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APPLIED SCIENCES

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MOBILE BANKING IN DEVELOPING
COUNTRIES.

(A CASE STUDY ON KENYA).

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ABSTRACT

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The Bachelor's degree research report will try and show whether mobile applications in such areas of mobile banking and business to business trading is mostly for local business people e.g. small-scale farmers in developing countries.

The work will try to identify applications that would help all parties in developing countries, from service operators to individuals in both rural and urban areas.

The report will find out whether voice and SMS services are among best ways of raising living standards in Kenya (and in that matter developing nations), considering the current situations (that is poverty, disease and civil unrest).

To give some general idea of the situation in Kenya, it should be noted that 90 percent of the inhabitants of the capital city, Nairobi, have moved there from rural areas. This in turn has created a considerable demand for communications and the exchange of information between the city and outlying areas. For the individual, the lack of ways to communicate with relatives and friends in other parts of the country is a major social problem.

Keywords Mobile Banking, Kenya.

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1 INTRODUCTION

1.1 Background of the Study

Improving access to financial services, such as savings, deposits, insurance and remittances, is vital to reducing poverty. Savings can help poor people to invest in productive assets like livestock, a loan may help to expand business activities, and insurance can provide income for a family if a breadwinner becomes sick.

In many developing countries, however, 9 out of 10 people do not have a bank account or access to basic financial services. Poor people are often not considered viable customers by the formal financial sector as their transaction sizes are small, and many live in remote areas beyond the reach of banks branch networks. Informal banking services such as microfinance and village savings and loan associations remain limited in their reach.

In order for banks to view the poor as viable customers, new ways of serving them profitably need to be explored. Extending branch networks is often too expensive, but the development of appropriate technologies can provide one answer to this problem.

Offering banking products through mobile phones is one option that offers great potential for reaching poor people:

Many poor people already have access to mobile phones. A positive aspect of mobile phones is that mobile networks can reach remote areas at low cost. The poor often have greater familiarity and trust with mobile phone companies than formal banking institutions. Furthermore a mobile handset can easily be adapted to handle banking transactions.

In the last five years mobile phone communication has grown faster in Sub-Saharan Africa than in most other parts of the world. African mobile phone subscribers grew from 8 million to nearly 80 million from 1999 to 2004 (International Telecommunications Union) and is expected to increase to 250 million in the next four years (Progressive Policy Institute).

1.2 Statement of the Problem

Stated as a question this concern can be expressed as: what is the extent of access to financial services? What are the attitudes towards mobile banking by small businesses? And what are the effects and challenges of implementing mobile banking?

1.3 Purpose of the Study

The purpose of this study is to establish the importance of mobile banking in the day to- day running of small businesses in Kenya. To understand the challenges involved in using m-banking as a business tool and appreciate the advantages and disadvantages therein.

1.4 Importance of the Study

The findings of this study will be useful to different cohorts of the population. Firstly, small business owners can use the study to educate themselves on the many avenues and platforms that m-banking affords them. Secondly, the findings of this study can be used by mobile phone operators to improve or expand their services in a way geared to economic empowerment to all involved.

1.5 Outline of the study.

Chapter 2 provides information on the literature overview.

Chapter 3 provides information on research methodology.

Chapter 4 provides information on research results.

Chapter 5 provides information on summary and conclusion followed by used references.

2 LITERATURE REVIEW

2.1 Electronic Banking

The telecommunications industry worldwide has scrambled to bring what is available to networked computers to mobile devices (Schofield & Kubin 2002). Presently, the use of electronic banking is considerably high and as more and more users sign up for electronic-banking, the maturity as regards remote banking (i.e. banking outside the banking hall) is on the increase.

With electronic banking, users can now conveniently carry out banking transactions, but this convenience cannot be achieved if the user does not have access to the internet, hence, in other words, the user cannot carry out a banking transaction while waiting for a bus, or perhaps while having lunch in a restaurant. With m-banking, convenience can be achieved 24hrs a day. This is because a user has access to his mobile phone all day, at all times. So, to effectively achieve a truly convenient banking mode, a truly mobile mode of banking has to be explored, hence the need for m-banking.

2.2 Trends in Mobile Banking

The advent of the Internet has revolutionized the way the financial services industry conducts business, empowering organizations with new business models and new ways to offer 24 hour accessibility to their customers.

The ability to offer financial transactions online has also created new players in the financial services industry, such as online banks, online brokers and wealth managers who offer personalized services, although such players still account for a tiny percentage of the industry.

Over the last few years, the mobile and wireless market has been one of the fastest growing markets in the world and it is still growing at a rapid pace. According to the GSM Association and Ovum, the number of mobile subscribers exceeded 2 billion in September 2005, and now exceeds 2.5 billion (of which more than 2 billion are GSM).

According to a study by financial consultancy Celent, 35% of online banking households will be using mobile banking by 2010, up from less than 1% today. Upwards of 70% of bank center call volume is projected to come from mobile phones. Mobile banking will eventually allow users to make payments at the physical point of sale. "Mobile contact less payments" will make up 10% of the contact less market by 2010. Many believe that mobile users have just started to fully utilize the data capabilities in their mobile phones. In Asian countries like India, China, Bangladesh, Indonesia and Philippines, where mobile infrastructure is comparatively better than the fixed-line infrastructure, and in European countries, where mobile phone penetration is very high (at least 80% of consumers use a mobile phone), mobile banking is likely to appeal even more.

This opens up huge markets for financial institutions interested in offering value added services. With mobile technology, banks can offer a wide range of services to their customers such as doing funds transfer while traveling, receiving online updates of stock price or even performing stock trading while being stuck in traffic. According to the German mobile operator Mobilcom, mobile banking will be the "killer application" for the next generation of mobile technology.

Mobile devices, especially smart phones, are the most promising way to reach the masses and to create "stickiness" among current customers, due to their ability to provide services anytime, anywhere, high rate of penetration and potential to grow. According to Gartner, shipment of smart phones is growing fast, and should top 20 million units (of over 800 million sold) in 2006 alone.

In the last 4 years, banks across the globe have invested billions of dollars to build sophisticated internet banking capabilities.

As the trend is shifting to mobile banking, there is a challenge for CIOs and CTOs of these banks to decide on how to leverage their investment in internet banking and offer mobile banking, in the shortest possible time.

The proliferation of the 3G (third generation of wireless) and widespread implementation expected for 2007–2011 will generate the development of more sophisticated services such as multimedia and links to m-commerce services.

2.3 Mobile Banking Business Models

A wide spectrum of Mobile/branchless banking models is evolving. However, no matter what business model, if mobile banking is being used to attract low-income populations in often rural locations, the business model will depend on banking agents, i.e. retail or postal outlets that process financial transactions on behalf of telecoms or banks. The banking agent is an important part of the mobile banking business model since customer care, service quality, and cash management will depend on them. Many telecoms will work through their local airtime resellers. However, banks in Colombia, Brazil, Peru, and other markets use pharmacies, bakeries, etc.

These models differ primarily on the question of who will establish the relationship (account opening, deposit taking, lending etc.) to the end customer, the Bank or the Non-Bank/Telecommunication Company (Telco).

