

**MOBILE BANKING CAPABILITY AND PERFORMANCE OF COMMERCIAL
BANKS IN NAIROBI COUNTY, KENYA**

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DECLARATION

This study is exclusive to me, and it has never been submitted for a degree in any university.

Signature _____ Date _____

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I confirm that the work in this thesis was done by the candidate under my supervision.

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DEDICATION

This dissertation is in honour of my parents and close friends for the support they gave me up to the completion of this document. Your prayers, financial and moral support have seen me through this dissertation. I thank you all.

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My regards go to Dr David Nzuki who is my supervisor. His direction, imminent support, recommendations, helpful remarks and valuable critique which were all an encouragement to the fruitful finish of this project venture.

May God favour you.

ABSTRACT

Three major commercial banks collapsed in 2015 and 2016 due to capital shortages, and CBK put them under liquidation and receivership in less than two years, demonstrating the country's commercial banks' poor performance.

A well performing commercial banking sector is critical in the absorption of financial crises in the economy hence strengthening the economic system of the country. The foregoing has provided an impetus for commercial banks in the country to adopt competitive strategies that aim at growing their customer bases for improved financial performance, key among which, mobile banking. Pertinent empirical literature in the Kenyan context however lacks, on how security of transactions, transactional costs, efficiency of transactions and operational competencies in m-banking influence financial outcomes among banks in Kenya in regards of ROA and ROI, As a result, the current research. The aim of the research was to determine the impact of mobile banking on the performance of Kenyan commercial banks. The population studied was the 42 commercial banks that operated in the country, and the method used was descriptive design, which formed the units of analysis, from which a sample size of 84 bank managers was formulated by using purposive sampling design. The units of observation included business development managers, ICT managers, operations managers and marketing managers in the respective banks. Primary data was employed and it was gathered by use of semi-structured questionnaires. The study used descriptive and inferential analyses. Findings indicated that transactional security did not have a significant effect banking using mobile phones and banks performance in Kenya. However, it was discovered that transactional costs in mobile banking had a huge impact on bank performance in Kenya. Transactional efficiency in m-banking has also been found to have an impact on Kenyan banks' success. Customer operational competency in mobile banking had a substantial impact on bank success in Kenya, according to the report. The findings are expected to educate bank managers and policymakers on how to boost Kenya's banks' efficiency by leveraging mobile banking capability

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OPERATIONAL DEFINITION OF TERMS

Bank Performance:	This is a measure of how banks can exploit its resources in order to achieve its objectives
Customer Operational Ccompetency:	Skills and abilities among mobile banking users to use a smartphone as well as the ability to navigate mobile banking services and carry out transactions.
Mobile Banking Capability:	Commercial banks offers several services including transactional security, transactional cost, transactional efficiency and customer operational competency which clients to perform financial traction using their mobile phones.
Transactional Cost:	The transactional expenditure accrued as a result of Bank service charges and mobile operation charges using mobile banking services.
Transactional Efficiency:	The Speed of transaction and Convenience that result from using ability to realize the most financial benefits at the least cost in such resources as time and money mobile banking.
Transactional Security:	The assurance among mobile money users of the safety of access to their financial information and of measures in place to curb fraud. The users have autonomous control of their mon and are free to access the same at any time.

ABBREVIATIONS AND ACRONYMS

CBK	Central Bank of Kenya
ICT	Information Communication Technology
NACOSTI:	National Commission for Science, Technology and Innovation
OLS	Ordinary Least Squares
ROE:	Return on Equity
PIN	Personal Identification Number
SMEP:	Small and Micro Enterprise
SSA	Sub-Saharan Africa
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
UAE	United Arab Emirates

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The Commercial banks financial output is critical because a sector's performance is inextricably related to the overall economy's performance.

(2014) (Lipunga) A bank's profitability is inextricably related to its financial strength; as a result, for a banks the bank's continued existence and wellbeing the management has to ensure that they make profits.

Banking sector's profitability is also crucial, as the industry's health is closely linked to the overall health of the economy.

As a result, a professional and a profit-making banking sector is able to endure adverse economic conditions. 2014 (Ally).

In order to enhance their performance, the banking sector has over a couple of years come up with several innovations which has improved efficiency and on the long run improved financial performance (Ernest & Young, 2018). Key among these innovative products have been the adoption of mobile banking (Flamini, McDonald & Schumacher, 2017). Lee, Lee and Kim (2017) opined that offering financial services by employing the use of mobile phones is mobile banking.

Financial developments have ushered in a revolution in the banking industry around the world. According to Yin and Zhengzheng (2010), Chinese commercial banks have shifted from wholesale credit operations to retail credit operations as a result of technological advancements.

In Finland, mobile banking provided services such as checking account balances, transferring money, paying bills, trading stocks, managing portfolios, and purchasing insurance in 2019. (Statistics Finland 2020).

In Nigeria, mobile banking has strengthened e-Commerce and e-Payment systems, resulting in a decrease in the amount of currency in circulation (Chiemeké, Ewwiekpaefe, and Chete, 2016; Ayo, Adebisi, Fatudimu, and Ekong, 2018). According to Padachi, Rojid, and Seetanah (2018), the two main banks in Mauritius, the Mauritius Commercial Bank and the State Bank of Mauritius, strengthened their financial results after implementing mobile banking. In Tanzania, Vodacom reported that M-Pesa represented 22.6% of service income in year 2015. Millicom Group reported that aggregate income from mobile money related operations in nine markets in and the Sub-Saharan Africa and Latin America expanded by 23.1% in quarter 3 of 2015 when contrasted with 2014.

Many opportunities arise in the banking sector due to wide use of mobile phones to bank the unbanked (Economic Co-operation and Development (ECD), 2017). Due to introduction of mobile banking, people no longer have to move long distances and use their time and resources to access banking services (Lee et al., 2017). Transacting using m-banking costs less compared to using the Automatic teller machines in which banks can generate profits when cash is withdrawn and deposited (ECD, 2018). Banking using mobile phones can perform different services that include transaction history queries, account balances, settlement of bills through mobile phones and funds transfers (Kim, Mirsobit & Lee, 2018).

In addition, unlike other conventional banking platforms such as non-mobile banking and ATM, mobile banking technique has a lot of benefits including secure access to funds, more interactive interfaces with the clients, flexibility in that it can be operated in different devices, ubiquity coverage and has extensive accessibility (Kadalarasane, 2015). The foregoing point to mobile banking capabilities including transactional security, cost, and efficiency and highlight the necessity of operational competency by mobile phone users to transact through mobile banking, all of which can have major impact on the commercial bank's performance,

which is the major objective from the point of view of the financial institutions, hence the present study.

1.2 Mobile Banking Capability

According to Okiro & Ndungu, (2013), the use of mobile telecommunication equipment in providing banking and other money related services is referred as mobile banking. In addition, Delgado, Hernando and Nieto (2014) define M-banking as the provision of financial data, transaction services for example payment of bills, account to another to account transfer, account balances, communication platform and other mobile banking services by use of electronic devices from any point at any favourable time according to the convenience of the customer.

When users are making a choice to use mobile banking services, safety and reliability of the system are the key factors which re considered (Kanchu & Kumar, 2018). Safety and reliability are therefore a major challenge facing the mobile banking world. Theft has brought about risk of information. Service providers must ensure that they use highly secured technology to prevent loss of data. According to (Porteous, 2017), one major attribute which has made m-banking successful is trust.

Transactional cost has also been pointed out as a major determinant for widespread usage of mobile banking (Tarasewich, Warkentin & Nickerson, 2016). There is a cost linked to purchasing a mobile phone and connection through a service provider, when carrying out mobile phone banking (Nah, Siau & Sheng, 2015). Mobile banking also bears transactional costs in its services including transfer of funds, withdrawal of funds, application for account balance and statements, account opening, among others. (Mathieson, Peacock & Chin, 2017). The costs associated with using mobile banking ought to be reasonably affordable by the

customers. The lower the costs of innovations the more likely clients will adopt it (Min & Qu, 2018).

Perceived transactional efficiency is also an important feature in mobile banking (Deloitte, 2016). Most users perceive the ability to carry out transaction from the comfort of their homes or workplaces instead of having to travel to the bank or ATM, as well as speedy transactions as opposed to queuing as highly efficient (Featherman & Pavlou, 2016). For purposes of value addition for the users, mobile devices ought to be adequately functional in order for the user to get timely transactional alerts (Dholakia & Dholakia, 2018). Users should not be hampered in their ability to enjoy comparable features through mobile banking; any design restriction that prevents users from fully utilizing the features would limit their use.

Further, one of the major reasons why clients adopted the use of mobile phones in banking is operational competency (Tiwari & Buse, 2017). Perceived ease of use of an innovation will determine if a client will fully embrace an innovation or not. When an innovation seems complex it will be less adopted according to the author in (Min & Qu, 2018). According to Olatokun & Igbinedion, 2018), customers can completely embrace an invention if they believe it is simple to use and understand. The developers of an innovation ought to ensure that frequently used transactions should have shortcuts to avoid lengthy processes. (Dholakia & Dholakia, 2018).

1.3 Performance of Commercial Banks

The efficiency of a bank can be assessed from its profitability which can be assessed both in terms of its ROA and ROI ratio (Madhyam, 2017). Both ROA and ROI are the most commonly used benchmarks for the profitability of commercial banks since they measure the bank's return on assets (Tariq, Usman & Mir, 2014).

In other words, it assesses a company's ability to effectively control its assets in order to generate revenues. Historically speaking, a ratio of 1% or greater has been considered profitable but it can fluctuate with the prevailing economic times. Smaller banks mostly have lower ratio compared to big banks. (Masood, Aktan & Chaudhary, 2018).

