on profitability of the banks or financial performance in general.

4. The study argues for a deeper exploration of these perceptions on mobile phone banking and how they may be used to segment the low-income market.
REFERENCES


Dannie Schute (2005), “Reinventing bank’s IT architecture to meet services demand”, IT Director – Teba Bank, Nigeria.


Gautam Ivatury “Retail Banking: Imagination Widens Reach” The Micro finance Sector Has Been Looking For Ways To Bypass The 'branch Infrastructure Problem' And Mobile Phones May Be The Answer To Reaching Rural Clients, working paper, 2006.


APPENDICES

Appendix IA: Interview Schedule (for bank)

This interview is intended to provide the researcher with data to help gather information on mobile phone banking services offered by banks in Kenya, their impact and efficiency on banks provision of services. This information will be treated with confidentiality that it deserves and will not be used for any purposes other than those outlined here. Your participation in this survey will be of great value to the researcher and we appreciate your cooperation.

Instructions

The questionnaire is set up in 5 sections. Please answer all questions in all the sections by ticking the response you find most appropriate.

Interview date

Organization name

Position of respondent

Section 1: Background Information

1. What type of bank is your bank?
   i) Retail bank [ ]
   ii) Corporate bank [ ]
   iii) Investment bank [ ]
   iv) Housing finance bank [ ]
   v) Both retail and corporate bank [ ]
   vi) Others (please specify) [ ]

2. Does your bank offer mobile phone banking services?
   i) Yes [ ]
   ii) No [ ]
3. If yes for how long have you been offering the service? 

4. What inputs in terms of technology and human resource do you need for provision of mobile phone banking?

5. Whom do you target as customers?
   a) Retail Banking customers [ ]
   b) Corporate Banking customers [ ]
   c) Investment Banking customers [ ]

6. Why do you target the above mentioned?

Section II: services and challenges

7. What services do you offer?
   a) Top up airtime [ ]
   b) Mini statements and accounts history [ ]
   c) Fund transfers and commercial payments [ ]
   d) Utility bills payment [ ]
   e) Personalised alerts and notifications [ ]
   f) Real time stock quotes [ ]
   g) Cheque book request [ ]

8. What services other than these are you aware?
9. What support systems for mobile data do you have to offer these services?
   a) SMS [ ]
   b) HSCSD [ ]
   c) GPRS [ ]
   d) EDGE [ ]
   e) IVR [ ]
   f) WAP [ ]
   g) Others (please specify) ............................................

10. What mobile phone banking information systems do you use?
    a) GSM [ ]
    b) PCS [ ]
    c) CDMA [ ]
    d) CDPD [ ]
    e) TETRA [ ]
    f) Others (Please specify) ............................................

11. How do you plan to improve these services? ................................................

12. What challenges do you face in the provision of this service?
    a) Security and Fraud [ ]
    b) Fast improvements in technology [ ]
    c) Compatibility of mobile phones [ ]
    d) Competition from other financial sectors [ ]
    e) Others (please specify) ............................................
13. What security problems do you encounter? .................................................................

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

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

14. How have handled such problems?

   a) Limit in the type of transaction [ ]
   b) Use of different PIN for mobile banking [ ]
   c) Public key infrastructure [ ]
   d) Smart cards [ ]
   e) Others (please specify).................................

15. How do you cope with fast innovations problems in technology sector?

   a) Continuous training of staff [ ]
   b) Employment of new and competent staff [ ]
   c) Buying multi channel equipment [ ]
   d) Others (Please specify).................................

Section III: Benefits

16. What benefits has the bank achieved from mobile phone banking?

   a) Growth in new customer base and market [ ]
   b) Increased share in customer transactions [ ]
   c) Growth in assets [ ]
   d) Increased revenue from fees [ ]
   e) Expansion in brand and presence [ ]
   f) Market awareness and reputation [ ]
17. If there is growth in clientele base how do you plan to maintain them? 

18. If there is increase in revenue, by what margin is it? 

19. Has mobile phone banking increased efficiency in provision of services by your firm?
   a) Yes [ ]
   b) No [ ]

20. If yes in what way?
   a) Fast service provision [ ]
   b) Less queues in banks [ ]
   c) Fast integration in branch networks [ ]
   d) Others (please specify) 

21. What other services do you intend to offer to your customers? 

22. In your own view do you think your customers are satisfied with the services you offer and how do you know?
   a) Yes [ ]
   b) No [ ]

23. Give reasons for the answer above.
24. How do you plan to cope with competition from other financial service providers?