Another difference lies in the nature of agency agreement between bank and the Non-Bank. Models of branchless banking can be classified into three broad categories - Bank Focused, Bank-Led and Nonbank-Led.

2.3.1 Bank-focused Model

The bank-focused model emerges when a traditional bank uses non-traditional low-cost delivery channels to provide banking services to its existing customers.

Examples range from use of automatic teller machines (ATMs) to internet banking or mobile phone banking to provide certain limited banking services to banks' customers. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking.

2.3.2 Bank-led Model

The bank-led model offers a distinct alternative to conventional branch-based banking in that customer conducts financial transactions at a whole range of retail agents (or through mobile phone) instead of at bank branches or through bank employees. This model promises the potential to substantially increase the financial services outreach by using a different delivery channel (retailers/ mobile phones), a different trade partner (telco / chain store) having experience and target market distinct from traditional banks, and may be significantly cheaper than the bank-based alternatives. The bank-led model may be implemented by either using correspondent arrangements or by creating a JV between Bank and Telco/non-bank. In this model customer account relationship rests with the bank

2.3.3 Non-bank-led Model

The non-bank-led model is where a bank does not come into the picture (except possibly as a safe-keeper of surplus funds) and the non-bank (e.g. telco) performs all the functions.

2.4 Definition of Terms

M-banking- refers to provision and availment of banking- and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to

administer accounts and to access customised information. Small Businesses can be defined according to nature and size. In terms of nature a small business as one run by an individual like in a sole proprietorship or a group of between two and twenty individuals like in a partnership. In terms of size a small business can be defined as one with less than 100 employees.

2.4 Building Blocks of Retail Banking

A payment is the transfer of ownership of assets, generally, but not necessarily, money, to be accepted as a form of settlement of a claim. Money is a particular kind of asset that has the important features of being, in many but not all countries, a stable store of value and a unit of account that is widely accepted as a means to settle claims.

In most economies, money is currency issued by a government mandated authority, such as the central bank, and has no intrinsic value itself, but acts as a placeholder for value and is by law defined as a valid asset in which to settle claims. But it is possible to have other instruments (and issuers) that are sufficiently stable and widely accepted to act as money. There are many instances of private institutions issuing claims accepted for payment in limited contexts: corporations issue stocks and bonds, retailers issue gift certificates, airlines issue air-miles, etc. Currency often takes the form of physical notes and coins. But it is increasingly held as a claim on a commercial bank (or script) at which clients hold accounts and from which they can effect payments. These claims on banks are generally backed up by deposit insurance and currency reserves held by the deposit taking institution with the central bank. The solvency of such banks is important for ensuring that deposits held with them remain a good store of value and can be exchanged for other assets. Currency, like other assets, is of little use without the ability to unambiguously attribute ownership of it.

Banknotes and coins are 'bearer instruments': ownership is generally based simply on possession. But the ownership of value held with banks is established

by a complex set of rules, contracts and conventions as well as mechanisms to ensure compliance with them. Lastly, having ownership of an asset (or a claim thereto) is of little use if owners do not have the means to exchange it for other assets, goods or services. Beyond the simple physical process of exchanging notes and coins, institutions have developed a wide variety of accepted processes for transferring assets in the form of money.

Most prominent is a bank-to-bank transfer of units from one account to another, often held with a separate banking institution. This can often be achieved using payments instruments or media (e.g. debit or credit cards, chips embedded in mobiles) issued by a depositors bank. In some cases, private issuers have experimented with true digital, encrypted cash (or e-money) that can be stored on a smart card and transferred to other cards with the help of specialized card readers. The specific process by which transfers are conducted include a whole variety of checks and balances, confirming amounts, accounts, availability of funds, the identities of the counter-parties, dates for transfer and the units of account being used as well as the possibility of conversion from one unit of account to another (e.g. foreign exchange). Payment providers are intermediaries which settle financial claims between certain types and scope of transaction counter-parties. Secondary characteristics of payment services include the kinds of transactions they support, the ease of use of their payment instruments and the costs, risks and speed associated with settlement arrangements. The value of the payment service depends on the way a provider combines these features (World Bank 2005).

2.4.1 Outreach of Traditional Banking Services

A vicious cycle driven by perceived low levels of demand, low levels of bank income, high bank fees, inappropriate products and extremely limited geographical reach, ensure that only a small percentage of people in developing countries use banking services. Conventional banking business models are essentially driven by income derived from the fees for services and the margin

earned between interest paid on deposits and interest receivable on loans. The branch infrastructure is a substantial fixed cost for traditional banks; it is both expensive to maintain and expensive to increase its geographical spread. Any reductions in the essential fixed costs of a bank have the potential to increase profitability and the competitiveness of the bank. Hence the conventional banking business models tend to concentrate on relatively dense urban areas and relatively affluent areas.

In the context of these traditional banking business models, the geographical extension of a banking network is hampered by the high cost of rolling out a physical network of bank branches, by the small average size of customer deposits, by relatively low population densities, and by a lack of documented credit histories (necessary for AML/KYC requirements and also to leverage additional bank income from a loan portfolio).

As observed by UNCDF: Building comprehensive, secure banking networks accessible to the under-banked and unbanked segments of population, dealing with very modest sums of money, can prove to be prohibitively expensive to banks. Building network of bank branches and ATMs in remote locations can be unsafe, while providing electronic banking is impossible due to the lack of either fixed telecommunication infrastructure (poor telecom service penetration rates) or lack of end-user devices.

To combat the prohibitive costs associated with roll-out of banking networks, alternative access channels can be considered, all of which have a downside if the basic telecoms infrastructure in a country is inadequate. It is possible to install fully automatic ATMs, for example, but these depend on a widely available telecommunications network and the ability to ensure regular cash replenishment. The promotion of e-banking is contingent on the widespread availability of internet access as well as advanced telecommunications infrastructure. In countries with a poor fixed telecommunications infrastructure but high mobile

penetration and growth rates, mobile telecommunications networks are being considered as alternatives to the more traditional banking channels.

2.4.2 The Banking Ladder

The concept of the banking ladder is a stylized way of capturing the nature of demand for financial services by individuals and households across the whole population, charting the progression the way in which an individual may use them.

The banking ladder implicitly defines the conditions under which services need to be offered to the market. The ladder also postulates a relationship between the level of income and the adoption of mobile telephones. Exploring the relationship between the demand for financial services and the adoption of mobile phones is fundamental to defining the market in which mobile transaction platforms could play a transformational role in the provision of financial services to all. The main impact of banking on low income households is two-fold. On the first steps of the banking ladder, the benefits of access to finance are exclusively improvements in the quality of people's lives, such as saving time (for example avoiding long queues to pay bills), reducing the threat of crime, and making transactions (such as intra country remittances) easier.

The subsequent rungs of the ladder introduce additional benefits which flow from establishing financial track records. In terms of debt, these higher rungs on the ladder allow for formal acquisition of property rights (through mortgages for instance), the smoothing of income against unpredictable expenditures and the ability to support family-owned entrepreneurial activity. In terms of savings, better access to financial services can lead eventually to access to longer term products such as pension schemes and the acquisition of investment products. Climbing the banking ladder allows individuals to benefit from the broader processes of economic development.