The profitability measure of banks performance is measured by return-on-investment ratio. The formula looks at the benefit or gain which is achieved from an investment divided by the original investment cost (Kanchu & Kumar, 2018). This ratio is determined by dividing net profit after taxes by total capital paid. It assesses how well a bank manages its invested capital. In other words, this ratio reflects the bank's ability to produce the necessary return (expected return) through the use and management of the shareholders' invested capital (AL Matarneh, 2009).

Commercial bank specific variables, among them ROA and ROI are instrumental in shaping the performance of a specific bank. Kenyan banks with higher ROA and/or ROI are likely to perform better than those with lower ROA and/or ROI since the latter are not interpreted to be more profitable than those with high ROA and/or ROI (Njoroge, 2014). Investors in most cases opt to transact their business with banks that are both profitable in terms of ROA and ROI and guarantee them security in terms of flexibility when they need cash (Kigen, 2015).

A commercial bank records productive ROI and/or ROA in case it has gathered more profits in money related point of view from contributed capital. The bank's gains or profits is evaluated after a budgetary period of time (Okiro & Ndungu, 2013). A profitable ROI and/or ROA also show the linkage between the outright level of income which shows that the bank's capability to lend loans to its members and grow its profit (Tariq et al., 2014). In the current volatile environment, a profitable ROI and/or ROA indicates a good and effective operations and development of the bank. Profitability is additionally pivotal for a managing an account

institution to preserve its continuous operations and for shareholders to generate reasonable returns (Musyoka, 2017).

In an effort to attain profitability as indicated by both ROI and ROA, commercial banks are increasingly adopting the idea of M-banking, albeit is still below the bar in comparison with money transfer from mobile phones by the consumers (Lule, Omwansa and Waema, 2012). There are more benefits that mobile banking has compared with money transfers that is offered by various network operators which include the interests that accrue on the money saved, loan accessibility and credit history as a result of access of individual financial information. This begs the question on why despite mobile banking yielding enormous benefits; its adoption is still in its infancy stage and therefore meaning that the banking sector is yet to understand the unbanked user.

It is necessary to comprehend the impact and performance of banking when using mobile phones and to recognize mobile banking factors that influence these financial institutions' operational performance.

Central bank of Kenya (2016) records shows that all financial institutions which operate in Kenya have adopted mobile banking. Consequently, it is imperative that the effect of employing mobile phones banking on the bank's profitability is determined, more so, in recognition of the role that the Kenyan banks play in the realization of the country's Vision 2030.

1.4 Statement of the Problem

The ROA of Kenya's banks have been on a decline in the last 5 years. The average ROA recorded in the year 2019 was 2.6 percent which was similar to the average in the year 2018 which was also reported at 2.6 percent in 2018 (CBK), 2020). This translates to a decrease

of 2.7 percent on average reported in the year 2017. Further, the 2017 average of 2.7 percent was a decrease from the previous number of 3.3 per cent recorded in the year 2016. The 2016 figure was however an increase from the average of 2.90 percent recorded in the year 2015 (CBK), 2018)

Additionally, the fall of Imperial bank in 2015, Chase bank in 2016 and Dubai bank has largely been attributed to their low profitability as indicated by their low and declining ROA, averaged at 1.14 at the time of their collapse (Cytonn, 2016). The banks had been placed under liquidation and receivership by CBK which is an indication of poor performance of commercial banks in the country (Musyoka, 2017; CBK, 2018). The foregoing has provided an impetus for commercial banks in the country to adopt competitive strategies that aim at growing their customer bases for improved financial performance (Waiganjo, 2018). Key among these strategies has been tapping into financial innovations that not only enhance efficiency and improve customer experience, but also enables access to the unbanked population. The records from the Central Bank of Kenya (2018), all the 42 banks which operate in Kenya have embraced mobile banking.

However, how mobile banking capabilities affect performance among Kenyan banks in terms of both ROA and ROI remains unexplored in the Kenyan body of knowledge.. Extant studies in Kenyan literature have largely focused on aspects of mobile banking other than capabilities vis-à-vis Kenya's banks profitability. For instance, Kihara (2015) investigated the impact of mobile CRM development and versatile promoting advancement on the upper hand of business banks in Kenya; while Waiganjo (2018) assessed the effect of perceived increased customer base and possible adverse effects on profitability of banks of kenya. Njoroge (2014) on his part focused on services offered through m-banking and deposit volumes and Kenyan commercial banks' financial performance of as measured by efficiency.

Furthermore, existing empirical studies in Kenya have pointed to a variety of factors that have contributed to commercial banks' weak results, although in contexts other than Kenya. It include security of transactions with regard to secure access to financial data, fraud and security of the mobile device from third party access (Masood, Aktan & Chaudhary, 2018); transactional costs in terms of fund transfers, withdrawals, deposits and account opening (Tariq et al., 2014); efficiency of transactions in terms of autonomy and convenience of operations (Anyasi & Otubu, 2017); as well as operational competencies which concerns users' ability to navigate mobile device applications and carry out transactions (Alsheikh & Bojei, 2014). Pertinent empirical literature in the Kenyan context however lacks, on how security of transactions, transactional costs, efficiency of transactions and operational competencies influence banks performance.

1.5 Objectives of the Study

The study's overall goal was to examine the impact of mobile banking capabilities on Kenyan bank performance.

1.5.1 Specific Objectives

The aim of the research was to:

- i. Investigate the effect of transactional security in mobile banking on performance of commercial banks in Kenya
- ii. Determine the effect of transactional cost in mobile banking on commercial banks' performance in Kenya
- iii. Examine the effect of transactional efficiency in mobile banking on performance of commercial banks in Kenya
- iv. Evaluate the effect of customer operational competency in mobile banking on performance of commercial banks in Kenya

1.6 Research Questions

- i. How does transactional security in mobile banking influence performance of commercial banks in Kenya?
- ii. How does transactional cost in mobile banking affect performance of commercial banks in Kenya?
- iii. What is the relationship between transactional efficiency in mobile banking and the performance of commercial banks in Kenya?
- iv. What is the effect of customer operational competency in mobile banking on performance of commercial banks in Kenya?

1.7 Significance of the Study

The banks top management can be able to pinpoint places where mobile banking can improve their operations to deliver quality services and also be able to know the areas in their internal operations that need reconfiguration to reap improved benefits to the bank. With the view of decision and policy making, stakeholders, Banks's management and financial institutions ought to consider fronting employing mobile phones to bank as a platform of efficiently and conveniently delivery of services as well as a product of internet banking that might aid in the process of strategic planning and decision making.

Telecommunication also commercial will through this study establish a proper way that the to establish a mutual gain through partnering with one another. In conclusion, scholars, students, institutions and corporate management body could gain benefits from this study because it may provide a basis for literature concerning mobile banking which could be cited by future researchers.

1.8 Scope of the Study

The goal of the study was to find out the impact of mobile banking on performance of banks in Kenya. More specifically, the study zeroed in the impact of transactional security; determining the effect of transactional cost; examining the effect of transactional efficiency; and investigating the effect of customer operational on banks' performance.

The study was conducted in the background of Kenya's 42 commercial banks. The research was completed in December of this year.

1.9 Limitation of the Study

Filling and returning of the questionnaires depended on the willingness of the respondents and time at their disposal, which exposed the study to non-response owing to time availability for response considering respondents' busy schedule at the bank. To address this, researcher dropped the questionnaire and allowed the respondents ample time with the questionnaire and responded to the same at their convenience after which they informed the researcher when dully filled for collection. At their convenience

The study also faced logistical challenges in the distribution of questionnaires due to the location of the different bank's headquarters. Also, the possibility of meeting the target respondents at a time is minimal. This was dealt with by making prior arrangements with the Administrators of the companies to organize for meetings and also to plan for the most appropriate time to drop the questionnaires. However, the study quality was still good since the challenges presented did not affect the results the research design, output and subsequent development of the research project report

1.10 Organization of the Study

There were five chapters in this study. The presentation of the paper was the subject of the first chapter.

The second chapter delves into the literature review based on the specific goals.

Chapter three presented the research methodology while the results and an analysis are presented in Chapter four. In Chapter five, discussion of findings, conclusion and recommendations are presented.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Hypothetical systems that focus on innovation execution in the monetary area have been inspected and assessed

The section also examines various empirical studies that have been conducted on the study's variables, namely; security of the mobile system, cost of mobile banking, efficiency and ICT competence of customers. In addition, the chapter represents the conceptual framework. The chapter will then conclude with the summary of the section and resultant research gap.

2.2 Theoretical Review

Many theories advanced by scholars to expound and further comprehend mobile banking capability and Kenya's bank performance. The theories that were found to be important to the study were: theory of rational behaviour, acceptance model of technology, and the theory of transaction cost innovation.

2.2.1 Theory of Reasoned Action

Ishbein and Ajzen (1975) conceptualized this theory, while Bagozzi (1994) further expounded this theory. The theory holds that customers are rational when making decisions and consider all possible outcomes of their actions before accepting a given attitude. This means that customers are always curious and intuitive in clarifying roles and focusing on the components that drive conscious attitudes. This means the driving force for the customer to decide to use a given technology. For instance, a customer's decision to follow theoretical mobile banking

assumptions is influenced by the intentions, attitudes and final subjective standards of the customer.

According to Fishbein (1980), a customer's intention to use an invention is made up of attitudes and subjective standards, since these two factors influence a customer's intention and, as a result, behaviour.

A customer intention represents the cognitive part and captures the motivational attributes that influence behaviour. It represents how a bank customer works to try a new bank application that will improve their interaction with the bank. The theory further suggests that for a customer's overall feeling of favourableness or unfavourableness attitude toward an idea, such as a mobile banking application.