25. Do you think introduction of mobile phone banking has given you a competitive advantage?
   a) Yes [ ]
   b) No [ ]

26. If yes how, and how do you plan to maintain this?

27. What policies would you want to be enacted to help in provision of mobile phone banking services?

28. How do you think these policies will help in provision these services in terms of security?

29. What advices do you for your customers in utilization of this service?

**Section IV: Bank performance**

30. Please could you provide the figures for the following for the year ending December 2005
   [1] Yield on earning assets
   [2] Cost of funding earning assets
31. Briefly comment on the status of the banks:

[a] Capital adequacy

[b] Earnings and liquidity

[c] Market share

[d] Profit and loss

Section V: Marketing strategy and customer awareness

32. How do you market the use of mobile phone banking?
   a) Mandatory use by all customers [ ]
   b) Willingness by the customer [ ]

33. How do you advertise this service to your customer?
   a) Through radio [ ]
   b) Television adverts [ ]
   c) Newspaper and magazines [ ]
   d) Billboards [ ]
   e) Issue of brochures [ ]
   f) Other (please specify) [ ]
34. How do you entice your customers to use this service?
   a) No charges [ ]
   b) Minimal charges [ ]
   c) Extra charge if other service used [ ]
   d) Other (please specify)..............................

35. How do you know if (mobile phone banking) is being utilized by your customers?
   a) Marketing research [ ]
   b) Record number of transactions [ ]
   c) Other (please specify)...............................  

36. In your own view do you think your customers are utilizing this service?
   ...........................................................................
   ...........................................................................
Appendix IB: Interview Schedule (for Customers)

This interview is intended to provide the researcher with data to help gather information on mobile phone banking services offered by banks in Kenya, their impact and efficiency on banks provision of services. This information will be treated with confidentiality that it deserves and will not be used for any purposes other than those outlined here. Your participation in this survey will be of great value to the researcher and we appreciate your co-operation.

Instructions

The questionnaire is set up in 2 sections. Please answer all questions in all the sections by ticking the response you find most appropriate.

Interview date

Organization name

Section I: Background Information

1. Gender Male [ ] Female [ ]

2. Educational level
   a) University level [ ]
   b) Diploma [ ]
   c) Secondary [ ]
   d) Others (please specify)..............................

3. Occupation
   a) Employed [ ]
   b) Self employed [ ]
   c) Business [ ]
   d) Others (please specify).........................
4. What type of account do you hold?
   a) Savings account
   b) Current account
   c) Salary account
   d) Business account
   e) Other (please specify)

5. Does your bank offer mobile phone banking services?
   a) Yes
   b) No

6. For how long have you been a customer to this bank?

Section II: services and challenges

7. What services are you aware in mobile phone banking?
   a) Top up airtime
   b) Mini statements and accounts history
   c) Fund transfers and commercial payments
   d) Utility bills payment
   e) Personalized alerts and notifications
   f) Real time stock quotes
   g) Cheque book request

8. What other services are you aware of?

9. Have you ever used any of this services offered? Yes [ ] No [ ] if no go to question 13 then question 18-21
10. If yes which service?
   a) Top up airtime [ ]
   b) Mini statements and accounts history [ ]
   c) Fund transfers and commercial payments [ ]
   d) Utility bills payment [ ]
   e) Personalized alerts and notifications [ ]
   f) Real time stock quotes [ ]
   g) Cheque book request [ ]

11. How often do you use this service?
   a) 1-2 times a week [ ]
   b) 2-4 times a week [ ]
   c) Weekly [ ]
   d) Monthly [ ]
   e) Other (please specify).............................

12. What support system for mobile data do you use for this service?
   a) SMS [ ]
   b) EDGE [ ]
   c) WAP [ ]
   d) IVR [ ]
   e) Other (please specify).............................

13. How did you know about mobile phone banking in your bank?
   a) Newspaper and magazine adverts [ ]
b) TV and radio adverts

14. What benefits are you seeing in provision of this service?
   a) Fast service provision
   b) Less queues in banks
   c) Easy access to banking information
   d) Time saving
   e) Other (please specify)..............................

15. What challenges do you face when using this service?
   a) Fast improvement in technology
   b) Security and confidentiality
   c) Lack of knowledge on usage
   d) Other (please specify)..............................

16. In your own view do you feel satisfied with this service from your bank?
   ............................................................................................

17. What improvement do you want in the provision of this service?
   ............................................................................................
   ............................................................................................
18. Where do you conduct the following services? Please tick the appropriate box

- Pay utility bills
- Buy top up airtime
- Check account balance
- Transfer money between a/c
- Electronic money transfer
- Pay store/supermarket bills

19. What is your attitude towards use of technology in banking services? Please tick the box with the correct statement. You can tick more than one box.

- You try to avoid technology as much as possible
- You avoid banking machines as much as possible
- You have learned to live with technology for the benefits
- Technology is about keeping with others
- Technology is exciting
- If you could, you would use technology more often
- Technology is the way of the future

20. What are your views on mobile phone banking? Please tick the box with the correct statement. You can tick more than one box.