2.5 Mobile Transactions

One view is that mobile technology is just another, although highly innovative, access channel; an alternative is that mobile telecommunications networks are becoming the ‘front office’ for financial services leaving the existing banks as providers of back office functions. But there is also another view which seeks to define the competitive advantages of the banking and mobile finance business models and then explore the ways in which these could give rise to new market structures within which the existing portfolio of financial services (savings, credits and transactions) can be unbundled. There are a number of mobile transaction initiatives in the developed and developing world. Most are bank-led and largely provide an information and transaction channel which complements existing bank access channels such as branches, telephone banking and online services. There are, however, significant examples of innovative mobile transaction schemes that hint at a radical transformation of the financial market landscape in that the business model addresses those without existing bank accounts. Examples which are often cited include Wizzit in South Africa, Globe in the Philippines and M-PESA in Kenya. In addition there are mobile financial transaction models which make innovative use of existing widely-diffused financial service platforms, such as Visa, in order to deliver transaction services to under- served market segments. Interestingly, the most innovative of these mobile banking models, and those with the greatest potential to bring significant benefits to consumers, are those addressing the needs of developing markets, which hitherto have been the most complex in which to increase access to finance.

In both types of approach – mobile transactions as a brand new access channel and as an innovative alternative banking system – the rapidly-growing mobile communications infrastructure and its associated support services (for example, air time agents) provide the possibility of outreach vastly beyond traditional banking networks and at significantly lower costs.

In order to explore the nature of mobile financial transaction systems in more detail, three examples are described below.

Each attempts to provide a system that allows a customer to put cash in and take it out, and also make money transfers to other individuals and entities. Each system, however, is 'optimized' for particular purposes and thus there are significant practical differences between the systems and the user experience. At their core, each of the schemes described offers four basic services.

How these services are offered and charged to the consumer varies. The four core services are: Information – for example account balance retrieval, transactional history of deposits and withdrawals; Transactions – for example, transfer of funds between accounts; Cash-in and cash-out services – the deposit and withdrawal of cash; Payments – a variety of mobile payment applications, such as air-time top-ups, electricity meter top-ups and in some markets broader services such as m-payments at vending machines.

The differences between the schemes can also be described in terms of the broader system characteristics which may be less transparent to consumers. The systems vary in terms of: their technical platform; who manages the money float and settlement mechanisms; who manages the interaction with a customer and how; and whose brand is used to market the product. These broader characteristics fall into the following categories: open or closed systems, interoperability, identity of the deposit holder, tariff structures for consumers, regulatory compliance and mechanisms for deposit making, transfers and cash withdrawal.

Open or closed system – the extent to which a specific mobile scheme allows transactions and/or payments to any account in any other network. The ability to effectively interconnect with the existing bank clearing systems and money transfer networks (such as Visa), and the terms and conditions of this interconnection regime, is a critical aspect of the design and operation of a mobile banking scheme.

In effect this interconnection regime defines the nature and extent of the network externalities, and their distribution.

Interoperability – the technological design of the system and its functionality. The key issue is whether or not the mobile scheme is essentially a proprietary system embedded in the network, equipment and operations of an existing mobile operator or instead stands free of any particular network. Is the service tied to one mobile network operator or is it network-independent?

Identity of the deposit holder – are deposits made by customers held in individual deposits at a licensed deposit taking institutions (a traditional bank) or are they instead held as nominated elements of a pooled account (which itself might or might not be directly held at a licensed deposit taking institution)?

Mechanisms for deposit making, transfers and cash withdrawal – the effectiveness of these operations is vital in turning a mobile payment system into a transformational mobile system. Without a convenient way to deposit and withdraw cash, any mobile system is bound to fail in mostly cash-based societies. This makes ensuring the trustworthiness of collection agents pivotal in establishing the integrity of the mobile banking product. The integrity and the efficacy of agents in managing the deposit taking process, transfers and cash distribution is critical to managing some of the range of risks inherent in a mobile banking product, including reputational risk.

Regulatory compliance – there is a variety of ways to comply with both know your customer (KYC) and anti-money laundering (AML) regulations. For example AML tools might be applied only when transactions exceed specific limits in terms of both frequency and amount. The migration from mobile customer to mobile bank customer offers significant potential to reduce the costly information asymmetries between customer and bank, as mobile operators of payments schemes hold useful information about customers' usage patterns.

Tariff structures for consumers – are customers charged account fees or fees per transaction? The user experience of the various mobile systems depends on how well specific products correspond to customer needs in different countries.

The demand for banking services in developing countries, especially by the 'unbanked', is relatively poorly understood. However, there is considerable case study evidence that supports the following categorization of customer needs.

2.6 Micro-enterprises and the Informal Sector Employment in Kenya

According to CBS (2005) Kenya has over 5,970,600 people employed in the informal sector, which has translated to about 19% of the total Kenyan population. This sector has continuously experienced growth, and becoming a key sector in the economy of the country, creating most of the new jobs in Kenya.

Malick (2004) adds that Kenya's informal sector constitutes 98% of all businesses in the country, absorbing a high population of school, college and university leavers. The number of enterprises have grown from 910,000 in 1993 to 1.8 million in 2006 (Baseline Survey 2006). Out of 1.3 enterprises in 2006, 66% was located in the rural areas, while women owned 48% of the enterprises. 64.3% of the SMEs was in trade, 14.8% in services, 13.4% in manufacturing while 7.7% involved other activities. The informal sector is segmented into three according to Haans (2001). The smallest segment is the Income-Generating Activities (IGAs). This is a segment of the informal sector is the predominant type of informal businesses, e.g. seasonal trading and hawking, keeping domestic animals, and many traditional craft activities, especially in rural areas that has the following characteristics: Pre-entrepreneurial, subsistence type of self-employment, supplements farming incomes. Usually they concern part-time, seasonal activities, based on traditional technologies, local materials and local markets. They have little if any potential for growth, and might be best supported by assisting the women to diversify their activities. The second segment the micro-enterprises (SMEs) has businesses that are slightly bigger than IGAs, which includes small shops, metal working, carpentry, tailoring, and various forms of repair services (e.g. radio & TV, cars, household appliances). The main Characteristics are: they work with a few family workers, apprentices with one or a few (up to 10 including the owner(s) of the business) permanent workers. Their technology is a mix of traditional and more-modern-but-obsolete. They lack access to capital, have modest technical skills and lack management. They are

more linked with markets as part of their production inputs are imported and they serve local and nearby markets.

They found in larger villages, rural towns and regional centers. Some of them have some potential for growth, or at least for the development of entrepreneurial skills. Small enterprises (SEs) are firms with roughly 10 to 20 (sometimes 50) workers that are at the boundary between formal and informal sector and have the following characteristics: they use non-traditional or 'modern' technologies in at least some of the productive aspects of the transformation process.

Their products and services range from simple to complex and similarly span a range of consumer types. The marketing pattern may be somewhat complex, reflecting innovation in raw material procurement and in output sales.

SEs are (on the margin of) formal: they are usually registered with the local government and tend to be paying some taxes.