According to TRA, a customer's positive or negative attitude towards mobile banking technology, and the customer's acceptance of banking products will depend if they will embrace the technology or not. Bagozzi (1982) similarly proposed that if consumers have positive and significant beliefs about their character, then the apparently positive attitude towards the behaviour is when the customer has negative and significant beliefs about some of the results of his buying behaviour, the opposite is true, which is considered a negative attitude. Another attribute of customer behaviour that determines customer behaviour in the plan is their subjective norms. These subjective standards represent an individual's assessment of the social pressures associated with performing or failing to perform expected conduct (Ajzen & Fishbein, 1980)

The thought that a person is having in mind about what other people think about his character is referred as customer's subjective norm. This includes the perceptions that family and friends think about the results of involving in a specific behaviour, and the extent to which this affects

the consumers' conduct or action. Similarly, motivation to comply and normative belief establishes the subjective norm regardless of individuals' ideas. The behavioural outcome will be determined by an individual view on how people around him believe that he should act in a particular code of conduct.

It was pointed out that the key critique of TRA is that the relationships of individuals, including social relationships and the broader social system, are not taken into account (Terry, Gallois, and McCamish, 1993). While the value of social norms is acknowledged by TRA, its approach is limited to considering the views of individuals on these social phenomena. Activities include personal values, behaviours and comprehension. The distinction between these two facts is not, therefore, apparent. Schwartz and Tessler (1972) pointed out that there are other reasons which determine the intentions that goes beyond the behaviour. That is, they put forward a person's right and wrong ideas and beliefs about moral obligations may also affect one's intentions. In addition, social changes may be passed on from generation to generation. People collectively adapt and construct new models of meaning and practice (Pinder, 2008)).

The present study is anchored on the TRA theory as it demonstrates how the security and efficiency in transactions influences the uptake of mobile banking. The theory also underpins how customers consider the incurred transactional costs and their operational competencies in the take up of banking by use of mobile phones.

2.2.2 Technology Acceptance Model

It was Davis (1989) who progressed the theory, and its advanced reasoned action theories provision. It notes that an individual's ability to use a particular technology is determined by his or her willingness to embrace and accept it. The users accept or reject the technology voluntarily. Users' acceptance of the underlying technology is described by their willingness

to use specific information technology. User purpose, in turn, is generally defined by the attitude of the user and the perception mechanism of the system and also represents the perceived utility of the system. (Niederhauser & Perkmen, 2010)

Perceived functionality and convenience and ease of understanding of a mobile application in provision of banking services to customers will further be affected by the attitude of a customer towards the idea. Davis (1989) characterized perceived convenience while using a mobile application for delivery of service as the extent at which someone believes that by using a given item, he/she will not apply a lot of effort in order to realize a set objective. In TAM, it is believed that the convenience of use of a device will indirectly affect behavioural intentions by affecting perception functions. The Theory of Technology Adoption is applicable to this research because it accurately predicts users' behavioural intentions. (Wang and Butler, 2011). For example, in the case of accepting a bank information system, customers and other related purposes will use the program in a way that the institution originally intended for a single purpose (for example, to enhance convenient transaction operations between customers and banks).

Similarly, a customer's volitional control will clarify the motive behind the use of information system is maintained by users objectively having standards that have been set to achieve at the end of the period (Conner & Norman, 2015). Therefore, this research expects the volitional nature and behaviour of bank customers in relation to mobile banking. The reason behind the expectation is majorly because of the argument that when people are subjected to the services that they learn through self-directed approach, they tend to acquire some control powers over decision making on the resources that will render their learning process effective and convenient (Bellotti, Mikulecka, Napoletano, & Rohrova, 2014).

Acceptance of the use of mobile banking by bank clients in their bank transactions, will influence the performance levels of individual banks. This is because acceptability will determine the volume of transaction undertaken using mobile banking which translates to higher transaction fees to the commercial banks. In addition, adoption of mobile banking leads to improved loan advances and interest income. Hence, innovation of a new technology on its own does not affect the performance of a bank but rather the level of acceptability by the bank customers to adopt the new innovation in their operation determines the performance of the bank.

There are various factors influencing the buyer behaviour and actions and according to TAM they can be measured by subjective means like behavioural intention (BI) control, this one of the setbacks of TAM. One of the disadvantages of TAM is the variable affecting the consumer's behaviour, which is inevitably evaluated by subjective means such as behavioural intention (BI) such as interpersonal management. Interpersonal influence means when one is influenced by a colleague or a friend by words of mouth. It is possible for a superior to influence a junior employee by instructing him/her to perform specific tasks with the use of, but it will be ambiguous to conclude that an acquaintance to the employee can wield great influence (Shan & King, 2015). Additional reproach to the theory is that, because of a variety of various subjective variables such as cultural standards and beliefs and personal qualities and personality features, emphasis of actions may not be accurately quantified in an empirical investigation. Therefore, it is not conceivable for a friend or relative to make one adopt a certain technology (Ang, Ramayah & Amin, 2015).

This theory is relevant to this research because it underpins how customers make decisions to take up mobile banking based on their competencies in navigating mobile phone applications and carrying out transactions. It also helps elucidate how the perceived security and

effectiveness in the use of mobile banking services by users influence commercial banks profitability in Kenya.

2.2.3 Transactions Cost Innovative Theory

Niehans (2006) advanced the transaction cost innovative theory, which stated that the overwhelming motivating element of novelty in financial matters is to lower transaction cost, and that inevitably, financial developments are a reaction to advancement in innovation that caused transaction cost to decrease.

The possibility to decrease an organization cost of transactions can empower monetary advancement and financial services improvement. Mobile banking can possibly lower the cost incurred in transactions. With respect to this study, the use of Internet-connected Information Technology (IT) can significantly reduce a firm's exchange costs by improving the efficient organization, management, and usage of data, according to innovation theory.

According to Cao et al. (2010) mobile banking will bring down the exchange because it enables access to the association's interior database. Subsequently, the reduction of costs by use of internet banking, mobile banking and agency banking may impact bank's performance. Transaction costs refers to the expenses incurred by distinguishing equitable costs, negotiating and conducting economic exchange. For instance, the information integration measurement of a bank-client relationship allows coordination of data exchange and shared correspondence between the accomplices. Therefore, Faems (2012) affirm that the theory of transaction cost innovation makes firm to be more susceptible to its exchange accomplice's shrewd conduct when it is hard to assess the performance of a partner however, he opines that trust diminishes a portion of the dangers and vulnerabilities related with such economic trades.

In understanding the effects of mobile banking on Kenya's bank performance, exchange cost theory plays a very important role, and henceforth giving a hypothetical foundation for this research. The utilization of mobile banking encourages the decrease of coordination costs between a firm and its clients. For instance, e-banking platforms, enhances the reduction of expenses that would have otherwise be incurred while searching for appropriate information regarding how services are offered and their respective prices. In such manner, the reception of m-banking framework lowers the cost of seeking, for acquiring data about a bank product offering and costs, which in the end prompts cost minimization in the entire supply chain.

The theory is dominated by comparative institutional exercises that concentrate on transaction cost economizing, leaving no space for the process dimensions of bounded rationality introduced by more substantive notions (Furubotn, 2002).

Dow (1987) contends, however, that invoking bounded rationality as a necessary assumption in the study of contracts and governance structures and then assuming that substantively reasonable decisions can be made with respect to the contracts and governance structures is contradictory (that are imperfect because of bounded rationality).

The theory is linear and source dominated, according to Osterloh and Frey (2000), because it views the communication process through the eyes of an elite who has chosen to disseminate knowledge or an invention.

This theory also undervalues the influence of the media. They primarily serve to raise awareness of new technologies. It gives various types of people who are important to the diffusion process a central position. Simply put, the media influence innovators or early adopters, who in turn influence opinion makers, who in turn influence everyone else.

Rogers overlooked the fact that the media can also be used as a platform for reform agents to lead community discussions. Another consequence of this principle is that it encourages groups that do not want the innovation to follow it

The theory is of pertinence to the present study as it underpins why customers consider the transactional costs incurred when taking up mobile banking. It also helps explain and how the consideration of transactional costs including costs incurred in funds transfer, withdrawal, deposit, application of loans, account opening and checking account balance among others, influence the bank's profitability in the country.

2.3 Empirical Review

This section reviews variables namely transactional security in mobile banking, transactional cost in mobile banking, transactional efficiency in mobile banking and customer operational competency in mobile banking in relation to performance of commercial banks.

2.3.1 Transactional Security and Performance of Commercial Banks

Kombe and Wafula (2015) inspected the effect of website composition highlights of a community bank's performance utilizing an example of 55 community banking with online services in the five mid-western United States of America (USA) states. The author used both secondary and primary data by applying multiple regression models. The outcomes demonstrate that banks with higher convenience of ICT perform relatively superior to those with low ICT ease of use. On their part, Brunette, Vigil, Pervaiz and Levvari, (2015) noticed that the incentive for utilization of M-Pesa by associations canters around various advantages and bad marks which incorporate debasement, expanded working efficiencies, including less printed material, better transparency and responsibility by means of the electronic records, and more autonomy and independence for clients.

Malhotra and Singh (2017) looked into the influence of reliability of the internet on the efficiency of Indian commercial banks, and found that the competitiveness and availability of internet banking have no bearing on the protection of mobile banking.

Correspondingly, Donner and Tellez (2018) tried to set up the effect of electronic banking on the Jordanian business banks performance linking adoption, impact, and use while utilizing Ordinary Least Squares concluded that m-g industry in a negative way.