- Mobile phone banking is/would be confusing to use
- If you had a mobile phone bank a/c you still use the other a/c
- Mobile phone banking can be trusted if backed by cell phone firm
- Mobile phone banking can be trusted if backed by bank
- With mobile phone banking your money is secure
f) Mobile phone banking makes banking more affordable [ ]

g) You are prepared to use technology [ ]

21. Any other Comment?

................................................................................................................................................
................................................................................................................................................
## Appendix II: Research Budget

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<tr>
<th>Activity</th>
<th>Quantity</th>
<th>Unit cost</th>
<th>Total cost</th>
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<td>Proposal writing</td>
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<td>20/= @page</td>
<td>4800</td>
</tr>
<tr>
<td>Summary copies</td>
<td>15 copies of 8pgs</td>
<td>20/= @page</td>
<td>2400</td>
</tr>
<tr>
<td>Spiral binding</td>
<td>6 copies</td>
<td>70/= @ copy</td>
<td>420</td>
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<tr>
<td>Transport costs to libraries</td>
<td>3 days per week</td>
<td>300/= @ day</td>
<td>3600</td>
</tr>
<tr>
<td>Data Collection Instrument</td>
<td>160 copies of 10 pgs</td>
<td>20/= @ page</td>
<td>6400</td>
</tr>
<tr>
<td>Researcher and 3 assistants</td>
<td>15 days</td>
<td>300/= @ day</td>
<td>13500</td>
</tr>
<tr>
<td>Meals and transport</td>
<td>15 days</td>
<td>300/= @ day</td>
<td>13500</td>
</tr>
<tr>
<td>Data entry and analysis</td>
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<td>40/= @ page</td>
<td>4000</td>
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<tr>
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<td>150/= @ copy</td>
<td>900</td>
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<td><strong>Total</strong></td>
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<td><strong>53,400</strong></td>
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## Appendix III: Time Schedule

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<th>Activities</th>
<th>Time</th>
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<tr>
<td>Proposal writing instrument development</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Defending proposal and corrections</td>
<td>September 2006</td>
</tr>
<tr>
<td>Data Collection</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Data Analysis and Report Writing</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Submission to Faculty Board</td>
<td>March 2007</td>
</tr>
</tbody>
</table>
Appendix IVA: List of all Financial Institutions in Kenya

Data as at 31.12.2006: Source: Central Bank of Kenya

1. African Banking Corporation Limited
2. Akiba Bank limited
3. Bank of Baroda (Kenya) Limited
4. Bank of India
5. Barclays Bank of Kenya Limited
6. CFC Bank Limited
7. Chase Bank (Kenya) Limited
8. Charterhouse Bank Limited
9. Citibank NA
10. City Finance Bank Limited
11. Commercial Bank of Africa Limited
12. Consolidated Bank of Kenya Limited
13. Cooperative Bank of Kenya Limited
14. Corporate Merchant bank
15. Credit Agricole Indosuez
16. Credit Bank Limited
17. Development Bank of Kenya Limited
18. Diamond Trust Bank Kenya Limited
19. Dubai bank Kenya Limited
20. East Africa Development Bank
21. Equatorial Commercial Bank Limited
22. Fidelity Commercial Bank Limited
23. FINA Bank Limited
24. First American Bank of Kenya Limited
25. Guardian Bank Limited
26. Giro Commercial Bank Limited
27. Habib Bank A. G. Zurich
28. Habib Bank Limited
29. Imperial Bank Limited
30. Industrial Development Bank Limited
31. Investment and Mortgages Bank Limited
32. Kenya Commercial Bank Limited
33. K-Rep Bank Limited
34. Middle East Bank Kenya Limited
35. National Bank of Kenya Limited
36. National Industrial Credit Bank Limited
37. Paramount Universal Bank Limited
38. Prime Bank Limited
39. Southern Credit Banking Corporation Limited
40. Stanbic Bank Kenya Limited
41. Standard Chartered Bank Kenya Limited
42. The Delphis Bank Limited
43. Trans-National Bank Limited
44. Victoria Commercial Bank Limited
46. Devna Finance Limited.
47. Prime Capital and credit Limited
48. Housing Finance Company Kenya Limited
49. Saving and Loan Kenya Limited
50. East African Building Society
51. Equity Building Society
52. Family Finance Building Society
53. Prudential Building Society
Appendix IV B: Banks That Offer Mobile Phone Banking

1. Abn Amro Bank
2. Barclays Bank of Kenya
3. Cooperative Bank of Kenya
4. CFC Financial Bank
5. City Finance Bank
6. Consolidated Bank of Kenya Limited
7. Commercial Bank of Africa
8. Equity Bank
9. Kenya Commercial Bank
11. Standard Chartered Bank
12. Stanbic Bank
13. Trans National Bank Limited
14. Paramount Universal Bank
15. East Africa Development Bank
Appendix IV C: Targeted Banking Institution

1. Barclay Bank of Kenya
2. CFC Financial Bank
3. City Finance Bank
4. Consolidated Bank of Kenya Limited
5. Commercial Bank of Kenya
6. Cooperative Bank of Kenya
7. East Africa Development Bank
8. Equity Bank
9. Family Finance building society
10. Paramount Universal Bank
11. Kenya Commercial Bank
13. Stanbic Bank
15. Trans National Bank Limited