SEs are more urban than rural-based. Some examples of small enterprises are: saw mills, garment assembly, motorized transport, building & construction and medium-scale industrial agro-processing.

2.7 Mobile phones in Kenya's socio-economic development

The Kenya government recognizes the role-played by the mobile phones, and associated technologies in the economic growth and development (sessional paper, 2005). Therefore together with other stakeholders and development partners, Kenyan government has encouraged the development of communication infrastructure such as communication commission of CCK), which is regulating the mobile service providers, fixed line service providers, and other stakeholders in provision of the service industry (Research ICT Africa 2004). At the same time the government has recognized with concern the growth of micro-enterprises as the foundation blocks of development and industrialization.

The ministry of labor and human resources development has set up a department to deal with the development of the micro- and small enterprises. Through this ministry the government has identified that inappropriate technology as a major constraint in the country achieving the economic benefits resulting from the SMEs (Sessional paper 2005).

The government through ministry of Information and communication has encouraged the Kenyan population to join the information superhighways, to make them competitive and have a global reach, penetrate more markets, access information from different sources (customers, suppliers, banks), which are some of the factors hindering the productivity, and profitability of the SMEs, their growth and expansion.

2.7.1 Adoption and use of mobile phones in Kenya

Mobile telephony adoption is on the rise and the related technological innovations have dramatically enhanced the capabilities of the mobile phones (Salzaman et al 2001). About two billion people worldwide are using a mobile phone. As the number of mobile phone increases there has been a pervasive impact on people's lives (ITU 2006). Mobile phones adoption and use has a positive and significant impact on economic growth, and this impact may be twice as large in developing countries as in developed countries (ITU 2005, Salzaman et al 2001). In Africa particularly it has been said "people in Africa use mobile phones very differently. Most strikingly is the accessibility of mobile as the overall impact of mobile extends well beyond what might be suggested by the number of subscriptions alone."(ITU 2005).

In Kenya there has been a sporadic mobile phone subscription by the rural and urban populations. The number of mobile subscribers in Kenya has risen to 8 million subscribers from 6.5 million subscribers in June 2006, from the country's two operators (Safaricom and Zain) against 293,400 fixed lines (ITU 2007).

This increased accessibility to mobile phones have introduced changes in most sectors of the economy and particularly the urban informal sector consequently Jua Kali Business (SMEs) changing their business and operation environment, thereby creating an impact on Kenya's fastest growing sector and employer.

2.7.2 Integration of Mobile Phones in Kenyan SMEs

According to Donner (2005), there have been relatively few studies focusing directly on the way mobile phones are used in enhancing productivity among the users in the developing world. Some business also lacks the awareness regarding the potentials that exist in the use of mobile phones and ICTs (Adeya 2003).

Mobile phones provide technological services that reduce costs; increase income and increases reach ability and mobility. They can help to extend social and business networks and they clearly substitute for journeys and, for brokers, traders and other business intermediaries (Donner 2005, Hughes & Lonie 2007).

By 2005, SMEs in Kenya had employed approximately 5.9 million people. Of this population, 1.9 million was in the urban areas while the rest was in the rural parts of Kenya (CBS 2005, Economic Review 2005) out of the total population of 35 millions, which translates to 18.5% of the Kenyans have a mobile phone compared to 0.84 % Of the fixed lines (ITU 2007, Chogi 2006). It is therefore important to note that the adoption, usage and the influence mobile phones have on the Micro enterprises of Kenya. The uses can be categorized as social, business/economic and political. For micro entrepreneurs, just like all other users use mobile phones same device for both business and social purposes, as a result there were increased profits in business, and enhanced social networks (Chogi 2006). The emergence of M-PESA service, a Text messaging (SMS) provide the solution to small businesses' banking needs for the majority of the Kenyan population, because the majority don't hold bank accounts but they do have the services of a mobile phone, hence they could settle bills by building up credit on the mobile phones and then sending a text (SMS) to make a payment. The leading

mobile service providers in Kenya have introduced some money transfer services whose objective is to enable Kenyans to make 'micro payments' using their mobile phones. These services are supposed to provide an e-commerce platform of choice in a country where credit cards have struggled to reach most the population without the bank accounts. M-PESA, an innovative new mobile payment solution that enables customers to complete simple financial transactions by use of mobile phone (Hughes & Lonie 2007, Chogi 2005).

2.7.3 A Deeper Look at M-PESA

Safaricom and Vodafone launched M-PESA, a mobile-based payment service targeting the un-banked, pre-pay mobile subscribers in Kenya on a pilot basis in October 2005. M-PESA started as a public/private sector initiative. Vodafone was successful in winning funds from the Financial Deepening Challenge Fund competition established by the UK Government's Department for International Development to encourage private sector companies to engage in innovative projects to deepen the provision of financial services in emerging economies. The full commercial launch was initiated in March 2007. The service comprises a simple registration process to set-up a customer's new M-PESA account into which they can upload (deposit) and download (withdraw) cash at a large number of Safaricom's re-seller airtime distribution agents. Making a deposit is a similar process to topping up their airtime pre-pay balance: the account identifier is the mobile phone number and the customer goes to the very same place that they would go to buy airtime.

There the similarity ends; the M-PESA account is entirely separate to the pre-pay airtime credit. Once registered, the customer can send funds to any other phone number, on any network. The receiver gets a text message that can be taken to a re-seller agent and 'cashed in', enabling person-to-person money transfer instantly over large distances. A customer can also use their M-PESA account balance to buy goods and services (including airtime credit for any other Safaricom pre-payphone).

It comes with a full transaction tracking and reporting system, customer care support and anti money laundering measures, and is being developed to allow international use for remittances, allowing Kenyans overseas to send money home quickly and much more cost effectively than most alternative means.

2.8 Macroeconomic Impacts of M-Banking in Kenya

In terms of general macroeconomic impacts, there are only a couple key studies that have demonstrated the positive influence of mobile phone penetration in developing countries.

One well-known study found that while mobile phones in less developed countries are playing the same crucial role that fixed telephony played in richer countries in the 1970s and 1980s, the growth impact of mobiles is around twice as important in developing countries, where there is also a critical mass effect, and that a rise of ten mobile phones per 100 people boosts GDP growth by 0.6% (Waverman, Meschi & Fuss 2005). Another reported that the impact of mobile phone penetration is positively linked to Foreign Direct Investment (FDI), and that this impact has grown more significant in recent years, with a 1% increase in mobile penetration rates associated with 0.5-0.6% higher rates of FDI and GDP (Williams 2005).

One aspect of mobile phones in the developing world that is being looked at with some anticipation is the introduction of mobile financial services and transactions. Many if not most rural users in less developed countries have no access to financial services of any kind, and getting these “unbanked” citizens linked somehow into the formal banking sector is a priority for many governments. However, the evidence to date of initial efforts in this regard is mixed. While users are employing the mobile banking systems to make payments for things such as airtime and pre-paid electricity, and many are using them for sending remittances back to friends and relatives in their rural villages, there is little evidence to date of an increase in the number of users registering for more formal banking services via mobile phone, such as savings and credit services (Ivatury, Pickens 2006; Morawczynski 2008).