Min and Qu (2018) agree with the study that just because someone has a Personal Identification Number doesn't mean they're the rightful owner of the card.

Thus, measures have to be put place to ensure ate integrity and security of both the client and bank funds. Waiganjo (2018) argues in their study that mmobile banking innovation enables clients to increase confidence and to have certainty and an independent place to store and control their financial assets autonomously without access by different individuals from the family.

Whereas the reviewed studies have attempted to explore mobile banking's transactional security (Malhotra & Singh, 2017; Donner & Tellez, 2018; Waiganjo, 2018), none has adequately linked the concept with Commercial Banks' Performance as assessed by ROA and/or ROI. This presents an empirical gap that this study set out to explore.

2.3.2 Transactional Cost and Performance of Commercial Banks

Gutu (2014) however took note of that in developing nations, the absence of electronic banking foundation square effects on the normal cost viability and productivity of commercial banks.

Kihara (2015) looked into the impact of banking using mobile phones relying upon Kenyan banks' competitiveness in his exploration and discovered that when they provide a way to reduce the steps required to transfer money in a formal way, it can become a major indicator of progress in the financial sector.

In his report, Kigen (2015) discovered that the influence of mobile banking has dramatically reduced transaction costs, despite the fact that banks have not felt its effects in terms of increased income or customer base.

In their report on the economic impact of mobile phone technology in the banking system, Anyasi and Otubu (2017) argued that M-banking requires a mechanical stage to function, and that such a creative structure is time-consuming and expensive.

Initially, the banks own particular banking software must be able to be coordinated with a m-banking platform.

Kim et al. (2018) investigated the factors that influence people's decision to use m-banking payment and discovered that financial institutions can effectively reduce their expenses by m-banking benefits by using programmed messages but texts that inform clients about upcoming payments, advance payment and caution on delayed payment notification can spare credit officers time and telephone bills. In their study, Sripalawat, Thongmak and Ngramyarn (2018) argued that once the working expenses are decreased, the gradually expanding influence will reach the clients who will wind up not exactly before the coordination of m-banking framework by the bank. Customers will save on traveling expenses visiting banking facilities which are normally in towns.

Whereas the reviewed studies have attempted to explore mobile banking's transactional cost (Kihara, 2015; Kigen (2015; Sripalawat, et al., 2018; Kim et al., 2018), None has adequately connected the term to bank performance according to ROA and/or ROI. This creates an analytical void, which this study aimed to fill.

2.3.3 Transactional Efficiency and Performance of Commercial Banks

According to Gutu (2014), in the long run, customers were forced to spend more on the process to ensure that their overdue are cleared despite all the potential risks that could arise while walking around with the cash. With the introduction of M-pesa services, customers are able to deposit their money directly from their mobile phone to their respective bank accounts. Numerous studies have been conducted to examine and determine the associated benefits to consumers from the use of m-banking as a result of convenience and fast transactions but little or no concern have been depicted on the benefits that financial institutions have gained due to introduction of m-banking.

According to Tiwari, Buse and Herstatt (2016) employing m-banking is an effective and efficient strategy of conducting business. The study ought to determine the percentage increase that a bank will generate if it will provide value addition to the services offered to the clients; for instance, the use of mobile banking technology in conducting financial transactions.

Waiganjo (2018) states in his report that M-PESA has strengthened the functionality and repayment facilities for SMEPs in Kenya.

Before the establishment of the extremely used M-PESA, there was a lengthy procedure that customers of SMEP were going through in regard to the process of repayment for instance they could carry money to their meetings location which exposed them to risk. Before the clearance of the customer by the loan officer, the process of counting the customer's cash and recording would take very more time making the process tedious. In addition, the persons appointed in the position of a treasurer had to inspect the funds to check on the quality standards of the notes to ensure that fake money has not been received hence consuming more time. Thereafter, the cash had to be taken and deposited in the bank by the treasurer making the whole process lengthy and time consuming.

Whereas the reviewed studies have attempted to explore mobile banking's transactional efficiency (Gutu (2014; Tiwari et al., 2016; Waiganjo, 2018), None has adequately connected the definition to the banks performance as measured by ROA and/or ROI. This creates an analytical void, which this study aimed to fill.

2.3.4 Customer Operational Competency and Performance of Commercial Banks

Klapper and Singer (2014) observe in their study that the individuals who are advanced (as far as innovative aptitudes are concerned) get more open doors through access of data, making payments, impelling occupation manifestations through services of mobile banking. Kathuo et al. (2015) concluded that there was a tremendous improvement on mobile phones usage in developing nations, for example, Kenya has assumed a critical role in the accomplishment of numerous improvements in interventions in the course of the most recent decade. Mobile phones have given individuals, independent of their aptitudes level, accessibility of a scope of services and data and changed the entire business world. Complex mobile services are probably going to bolt out a substantial market share while a secure and simple idea is probably going to improve the situation.

Further, Tiwari et al. (2016) looked into on clients who favour electronic banking, demonstrate that clients create abilities in the utilization of mobile banking with progressive use of the mobile phone. Client use of electronic banking facilities, on the other hand, has an effect on the bank's cost and revenue structure. When banks used comparable electronic-based services without recognizing each other's sales potential, no advantage was gained in the sector.

Interestingly, when banks give corresponding services, their operational costs will reduce and the revenue base will strengthen.

Porteous (2017) attempted to use the specific experience of a few Sub-Saharan African countries to assess if mobile phones would effectively expand banking services to non-banked accounts.

This exam is an attempt to discuss how to use mobile phones to extend banking activities to the activities of poor, unbanked, low-income and marginalized groups. The study uncovered that fragile and low-paid family units in sub-Saharan Africa (SSA) states frequently need to use ledgers and face high fees when leading transactions related to base currencies

According to Madhyam (2017), the mobile phone displayed an extraordinary open door for the offering of commercial services to populations that are not banked. However, financial and technological progression, administrative and strategy development was anticipated to render these provisions a reality. In their study, Kanchu and Kumar (2018) report that the effortless of service offering idea that M-Pesa embraced has made it an example of overcoming adversity. The investigation takes note of that the M-Pesa clients simply need to comprehend the sending, receiving and adjust idea to helpfully utilize the services that M-pesa has offered in respect with mobile banking and other mobile banking services. Whereas the reviewed studies have attempted to explore mobile banking's customer operational competency (Klapper & Singer, 2014; Kathuo et al., 2015; Tiwari et al., 2016; Porteous, 2017), None has adequately connected the definition of banks performance as measured by ROA and/or ROI. This creates an analytical void, which this study aimed to fill.

2.4 Summary and Research Gaps

Author/Year	Study	Finding	Research Gap
Kombe and Wafula (2015)	How the performance of Kenyan commercial banks is affected by internet banking, with reference to Kenya Commercial Bank	Banks with higher convenience of ICT perform relatively superior to those with low ICT ease of use	Fails to link e/banking to banks performance .
Malhotra and Singh (2017)	How does internet reliability affect the success of Indian commercial banks?	Productivity and provision of internet banking lacks any critical relationship with the security of mobile banking	Fails to link internet reliability to f performance of Kenya's banks
Kihara (2015)	How the competitive advantage of Kenyan commercial banks is affected by mobile banking	There is a positive effect of mobile banking on competitive advantage among Kenyan commercial banks	Fails to link commercial banks' performance to mobile banking in Kenya

Anyasi and Otubu (2017)	Economic effect of mobile phone technology in banking system in Kenya	Banking needs a mechanical stage on which to work and such innovative arrangement is tedious and costly	Fails to link mobile phone technology to commercial banks' performance in Kenya
Tiwari, Buse and Herstatt (2016)	Effect of mobile technologies on the behaviour of customer and its influence on bank operations	mobile technologies lead to improved operational efficiency	Fails to link mobile technologies to commercial banks' performance in Kenya
Klapper and Singer (2014)	The opportunities of digitizing payments	Individuals who are advanced get more open doors through access of data, making payments, impelling occupation manifestations through services of mobile banking	Fails to link mobile banking capability to commercial banks' performance in Kenya

Source: Author (2021)

Pursuant to the above studies reviewed, it can be concluded that globally, numerous studies have been undertaken on regards of mobile phones and its resulting effect on banks' performance. Although the studies that have been undertaken have offered incredible information that is useful in strategic decision making, there is still confusion on the empirical evidences. For instance, Nenovski and Jolevska (2012), and Ciciretti, Hansan and Zazzara, (2009), finalize that banking using cell phones affects financial institutions success or failure.

In the opposite, Delgado, Hernando and Nieto (2004) and AL-Samadi et al. (2011) found out that here was a negative effect in banking using cell phones. Correspondingly, despite adoption of banking by use of cell phones by Kenyan financial empirical studies have provided quantitative evidence on regards to how mobile phones has affected performance of banks. Additionally, the study should utilize financial point of view as a tool of measure on commercial banks' performance which other studies have not shown interest in the past.

2.5 Conceptual Framework

It embodies the ideologies and concepts the research being conducted ought to follow in order to realize its goals and objectives. Fig. 2.1 below has clearly embodied not only the interrelation between variables and also provide the platform to the researcher to accomplish desired objectives. In order to assess the outcomes and also the association between banking using mobile phones and Kenya's financial institutions banking success or failure, therefore conceptual framework approach was adopted.