Initial analysis seems to indicate that while today's mobile banking systems are providing good money transfer and payment services to early users, there will need to be better marketing and training involved to help consumers understand what the systems are capable of, as well as improved policy measures to ensure that the benefits of mobile banking are evenly distributed across all banking and consumer sectors (Ivatury, Pickens 2006)

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the method that will be used for the study and adopts the following structure: research design, population and sample, population description, data collection methods, research procedures and data analysis and methods.

3.2 Research methods

In research design, there are two major methods of research. These are qualitative research and quantitative research. Table 1 below will show some of the comparisons between the two.

In quantitative research the aim is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. Quantitative research designs are either descriptive (subjects usually measured once) or experimental (subjects measured before and after a treatment).

For an accurate estimate of the relationship between variables, a descriptive study usually needs a sample of hundreds or even thousands of subjects; an experiment, especially a survey, may need only tens of subjects. The estimate of the relationship is less likely to be biased if you have a high participation rate in a sample selected randomly from a population.

In surveys, bias is also less likely if subjects are randomly assigned to treatments, and if subjects and researchers are blind to the identity of the treatments.

In my research quantitative research method is implemented. Surveys were used to gather information from small/medium enterprises. The survey respondents were small but informative and accurate.

The respondents represented the large percentage of business types operated in Kenya. The respondents were either the owners of the small businesses or either a manager who in most cases was a relative of the owner and in minor cases the owner was also the manager. This made the answers to the survey questions genuine and accurate.

Qualitative research is a participant observer research. It emphasizes the importance of looking at variables in the natural setting in which they are found. Interaction between variables is important. Detailed data is gathered through open ended questions that provide direct quotations. The interviewer is an integral part of the investigation.

Table 1 comparison between Qualitative and Quantitative research.

Qualitative Research	Research Aspect	Quantitative Research
Discover ideas, Used in exploratory research with general research objects.	Common purpose.	Test hypotheses or specific research questions.
Observe and interpret	Approach	Measure and Test
Unstructured, free-forms.	Data collection approach	Structured responses, categories provided.
Researcher is intimately involved. Results are subjective	Researcher independence	Researcher uninvolved observer. Results are objective.
Small samples-often in natural settings.	Samples.	Large samples to produce generalizable results(results

		that apply to other situations)
Exploratory research designs	Most often used	Descriptive and casual research design.

In research design, errors may occur. Errors can affect research design: A good research design attempts to control various sources of error. These are:

Random sampling error: This occurs when a particular selected sample is an imperfect representation of the population of interest.

This error can be defined as the variation between the true mean value for the population and the true mean value for the original sample.

Non-sampling error: This error can be attributed to sources other than sampling, and they may be random or non-random. They arise from various reasons such as errors in problem definition, approach, scales, questionnaire design, interviewing methods, and data preparation and analysis.

Non-response error: This occurs when some of the respondents included in the sample do not respond. This can cause the net or resulting sample to be different in size or composition from the original sample. The figure 1below illustrates the run-down of errors in research design

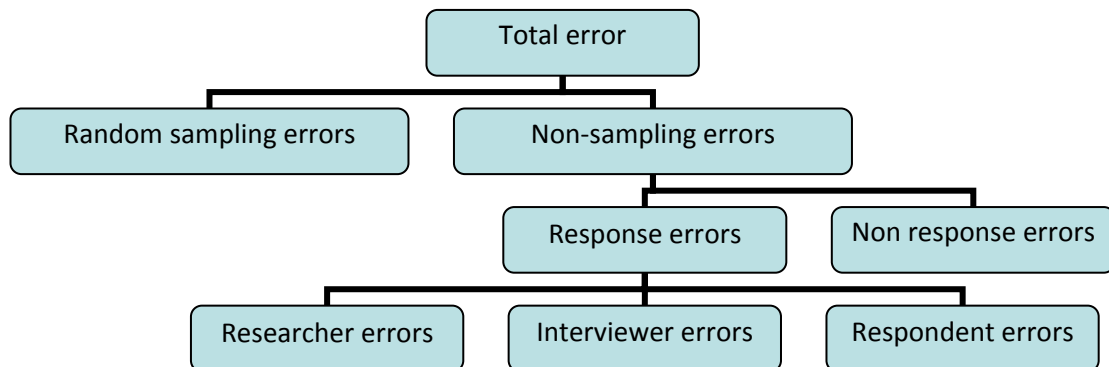


Fig.1 Potential sources of error in research designs.

3.3 Research Design

The research design to be used in this study is a survey design. The cross-sectional survey design will be used. This design entails the collection of data of more than one case and at a single point in time in order to collect a body of qualitative or quantifiable data in connection with several variables which are then examined to detect the patterns of association (Bryman 2001).

3.4 Sampling

The survey method was used in this study. A random sample of 20 firms was selected. In determination of the sample size, geographical location of the firms was considered in order to have both urban and rural SME's represented. The respondents from the firms were people knowledgeable with the questions at hand and were the most senior persons of the firm, for example owners, managers or supervisors.

3.5 Data Collection

Data was collected using a semi-structured questionnaire served on respondents through drop and pick methods. The method was chosen because of time and cost.

The exercise obtained core information and supplementary information was obtained through further probing of the respondents and by reading relevant publications of other firms in the industry.

3.6 Data Analysis

Data analysis was conducted through Microsoft Excel spreadsheets and Statistical Package for Social Science. Editing was undertaken before data analysis.

4 RESEARCH RESULTS

In summary the response rate of the survey was 90%. Some of the limitations of this study are important to keep in mind. The sample used was small due to the time and resources that such a research would otherwise require, hence the severest drawback to my study. However, thus the findings of this research should not be taken wholly writ. In this chapter the results of the survey will be presented.

4.1 Overview of Financial Access in Nairobi

What is the extent of access to financial services?

This study revealed that only 18% of small businesses in Nairobi have access to formal financial services through banks while 8% are served through micro finance institutions. 35% are served through informal institutions like pyramid schemes and self help groups. Sadly 38% of small businesses in Nairobi have no access to any type of financial services and rely on personal savings. In contrast, 27% of small business owners own a mobile phone while a further 28% can access one through family or friends. In totality therefore 55% of small businesses in Nairobi can access financial services through m-banking if they wanted to. The study also found out that 45% of small businesses in Kenya currently cannot access m-banking services.

It can be seen therefore that the high penetration of the mobile phone in Nairobi can serve to help the high percentage of unbanked small business access financial services through m-banking. The mobile phone industry can therefore be seen as an ideal partner to offer financial services to unbanked segments of the population. The graph below, figure 2, lucidly represents this information.