Independent Variables

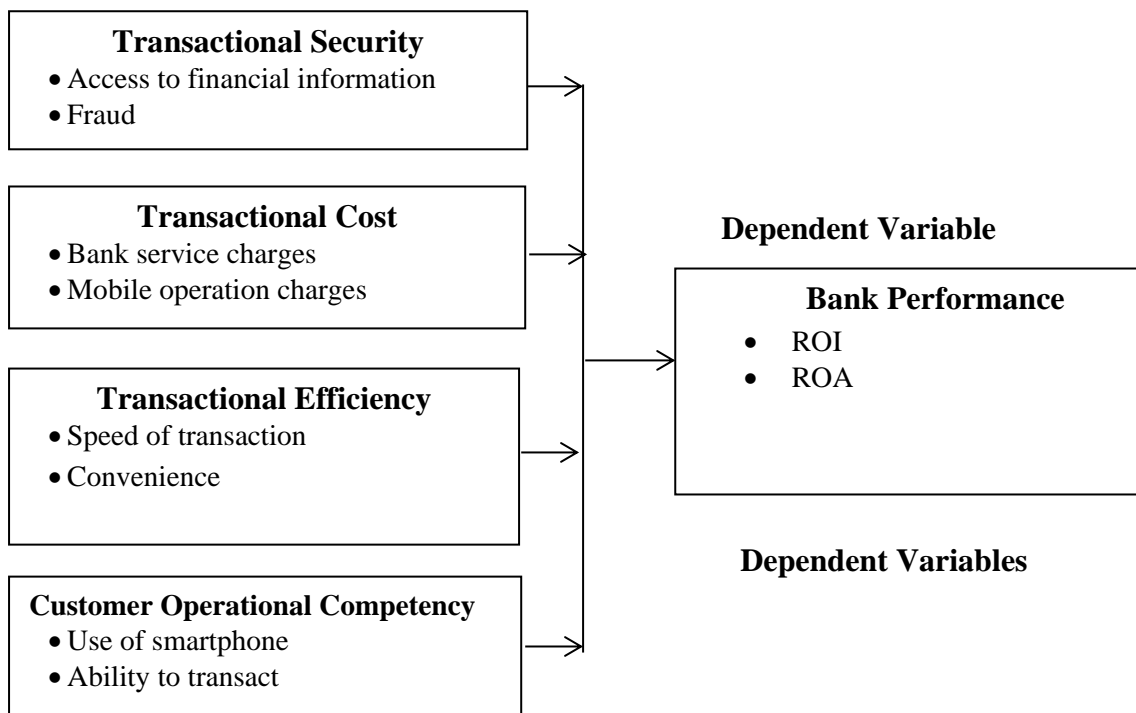


Figure 2.1: Conceptual Framework

Source: Author (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this section, the researcher's research methodology is defined. It covers design of the research, the target population, sample size, data collection as well as data analysis and presentation.

3.2 Research Design

The research utilized descriptive style, which is suitable on the grounds that it clearly expresses the findings relationship between various components of mobile phone banking and Kenyan bank performance when measured using ROA and ROI scales.

The reason why descriptive design was adopted was because it seeks to find out the univariate question whereby in this case it sought to find out the size, the form of delivery and dissemination and existence of the outcomes of banking using mobile phones. The design helped to access the real views and perceptions of the users in regards to how they think about the value addition as a result of adoption of mobile banking, the behaviour and or attitudes in reporting the current condition of the target population. According to Ary, Jacobs and Sorensen (2010), descriptive research describes a phenomenon from the opinion and perspective of an individual or an organization.

3.3 Target Population

Target population consists of 42 Kenyan banks. (CBK, 2017) as listed in Appendix V. Accordingly, the unit of analysis comprised of individual commercial banks while the units of observation included business development managers, ICT managers, operations managers and marketing managers in the respective banks.

The target population, according to Ary et al. (2010), depicted as entire pool of individuals, events, or measurements that contain the desired information and from which a statistical sample is drawn.

3.4 Sampling Design and Sampling Techniques

The systematic sampling techniques was used, in which all the even numbered banks in all the three tiers were selected, thus resulting to 21 commercial banks being selected. The questionnaires were distributed to the business development managers, ICT managers, operations managers and marketing managers in the respective banks, bringing the total sample size to 84. This is because the researcher deemed the target respondents to be knowledgeable and is involved in the bank operations and strategy that deal with mobile banking.

Purposive sampling, according to Tashakkori and Teddlie (2010), is a method of sampling in which a sample is taken from a population that is logically believed to be representative of the entire population.

Kumar (2011) points out that the main advantage of using systematic sampling instead of simple random sampling is that it can ensure that the population is uniformly sampled, because simple random sampling has the opportunity to allow cluster selection of subjects, which is systematically eliminated in purposive sampling.

3.5 Data Collection Instrument

The investigation depended on primary data gathered through semi-structured questionnaires. The study relied on a questionnaire, which included both closed-ended and open-ended questions. While the open-ended questions in the questionnaire allowed respondents to openly express their views, the closed-ended questions allowed respondents to answer quickly.

The respondents' overall data was contained in Section A while section B covered Transactional Security of Mobile Banking. Section C on the other hand contained questions pertinent to Transactional Cost of Mobile Banking while Section D explored questions on Transactional Efficiency of Mobile banking. Section E delved into questions on Customer Operational Competency in Mobile Banking while Section F covered questions on Commercial Banks' Performance. The "drop and pick" was adopted during questionnaire administering. Mugenda (2008) opines that when the questionnaire is used it saves time the report is confidential. To generate the responses, Five-point Likert scale was employed.

3.5.1 Validity of Instrument

Validity as defined by Kumar (2011), is a scale or estimating method to gauge what was intended to be achieved. The study checked the validity of both the construction and content. The skills should be tested in Construct Validity (Silverman, 2015) The contents of the questionnaire must fit the operationalization of the study variables in order to check for construct validity (Collis & Hussey, 2013).

Content validity means the test measures appropriate content. To check for content validity, the researcher engaged the Project supervisors and corroborated the questionnaire items with previous studies.

3.5.2 Reliability of Instrument

The information from the pilot test was analysed, taking into account a threshold of 0, using Cronbach's alpha to assess the internal accuracy or normal relation of items in an overview instrument to verify its reliability.

As suggested by Nunnally (1978). Questionnaire items with Cronbach alpha coefficients above 0.7 were considered reliable to ensure the reliability of the test instrument, whereas items that reported Cronbach alpha coefficients below 0.7 were considered inaccurate and were corrected. Reliability is extensively described as: how intensive steps are free of errors and produce predictable results along these lines. A few safety steps have been taken to reduce the sources of blunders and errors and thereby improve the degree of reliability for this analysis

3.6 Data Analysis and Presentation

After they were collected from the field, the questionnaires were edited to ensure that the criteria met the required standards of completeness, accuracy, and consistency however, inconsistencies were removed by the data cleaning process prior to the final stages of review and tabulated by classifying them into relevant categories (Tashakkori & Teddlie, 2010). In addition, coding of data into numerical format was carried out for convenience in the computation of statistical analysis. The description of the responses was obtained by presenting the details in tables, means, percentages, pie charts and standard deviations by descriptive analysis (Saunders, Lewis & Thornhill, 2012). To discover the relation between the research variables and consumer satisfaction, the study used inferential statistics. Specifically, to develop this relationship, the study used the Spearman correlation.

The relationship between bank performance and e-banking was established using regression analysis.

The regression equation was expressed as follow

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \dots\dots\dots 1$$

Where:

Y = Bank Performance

β_0 = Beta constant

$\beta_1 - \beta_4$ = Beta coefficients

X_1 = Transactional security

X_2 = Transactional cost

X_3 = Transactional efficiency

X_4 = Customer operational competency

ϵ = Error term

3.7 Ethical Considerations

Deliberate steps were taken to ensure that the information of the respondents was handled with utmost confidentiality. NACOSTI permit was first acquired before collection of data, in which it was given to the respondents after introduction and also letter from the university. To establish the degree of certainty among those who provided input, no subtle elements of names or individual identifying evidence were required to fill out the questionnaire. No data used by outsiders should be used by the researcher and the accumulated data should be used for scholarly purposes only. Respondents' interest was based on their own individual willingness and their approval was taken into account. The origins of knowledge and other literature review data were recognized in this analysis in a viable way.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This sections aim was about finding out whether there was a connection between commercial bank performance and mobile banking in Kenya. As a result, this section elaborates data interpretation, discoveries, and discussion in line with the study's goal. Furthermore, the outcomes of the analysis are expressed in frequency distributions and charts, while the analysis outcome is presented in standard deviations and means ratings.

4.2 Sample Characteristics

The sample characteristics are presented in this section, including response rate and demographic information. The data is presented descriptively by use of frequencies and percentages.

4.2.1 Response Rate

The rate of response of this study was 71.4 percent from 84 questionnaires distributed whereby the researcher was able to collect 60 duly filled questionnaires. A response rate of 50% is considered adequate, 60% is considered good, and 70% is deemed very well. Mugenda & Mugenda (2003).

As a result, the response rate in this study was deemed appropriate for drawing inferences and drawing conclusions.

4.2.2 Demographic Information

The focus of this study was on business development managers and the ICT managers in the respective banks. The education level, years worked in the bank, age and position in the firm was the information which was sought by the study. The length of service and level of experience provide an indication of how well a respondent understands the company's e-

banking operations and how well the company is doing. The results are presented in line with the study with objectives. A good percentage of the respondents as presented in Table 4.1, 60.0 percent, were male while female respondents accounted for 40 percent of the population.

Table 4.1: Response by Gender

Gender	Frequency	Percent	Cumulative percent
Male	36	60.0	60.0
Female	24	40.0	100.0
Total	60	100.0	

Survey Data (2020)

The study also established that commercial banks' top management comprises of individuals with an average age of between 39-45 years, which can be seen in the results, which are shown above. The above shows that age in study area is largely youthful to middle age, with a majority falling between the ages of 39 and 49 years. This is consistent with findings by Kigen (2015) and Musyoka (2017).

Table 4.2: Response by Age

Respondents' age	Frequency	Percent	Cumulative percent
25-31	2	3.3	3.3
32-38	14	23.7	27.0
39-45	36	60.0	87.0
Above 46 years	8	13.0	100
Total	60	100.0	

Survey Data (2020)

Similarly, 42 percent of the respondents as tabulated in Table 4.3 had attained Bachelor's degree level of education of which 25% had a master's degree which means they are well educated and competent hence will respond to questions well. Similar results were reported by Kombe and Wafula (2015) and Lule et al. (2012).

Table 4.3: Response by Education

Level of Education	Frequency	Percent	Cumulative Percent
O level	-	-	-
College cert/diploma	17	28.0	28.0
Bachelor degree	25	42.0	70.0
Master's degree	15	25.0	95.0
PhD	3	5.0	100.0
Total	60	100	

Survey Data (2020)

Correspondingly, 75 percent of the respondents had rendered services for respective banks for more than 5 years as presented in table 4.4 and this can be due to the nature of the employment cadres in which the respondents worked in their respective organizations, as most top positions require a significant amount of experience to qualify an employee for advancement. This is in agreement with findings by Njoroge (2014) and Okiro and Ndungu (2013).

Table 4.4: Response by years worked

Below 5 years	9	15.0	15.0
5-10 years	26	43.0	58.0
Above 10 years	25	42.0	100
Total	60	100	

Survey Data (2020)

The findings show that in regards of management scales, the majority of respondents (60%) were top-level management and they accounted for 40% of the total respondents, with middle management accounting for 40% of the total respondents (Table 4.5). This was also reported by Waiganjo (2018) and Anyasi and Otubu (2017).

Table 4.5 Response by Level of management

Level of management			
Top level	36	60.0	60.0
Middle level	24	40.0	100.0
Total	60	100	

Survey Data (2020)

The conclusions were that the respondents are involved in the development of organizational policy and decision making particularly in innovation and technological advancement for instance mobile banking. This finding is consistent with Caulderwood, (2015) finding that mobile banking strategy in an organization is undertaken by at the policy level of a bank and therefore the top and middle level management are the ones involved at this level. Hence the finding that majority of the respondents were holding these positions implies that they will be privy with the impact that mobile banking will have had on banks' performance. This position however is inconsistent with Mosheni-Cheraghrou (2013) who opines that the same policies cannot be applied in a blanket way.

4.3 Results of Reliability Analysis

All of the scales were found to be suitable, with alpha levels exceeding the 0.7 threshold, as shown in Table 4.6. The highest reliability was ($\alpha=0.924$) which represented transactional security It was followed by Customer operational competency ($\alpha=0.810$), then Transactional efficiency ($\alpha=0.808$), while Transactional cost had the lowest bur reliable coefficient ($\alpha=0.724$). The study found that the analysis was reliable and could be used for further investigation.

Table 4.6: Reliability Coefficients

Scale	Cronbach's Alpha	Number of Items
Transactional security	0.924	4
Transactional cost	0.724	6
Transactional efficiency	0.808	5
Customer operational competency	0.810	6

Survey Data (2020)

4.4 Descriptive Analysis Results

It has been realized that having access to a mobile banking platform has a direct effect on customer and bank security, as well as operating costs, efficiency and speed of transacting and

lastly, the degree of IT competency shown by the customer. In view of this, the study investigated how the four aspects mentioned above have influenced implementation of mobile banking activities in Kenya.

4.4.1 Transactional Security of Mobile Banking

The study's aim was to see how transactional protection when transacting using mobile phones influence banks performance. levels of agreement were registered by the respondents

Table 4.7 shows that mobile banking allows for transparency due to electronic device records, resulting in improved bank efficiency. (Mean = 4.301, SD = .996) and that M-banking affords the users better independence and self-sufficiency which lead to increased confidence to the bank and thus the overall performance (Mean = 3.996, SD = .821).

Table 4.7 Transactional Security of Mobile Banking

Statement	Mean	Std. Dev
Mobile banking affords openness because of electronic devices records and therefore improved bank performance	4.301	.996
M-banking affords the users better independence and self-sufficiency which lead to increased confidence to the bank and thus performance	3.996	.821
M-banking empowers customers to gain increased confidence and independence to store and control their funds independently devoid of access by other members of the family	3.881	.678
The requirement that customers have to transact with personal identification numbers while accessing bank accounts through their mobile phones increases the confidence in the system and thus number of transactions	3.651	.883

Survey Data (2020)

In addition, the study established that M-banking empowers customers to gain increased confidence and independence to store and control their funds independently devoid of access by other members of the family. The findings support a similar position held by Alsheikh and Bojei (2014) who while finding out the motivating factors influencing the customers to join the service in Saudi Arabian commercial, found that customers ‘awareness of service’ and mobile phone experience with regard to safety of the technology increases the willingness to use the technology whereas a lack of understanding led to a risk of clients not embracing it. This position supports the Theory of Reasoned Action (Ajzen, 1991) which postulates that customers are rational persons who will not wish to expose their personal data to unauthorised parties. The low standard deviations imply that majority of the responses agreed with each other. It is thusly, imperative to acquaint extra security frameworks which will ensure protection of both the client’s and bank’s funds.

4.4.2 Transactional Cost of Mobile Banking

The aim of the study was to see how transactional costs in banking using mobile phones affects banks performance. Participants expressed their degree of agreement. The study discovered that mobile banking has allowed banks to offer different types of financial products and financial business that include securities trading and mutual funds management (Mean= 4.011, SD= .981) As a result, the fixed and variable costs of Internet access in Kenya have decreased, allowing the Internet to play a larger role in bank business strategy. (Mean=3.964, SD=.873).M-banking reduces operating costs by reducing and ultimately removing physical branches and their related costs such as personnel and leases, as well as creating scale

economies that are greater than those available through conventional distribution networks, resulting in improved income.

Table 4.3 Transactional Cost of Mobile Banking

Statement	Mean	Std. deviation
Mobile banking has allowed banks to offer different types of financial products and business	4.011	.981
There is significant reduction in both fixed and variable costs in Kenya,	3.964	.873
M-banking leads to a reduction in overhead expenses	3.881	.698
M-banking generate scale economies in excess of those available to traditional distribution	3.512	1.012
High transaction cost will discourage many potential users from taking up the service	3.494	1.121
M-banking functions mainly as a substitute for physical branches	3.241	0.989
Overall mean	3.684	

Survey Data (2020)

The findings of the study, which show a cost reduction as a result of commercial banks adopting mobile banking, back up the findings of the findings by Arnaboldi and Claeys, (2008) which illustrate that technology-based products enable commercial banks to achieve substantial cost savings, increase profitability, and reduce risk when compared to traditional banking products. Similarly, Ciciretti et al. (2009) demonstrate that if enough customers demand the bank's technology-based goods, there will be a quick return on investment in this sector. However, the results go contrary to the findings by Kagan (2005) which reveal that the benefits of

adopting technology-based products was registered in developed countries and less in the developing countries.

4.4.3 Transactional Efficiency of Mobile Banking

The study also looked at how transactional efficiency affects the performance of Kenyan commercial banks. The respondents were expected to reflect their levels of agreement. The findings were that mobile banking speed and convenience leads to more customers sourcing more bank products (Mean=4.001, SD=.884) and that across-banks transactions has been facilitated which is convenient to customers and thus increasing the bank revenue (Mean=3.851, SD=.963). Mobile banking eliminates barriers of distance and bank operating hours which helps in increased transaction revenue (mean=3.628, SD=.738) leading to improved level of customer service because of the fast service delivery (Mean=3.443, SD=1.012). Additionally, the most efficient technology which yielded higher productivity in each employee and also led to reduction of the workforce was mobile banking (Mean=3.229, SD=.998). The various responses captured in the study imply that mobile banking has necessitated the process of transactions especially with bank accounts without limitation of neither time nor distance.

Table 4.4: Transactional Efficiency of Mobile Banking

Statement	Mean	Std. deviation
The speed results more customers sourcing more bank products and thus increased revenue	4.001	.884
Mobile banking facilitates across-banks transactions	3.851	.963
Mobile banking eliminates barriers of distance and bank operating hours	3.628	.738
M-banking lead to improved level of customer service because of the fast service delivery	3.443	1.012
Mobile banking is the most efficient technological means of yielding higher brand productivity	3.229	.988
Overall mean	3.630	

Survey Data (2020)

The findings are in line with Dos Santos and Peffers (2008) who was investigating about the factors that led to Automated Teller Machine being accepted and its effects on the efficiency of bank's employees, it was found that the introduction of the technology improved the bank's performance, the findings shows that indeed, mobile banking had improved the efficiency of the local banks as manifested by the speed in which customers are being served as well as facilitated inter-bank transactions. In addition, among the Jordanian commercial banks, According to Akram and Hamdan (2010), the use of ICT has a major impact on the bank's results. It was concluded that the efficiency of commercial banks was majorly attributed to mobile banking.

4.4.4 Customer Operational Competency of Mobile Banking

The aim of the study was to see how customer operational competency affected commercial bank output in Kenya. The respondents were expected to reflect their levels of agreement. In this case therefore, the study established that simplicity of the mobile banking application determines the customer's adoption of the system in transacting bank demands by a customer (Mean=3.847, SD=.849) in which ICT competence of customers determine the success of mobile banking (Mean=3.692, SD=.695). Similarly, it was found that mobile banking applications are easy to understand and operate which results in increased willingness of bank customers to use the platform (Mean=3.549, SD=.988) and also due to the availability of ICT devices to be used by the customers at the bank branch level hence determining the bank success in adopting mobile banking technology (Mean=3.321, SD=1.124).) The analysis also discovered that the demographic characteristics of the target customers have an effect on the bank's mobile banking performance. (Mean=3.145, SD=1.115).