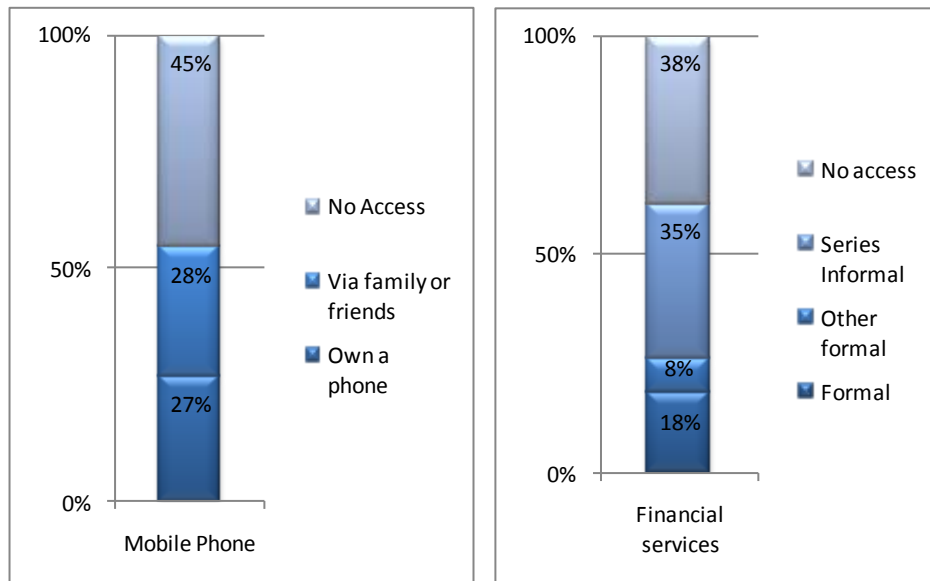


Fig. 2 Overview of Financial Access in Nairobi according to my survey, done between May-August 2008.

4.1.1 Financial Services Infiltration in Nairobi

This study revealed that there are a high number of m-banking agents in Nairobi than all other financial services agents combined. ATM bank branches fall a distance second at 22%. Banking halls are much fewer in number and Western union agents are the least in number in disbursing financial services in Nairobi. Figure 3 captures this information.

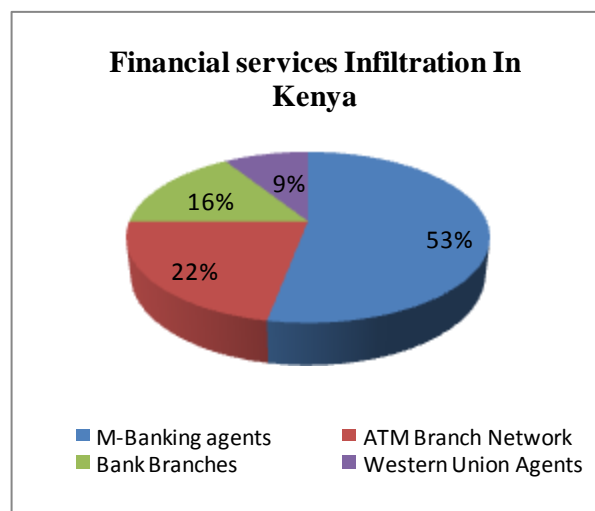


Fig. 3 Financial Services Infiltration in Kenya according to my survey, done between May-August 2008.

4.2 Attitudes Towards M-banking

What are the attitudes to mobile banking by small businesses?

This study sought to establish individuals' view of M-banking among users as well as non users with and without bank accounts. A series of questions were asked to respondents and results of those who answered in the affirmative were recorded and analyzed. The respondents were grouped into three distinct cohorts based on whether they were: Users of m-banking service (Safaricom's M-PESA was used as the reference), Non users of M-Pesa but with bank accounts, Non users of M-Pesa and without bank accounts. The questions and subsequent results were as below, fig 4;

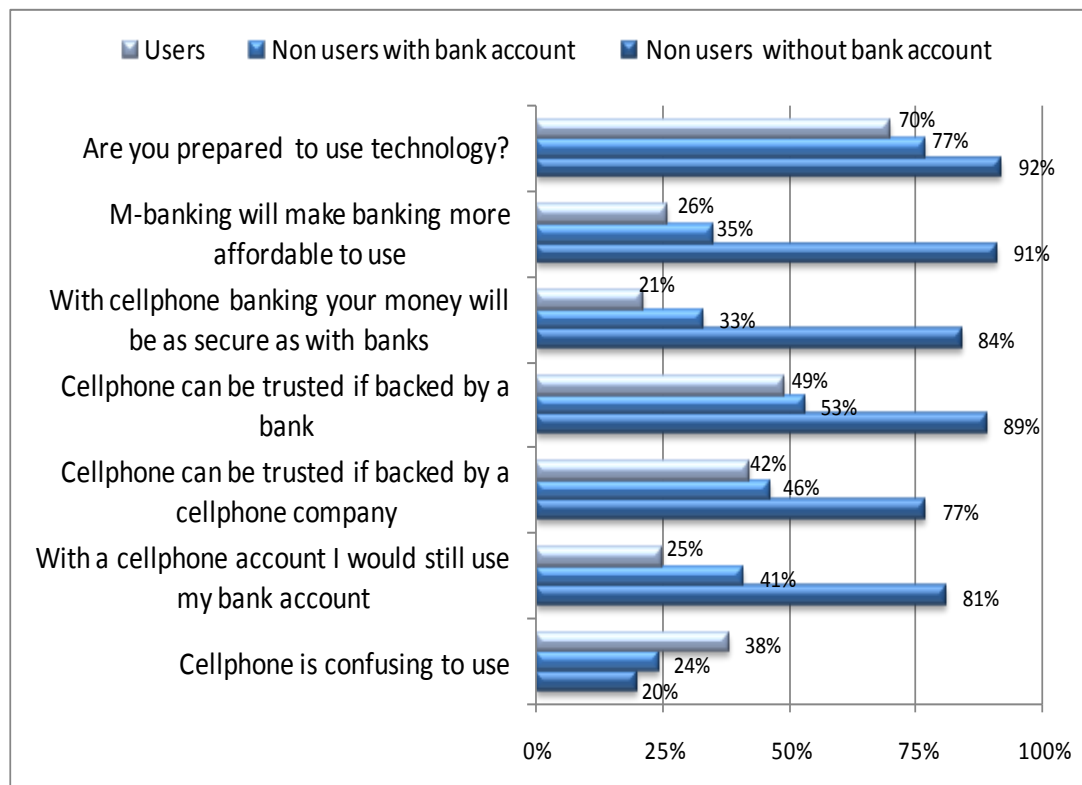


Fig.4 Attitudes Towards M-banking according to my survey, done between May-August 2008.

.A higher number of the unbanked cohort than any other cohort of the three responded in the affirmative.

This can be deciphered to mean that they have appositve attitude towards m-banking and therefore can easily be tapped into utilising the facility. Non- users of M-Pesa but who have traditional bank accounts had moderately receptive attitudes towards M-Pesa.

This can be interpreted to mean that while they are comfortable with the financial services they receive from their banks inside banking halls and though ATM's they might be willing to take advantage of M-Pesa with a little convincing. Surprisingly, users of M-Pesa were the most skeptical of m-banking services with majority answering in the negative. This can be attributed to the fact that most of

them are still uncertain of whether the service is viable over the long- term due to its newness.

4.3 Small Business Survey

A survey of 20 small businesses was conducted during this study to basically establish the impact of using Non-bank led M-banking services on various aspects of their operations.