Table 4.5: Customer Operational Competency

Statement	Mean	Std. deviation
Simplicity of the mobile banking application determines the customer adoption of the system	3.847	.849
The ICT competence of customers determine the success of mobile banking	3.692	.695
Mobile banking applications are easy to understand and operate	3.549	.988
There is availability of the device devices to be used by the customers at the bank branch	3.321	1.124
The demographic characteristics of the target customers influences the success of the mobile banking in the bank	3.145	1.115

Survey Data (2020)

The findings imply that customers with positive attitude towards a given mobile banking service will have positive influence towards the success of the service. Dubois *et al.*, (2011) argue that the utilization of electronic banking services by clients additionally influences the costs of operations of the respective financial institution. All financial institutions have not tapped the electronically based services hence they have not reaped the benefits. The relationship between mobile banking capability and commercial bank performance was studied using multiple regression. A social sciences statistical kit was used for analysing data.

The correlation coefficient is 0.665, indicating that the predictor variables have a heavy linear dependency on the outcome variables.

The coefficient of determination is the R squared and it shows model's goodness of fit which indicates how well the regression model estimates the actual data points. The adjusted R Square value of .402 implies that 40.2 percent of the variance in commercial banks' performance in Kenya was explained by the predictor variables including customer operational competency, transactional efficiency, transactional security, and transactional cost while the remaining 59.8 percent was expounded by other quarters

4.5.1 Regression Model summary

Table 4.6 Summary of Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.665 ^a	.443	.402	.28939

a. Predictors: Customer operational competency, Transactional efficiency, Transactional security, Transactional cost

The model description of regressed research variables is shown in Table 4.7.

The correlation coefficient indicates the strength and frequency of the association between dependent and also independent variables(R).

The correlation coefficient is 0.665, indicating that the predictor variables have a heavy linear dependency on the outcome variables.

. The coefficient of determination is the R squared and it shows model's goodness of fit which indicates how well the regression model estimates the actual data points. The adjusted R Square value of .402 implies that 40.2 percent of the variance in commercial banks' performance in Kenya was explained by the predictor variables including customer operational competency, transactional efficiency, transactional security, and transactional cost while the remaining 59.8 percent was expounded by other quarters.

4.5.2 Analysis of variance

Table 4.7 ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.661	4	.915	10.929	.000 ^b
	Residual	4.606	55	.084		
	Total	8.267	59			

a. Dependent Variable: performance

b. Predictors: (Constant), Customer operational competency, Transactional efficiency, Transactional security, Transactional cost

The regression model is used to statistically estimate the outcome variable based on the study of variance summary.

The statistical significance of the ANOVA was determined using the F test. The $P=0.000$, which is less than 0.05, implies that the regression model statistically and significantly predicts the dependent variable that is feasible for data.

The findings suggest that the model in general is significant in predicting the banks performance as suggested by the findings which shows that the model is important in forecasting bank output in general.

4.5.2 Coefficients of Determination

Table 4.8 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.086	.417		2.607	.012
	Transactional security	.009	.012	.105	.794	.431
	Transactional cost	.056	.015	.412	3.746	.000
	Transactional efficiency	.013	.015	.106	.878	.384
	Operational competency	.112	.023	.732	4.854	.000

a. Dependent Variable: performance

The following is the format of the overall equation model for predictor and outcome variables:

$$Y = 1.086 + .105X_1 + .412X_2 + .106X_3 + .732X_4$$

The model implied that, transactional security did not have a significant effect ($\beta=.105$, P value=.431>.05) on e-mobile and banks. However, transactional cost in e-banking had a significant effect ($\beta=.412$, P value=.000<.05) on banks performance in Kenya. Transactional efficiency in e-banking was found not to have a significant effect ($\beta=.106$, P value=.384>.05) on the performance of banks in Kenya. Finally, it was deduced that customer operational competency in mobile banking had a significant effect ($\beta=.732$, P value=.000<.05) on Kenya's bank performance.

According to the above regression equation, user expertise had a greater impact on the bank's performance and not even security characteristic of the mobile banking platform. This position can explain the finding by Crowe (2013) who opined that when a large population embraced the use of mobile phones usage in developing countries such as Kenya, it has been a key factor and a success story of many development interventions over the last decade and the user ability of the mobile phones is the important factor that influences the adaptability of the mobile banking. Nyaoma (2010) for example suggest that the M-Pesa customers just need to

understand the sending, receiving and balance concept to conveniently use the mobile banking services offered by M-Pesa and other mobile banking services. This position therefore supports the ICT competency as a significant factor that affects the outcomes of Kenya's banks.

4.6 Discussion

The main goal of this study was to establish the association of Kenyan banks performance an mobile banking capability.

The researchers first discovered that transactional security has no effect on the outcome. ($\beta=.105$, P value=.431>.05) on Kenyan bank results and mobile banking. Based on mobile banking security, it was particularly found that commercial banks have assured the client of openness and accountability by employing electronic records hence improving overall performance. In order to maintain mobile banking stability, the study discovered that, commercial banks have advised customers to set up PIN numbers that should not be disclosed to any other person including family members. The requirement that customers have to transact with personal identification numbers while accessing bank accounts through their mobile phones increases the confidence in the system and thus number of transactions.

Fraud is a violation of the law which it's intend is to get personal or financial gains which resonates with the findings Sharma and Panigrahi (2016). The objective of the act is what distinguishes mobile frauds from other risks.

With the use of mobile banking, the risk of fraud increases, which leads to a loss of funds. The users, business partners, agents, service providers or system administrators may propagate mobile banking fraud. The results of Hoffmann and Birnbrich. (2017) are also supported by the study which pointed out that when mobile banking occurs, it causes losses to both financial institutions and also their clients. Many measures are being put in place to reduce the instances of cyber-attacks.

It was also discovered that transactional cost has a huge impact on mobile banking. ($\beta=.412$, P value $=.000<.05$) on Kenya's bank performance. The reasons of this phenomenon are that the capital acquired from transactions using mobile phones including withdrawals, account opening, deposit, funds transfer, balance inquiries, mobile loan applications and payment interest among other services carried on mobile phones. According to Kearney (2018), banking operations resulted in two forms of transaction costs, which were dependent and influenced by the political and economic conditions. Additionally, Shankar (2017) broke down the transaction costs into two as direct costs and indirect costs. The study defined direct costs as the costs associated with training, direct organizational costs and monitoring costs. In other hand indirect transactional costs was distributed costs of the branch, regional costs, depreciation costs and taxation.

In contrast however, Kigen (2015) argues in his study that on how microfinance institutions' transaction costs are affected by mobile banking, that using mobile has reduced the costs of transactions on a large extend. Transactional efficiency in mobile banking was on the other hand found to not have a significant effect ($\beta=.106$, P value $=.384>.05$) on banks performance in Kenya. Mobile banking takes less time to access services as well as the relatively less expenditure in mobile banking transactions compared to the conventional services such as over-the-counter services and ATM among others. This is in agreement with Tiwari, Buse and Herstatt (2016) who observe that Mobile Banking is a cheaper way of banking compared to other ways of doing transactions. There are many charges which are incurred when doing transactions using mobile banking. For example, a client pays more when using the ATM than when using mobile banking.

Lastly, the study found that customer operational competency in mobile banking has a significant effect ($\beta=.732$, P value $=.000<.05$) bank's performance. Technological advancement

has enabled customers to gain knowledge by use of advanced mobile phones and therefore demand more innovative and sophisticated service delivery from their service providers. The course of the most recent decade. In addition, reduced cost of service delivery has been realized in commercial banks which attributed to the impact of mobile banking. Similarly, Dubois *et al.*, (2011) found that when banks give corresponding services, their operational costs will reduce and the revenue base will strengthen.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

There will be an outline in this chapter of the study's findings, shortcomings, feedback, and recommendations for future studies.

5.2 Summary of the Study

The study's aim was to determine how mobile banking capabilities affected commercial bank output in Kenya.

With a target population of 42 banks operating in the region, a descriptive design was used. A sample size of 21 commercial banks was formulated by using systematic sampling design. Primary data was employed and it was gathered by use of semi-structured questionnaires. Both descriptive and inferential analyses were performed to this end.

The study's initial goal was to see how transactional protection in mobile banking affected commercial banks' performance in Kenya. The results suggested that mobile banking affords openness and accountability and therefore improved bank performance (Mean = 4.301, SD = .996) and that M-banking affords the users better independence and self-sufficiency which lead to increased confidence to the bank and thus the overall performance (Mean = 3.996, SD = .821).

The study also looked into the impact of transactional costs in mobile banking on the performance of Kenyan commercial banks. It was discovered that mobile banking has allowed

banks to offer different types of financial products and financial business that include securities trading and mutual funds management (Mean= 4.011, SD= .981) hence increased reduction in both fixed and variable costs of the Internet connections in Kenya, making it possible for the Internet to play a more central role in banks' business strategy (Mean=3.964, SD=.873).

The study further sought to examine the effect of transactional efficiency in mobile banking on commercial banks' performance in Kenya. The convenience and speed of banking using mobile phones lead to more customers sourcing more bank products (Mean=4.001, SD=.884) and that across-banks transactions has been facilitated which is convenient to customers and thus increasing the bank revenue (Mean=3.851, SD=.963). Mobile banking eliminates barriers of distance and bank operating hours which helps in increased transaction revenue (mean=3.628, SD=.738) leading to improved level of customer service because of the fast service delivery (Mean=3.443, SD=1.012).

Finally, the study looked into the impact of customer operational competency in banking using mobile phones on banks efficiency.

The simplicity of the application determined the customers' acceptance. (Mean=3.847, SD=.849) in which ICT competence of customers determine the success of mobile banking (Mean=3.692, SD=.695). Similarly, it was found that mobile banking applications are easy to understand and operate which results in increased willingness of bank customers to use the platform (Mean=3.549, SD=.988) and also due to the availability of ICT devices to be used by the customers at the bank branch level hence determining the bank success in adopting mobile banking technology (Mean=3.321, SD=1.124).

5.3 Conclusions

The study concludes that transactional protection has no major impact on mobile banking or bank efficiency in Kenya, based on the preceding findings and subsequent discussions. In Kenya, commercial banks have implemented strategies that will enhance security of banking using mobile phones. The study discovered that as mobile banking's security status improves, it provides greater transparency and accountability through electronic records, resulting in improved bank efficiency.

The study also concludes that that transactional cost in mobile banking significantly affects banks' performance in Kenya. Commercial banks in the country have adopted various strategies with a view to raise extra revenue that would enhance organizational financial status hence improve performance. The cost of structuring, advertising and installing mobile banking application and software is lower compared to the cost of hiring individuals to perform the services that mobile banking could have done. On customers' view, mobile banking has greater cost benefit effect. Instead of going all the way to the bank, mobile banking has reduced the cost of travelling and the only expense that customers are incurred are the cost of transaction which is even lower than banks and the cost of internet services.

The study further concludes that transactional efficiency in mobile banking does not significantly affect banks' performance in Kenya. Speed and convenience of mobile banking leads to more customers sourcing more bank products and that across-banks transactions has been facilitated which is convenient to customers and thus increasing the bank revenue. Furthermore, the study findings suggested that Mobile banking has eliminated barriers of distance and bank operating hours which help increase transaction revenue.

The study finally concludes that customer operational competency in mobile banking significantly affects banks' performance in Kenya. Simplicity of the mobile banking application determines the customer's adoption of the system in transacting bank services by a customer. Similarly, mobile banking applications are made easy to understand and operate which results in increased willingness of bank customers to use the platform. As a result of customers' competency in ICT related platforms, adoption and implementation of mobile banking is easier since customers tend to understand how to use mobile phones with internet which is the main component of mobile banking

5.4 Study Recommendation

Mobile banking has a major impact on commercial bank success in Kenya. This finding is not peculiar given the financial security and convenience of carrying out transactions as a result of mobile banking. The above proof is anyway not bolstered by contemporary literature. Mobile banking is a platform that in any point, both the bank and the customers benefit mutually. In order for banks to win the confidence and independence of customers, commercial banks should ensure that transparency and accountability of mobile banking and other electronic information is upheld.

The researcher suggests that banks partner with regulators such as the CBK and the Communications Commission of Kenya (CCK) to come up with a single price for all bank tariffs. Customers would be able to choose whether or not to use mobile banking based on their own experiences, rather than restrictions such as pricing.

Similarly, enhancing the speed of transactions and offering of different types of financial products and financial business that include securities trading and mutual funds management is made easy with implementation of mobile banking and therefore commercial banks should

consider ways to reduce internet connections cost, making it possible for the Internet to play a more important role in the business strategy of banks.

Further, commercial banks should make their mobile applications' customer interface easy to navigate and carry out transactions. In like manner, mobile banking efficiency ought to have the capacity to stir enthusiasm of customers for having a positive perception towards implementation of mobile banking.

5.5 Areas for Further Study

Transactional security and transactional efficiency had no substantial impact on commercial banks' success in Kenya, according to the current report, as measured by ROA and ROI. Future research should look into why transactional security and transactional efficiency were not important, despite the fact that the literature suggests otherwise.

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APPENDICES

APPENDIX I: Introduction Letter

Dear Respondent,

This is an academic research on “*mobile banking capability and performance of commercial banks in Kenya*”. Your responses will be confidential and its data and conclusions will only be used to advance the field of. There are 3 sections in the questionnaire with brief questions and you will be required to tick or fill in your responses in the blanks where. Thank you in advance and your cooperation will be highly appreciated.

For any further inquiries, please feel free to contact:

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Appendix II: Questionnaire

SECTION A: GENERAL INFORMATION AND BIO DATA

1. Gender

Male Female

2. Age of the respondents

a) 18-24 years b) 25-31 years

c) 32-38 years d) 39-45 years

d) Above 46 years

3. Level of education

a) 'O' level b) College certificate/diploma

c) Bachelor's degree d) Master's Degree

d) PhD

4) Period you have worked in the bank

a) Below 5 years b) 5-10 years

c) Above 10 years

5) Position in the organization

a) Top level management

b) Middle level management

c) Lower level management

Section B: Transactional Security of Mobile Banking and Performance of Commercial Banks

- 6) To what extent has the security inherent in mobile banking influence the performance of your organization? Use, 1) Very low extent; 2) Low extent; 3) Moderate extent; 4) Great extent; 5) Greater extent

	Statement	1	2	3	4	5
1	M-banking empowers customers to gain increased confidence and independence to store and control their funds independently devoid of access by other members of the family					

2	The requirement that customers have to transact with personal identification numbers while accessing bank accounts through their mobile phones increases the confidence in the system and thus number of transactions					
3	Mobile banking affords better openness and accountability and therefore improved bank performance					
4	M-banking affords the users better independence and self-sufficiency which lead to increased confidence to the bank and thus performance					

Section C: Transactional Cost of Mobile Banking and Performance of Commercial Banks

7) To what extent does affordability of mobile banking affect the performance of your bank?

Please rate the level of agreement

A. A scale of 1- 5 was used whereby 1 represented = strongly disagree, 2= disagree, 3= neutral, 4 = agree and 5 = strongly agree.

Statement	1	2	3	4	5
Because of lower fixed and variable costs of Internet access in Kenya, it has become an important part of financial institutions' plans.					
Mobile banking has allowed banks to offer different types of financial products and financial business that include securities trading and mutual funds management					
M-banking leads to a reduction in overhead expenses due to the reduction of and eventually doing away with the physical branches and also the overhead costs (i.e. maintaining staff and rent).					
High transaction cost will discourage many potential users from taking up the service					
M-banking generate economies of scale leading to increased profits					
M-banking primarily serves as a replacement for physical branches in the delivery of banking services, lowering the bank's operating costs.					

Section D: Transactional Efficiency of Mobile banking and Performance of Commercial Banks

What impact does mobile banking efficiency have on your bank's performance?

- 5- Very great extent [] 4- Great extent []
 3- Moderate extent [] 2- Little extent []
 1-No extent []

Statement	1	2	3	4	5
M-banking lead to improved level of customer service because of the fast service delivery					
The speed and convenience of mobile banking leads to more customers sourcing more bank products and thus increased revenue					
Mobile banking eliminates barriers of distance and bank operating hours which helps in increased transaction revenue					
Mobile banking facilitate across-banks transactions which is convenient to customers and thus increasing the bank revenue					
Mobile banking is most efficient technological way of getting very high band productivity per employee because it leads to a reduction of employees required					

Section E: Customer Operational Competency in Mobile Banking and Performance of Commercial Bank

Please rate how much you agree with the following statements about customer ICT competency. A scale of 1 to 5 was used, with 1 representing strongly disagree, 2 representing disagree, 3 representing neutral, 4 representing agree, and 5 representing strongly agree.

Statement	1	2	3	4	5
Mobile banking applications are easy to understand and operate which results in increased willingness of bank customers to use the platform					
The ICT competence of customers determine the success of mobile banking					

The availability of ICT devices to be used by the customers at the bank branch level determines the bank success in adopting mobile banking technology					
The demographic characteristics of the target customers influences the success of the mobile banking in the bank					
Simplicity of the mobile banking application determines the customer adoption of the system in transacting bank demands by a customer.					

Section F: Performance of Commercial Banks in Kenya

Please indicate performance level of your organization using the indicators provided on the table, using the key: 1 = Decreased; 2 = neither decreased nor increased; 3 = Increased

		In the last 5 years				
		2015	2016	2017	2018	2019
R.O.I	Indicate the return on investment for the following years.					
R.O.A	Indicate the return on assets from the following years.					

THANK YOU SO MUCH FOR YOUR TIME

APPENDIX V: List of commercial banks

1. ABC Bank (Kenya)
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank
6. CFC Stanbic Bank
7. Chase Bank (Kenya)
8. Citibank
9. Commercial Bank of Africa
10. Consolidated Bank of Kenya
11. Cooperative Bank of Kenya
12. Credit Bank
13. Development Bank of Kenya
14. Diamond Trust Bank
15. Dubai Bank Kenya
16. Ecobank
17. Equatorial Commercial Bank
18. Equity Bank
19. Family Bank
20. Fidelity Commercial Bank Limited
21. GT Bank
22. First Community Bank
23. Giro Commercial Bank
24. Guardian Bank
25. Gulf African Bank

26. Habib Bank
27. Habib Bank AG Zurich
28. I&M Bank
29. Imperial Bank Kenya
30. Jamii Bora Bank
31. Kenya Commercial Bank
32. K-Rep Bank
33. Middle East Bank Kenya
34. National Bank of Kenya
35. NIC Bank
36. Oriental Commercial Bank
37. Paramount Universal Bank
38. Prime Bank (Kenya)
39. Standard Chartered Kenya
40. Trans National Bank Kenya
41. United Bank for Africa^[2]
42. Victoria Commercial Bank

Source: Central Bank of Kenya (2018)