4.3.1 Organization Type and Profile

The population of study was small businesses in Kenya. Forty percent of the firms included in the sample survey were small businesses in rural areas in the outskirts of Nairobi while sixty percent were small businesses operating within the city of Nairobi. Because of time and cost considerations all the firms included in this sample were located in Nairobi. A research assistant was used to follow up on the questionnaires. Fig 5 represents the proportion of rural and urban businesses represented in the sample.

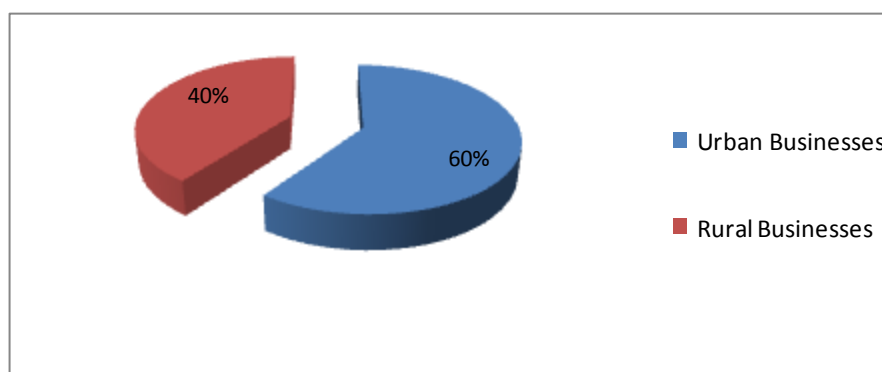


Fig.5 Urban and Rural Businesses according to my survey, done between May-August 2008.

4.3.2 Business Sector

The firms in the study were drawn from different business sectors. Broad categorization of the businesses in the sample saw them grouped in the transport, consultancy, fashion and information technology sectors. Table 2 represents the percentages of the firms in the sample from each of the various sectors.

Table 2 Business Sectors according to my survey, done between May-August 2008.

Business Sector	Urban	Rural
Transport	10%	60%
Business Consultancy	30%	25%
Fashion	15%	5%
Information Technology	45%	10%

4.3.3 Profile of Respondents

All of the respondents were knowledgeable in the area of M-banking and understood how the M-Pesa service works. This increases the level of authenticity in the findings of this study presented in figure 6. There was more sole proprietor businesses in the rural areas (Nairobi outskirts) and therefore a higher percentage of respondents were the actual owners. Within Nairobi most of the businesses were run by professional managers and thus were the most common respondents

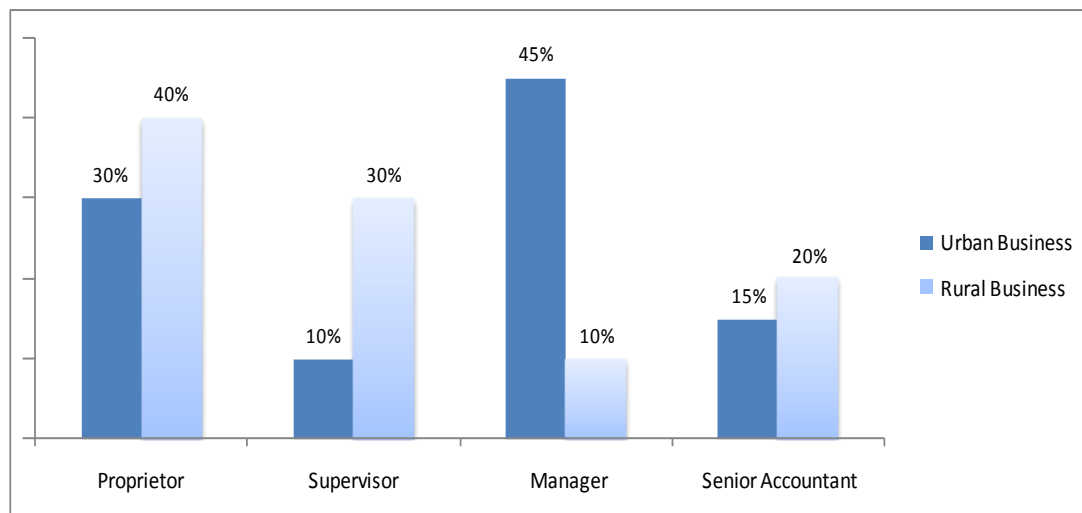


Fig.6. Profile of Respondents according to my survey, done between May-August 2008. (Kenya)

4.3.4 Organizations' Accessibility to Banking Services

All the urban based businesses in the sample have access to and employ both traditional banking, methods of using ATMs and banking through the banking hall, and m-banking. On the other hand, shown in figure 7, only 45% of the rural businesses have access to traditional banking services. All of the rural businesses have access to and make use of m-banking mainly through Safaricom M-Pesa services.

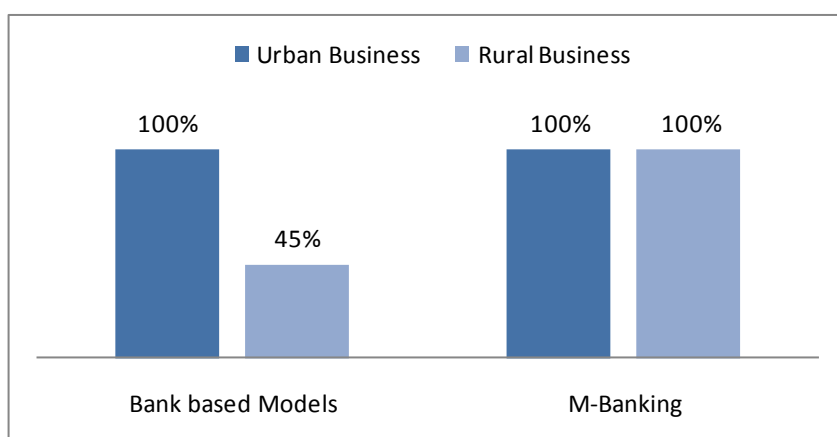


Fig.7 Bank Based Models and M-Banking according to my survey, done between May-August 2008 (Kenya).

4.4 Effect of implementing m-banking on payments, transfers deposits and withdrawals

What are the effects and challenges of implementing mobile banking?

As highlighted on the comparative graph, figure 8, the biggest effect in, terms of efficiency, in effecting financial obligations was felt when making withdrawals and peer to peer payments. This is when comparing before and after taking advantage of M-Pesa. There was general improvement in the overall efficiency of conducting transactions. However, the study revealed that the M-Pesa service had no effect on the small businesses' cross border transactions.

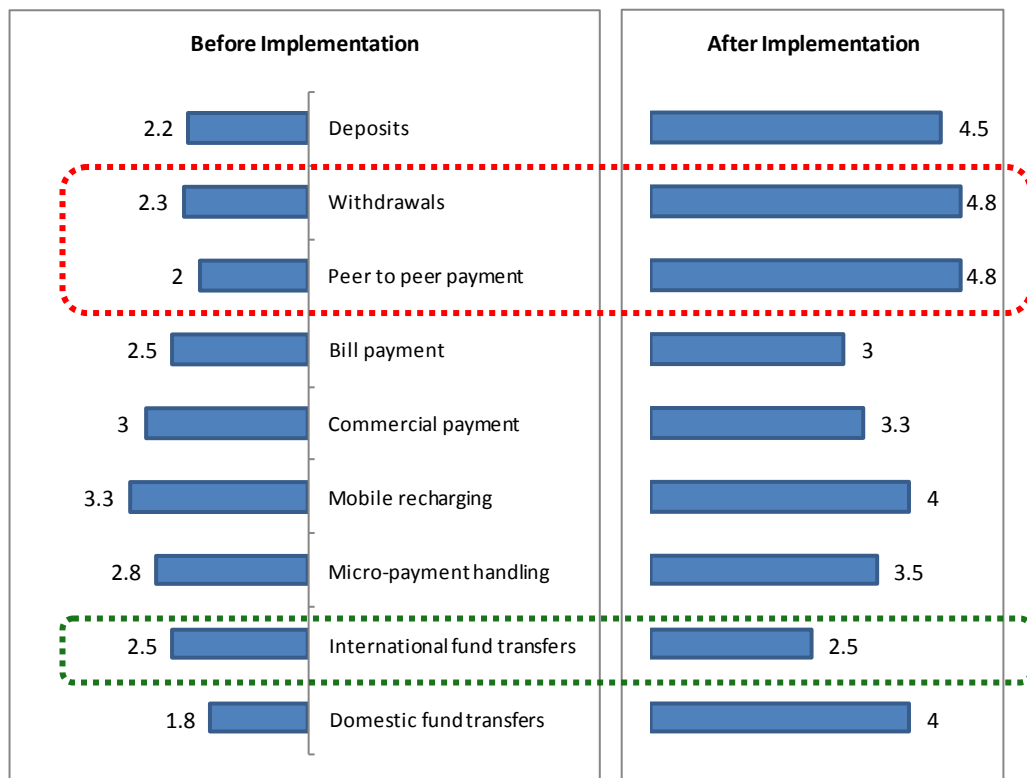


Fig 8 Before and After Implementation according to my survey, done between May-August 2008 (Kenya).

4.5 Challenges of M-Banking

This study revealed that security and applications updating were the major challenges facing M-Pesa that small business users. Regulatory barriers set by CCK (communications commission of Kenya) and the Central Bank on the M-Pesa service was the least concern that the small business owner's had.

Slow speed in customer adoption, data quality and lack of interoperability were other challenges facing the M-Pesa service that the business owners were not so worried about. The scale used in Table 3 ranges from: 1=Not a problem, 2=Slight problem, 3=Problem, 4=Big Problem, 5=Major Problem. Table 3, Challenges of M-banking according to my survey for small business owners, done between May-August 2008 in Kenya.

Barrier	Magnitude
Lack of interoperability	3
Regulatory Barriers	1
Slow speed in Customer adoption	2
Data quality	3
Security	4
Personalization	2
Applications Updating	4

4.6 Concern about Aspects of Security

This study revealed that loss of a mobile handset and security passwords were the biggest security concerns both rural and urban businessmen had, regarding an M-banking service. The urban small business owner also worried about encryption of data stored in his mobile phone. This is shown below in figure 9.

(Scale: 1=Not a problem, 2=Slight problem, 3=Problem, 4=Big Problem, 5=Major Problem)

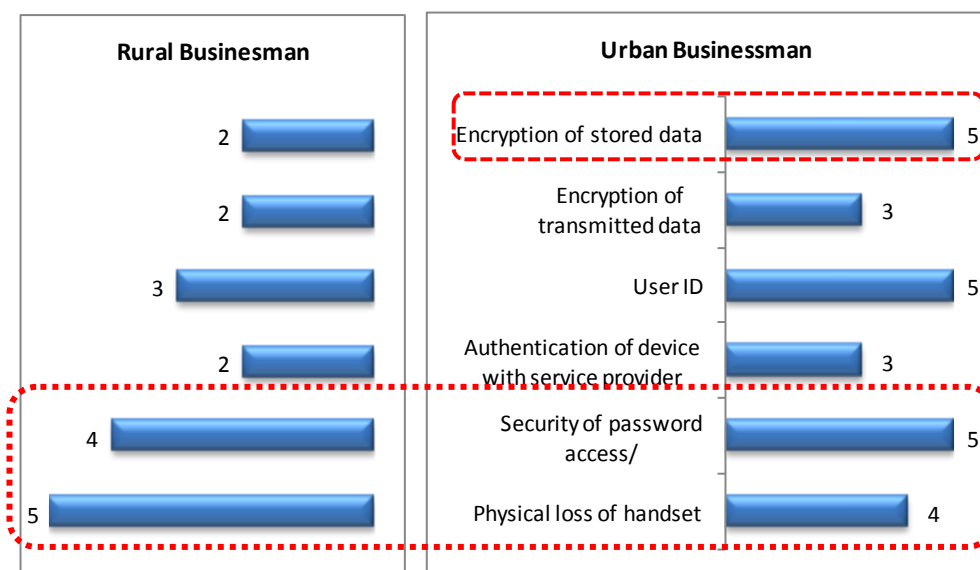


Fig.9. Concerns about Aspects of Security according to my survey, done between May-August 2008. (Kenya)

5 SUMMARIES AND CONCLUSIONS

5.1 Summary

In summary the response rate of the survey was 90%. The objectives of the study were to understand and appreciate the concept and potential of m-banking and analyze its impact on small businesses in Kenya

For objective one, it was found that mobile banking is a variation of branchless banking which is the delivery of financial services outside conventional bank branches using information and communications technologies and non-bank retail agents.

For objective two, it was found that m- banking has a positive impact on transfers, payments, deposits and withdrawals in financial transactions of small businesses. It is a cost effective, reliable and simple way of conducting business and reduces the instances of human error that is characteristic during human interaction in traditional banking.

5.2 Conclusion

It has been elaborated that the adoption and use of mobile phones is product of a social process, embedded in social practices such as SMEs Practices which leads to some economic benefits. The community defines the style of mobile phone use e.g. In urban areas over 73 % of mobile phone usage is for business purposes while over 70 % of mobile phone usage in the rural areas is for social communication (CCK 2005).

This paper provides practical guidance the entrepreneurs' and policy makers and all other stakeholders based on a sound evidence base as well as to promote further research coverage of issues addressable by many disciplines giving suggesting an active participation of computer and telecommunication experts, social scientists, economists and business strategists. This paper bridges the gap

between the studies of mobile phones technologies and practice in an effort to provide a solution to developmental/ economic issues in developing nations. There is evidence that the entrepreneurs have accepted the use of the technology and hence the governments should provide appropriate policies to facilitate the use of the mobile technologies in the SMEs and explore the viability of mobile commerce in the informal sectors.

The policy makers, ministry of finance, ministry of labor and human resource development and mobile service providers should educate the masses more about the benefits of integrating and using mobile technologies to enhance small businesses and also the need to enhance technical capabilities of entrepreneurs to allow widespread use of emerging technologies in SMEs.

5.3 Suggestions for further Research

I recommend further studies on the subject based on the following:

Firstly, the study was biased because it only included samples from Nairobi

Secondly, the study did not dig into the details of the cultural impact of the m-banking technology which therefore can be grounds for related research.

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