Factors Influencing the Adoption of Electronic Banking in Kenya: A Case of Commercial Banks in Nairobi County

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Abstract

The revolution of information technology has transformed the financial services industry. Despite the undeniable importance of financial innovation in improving service delivery, there is inadequate understanding about the drivers of adoption of e-banking systems. The study established the influence of organizational capability, perceived technological risk, perceived usefulness, and perceived ease of use on the adoption of e-banking in Kenya. The study is grounded on the Technology Acceptance Model (TAM) and Technology-Organization-Environment (TOE) framework. The findings show that the presence of electronic systems, databases, and applications; effective management and oversight, and financial capacity are prerequisite to adoption and use of e-banking services. The main risks perceived by respondents were the effect of incorrect entries, time taken to learn how to use the system, and system outages that may affect access to accounts. E-banking was also perceived to be faster, easier, and better than traditional systems, with many users' comments on perceived ease of use confirming that the graphic user interfaces are clear, easy to use and do not demand much mental effort. Multiple regression coefficients indicated a statistically significant relationship between organizational capability and perceived usefulness and the adoption and use of e-banking services. There was no statistically significant relationship with perceived risk and perceived ease of use.

1.0. Introduction

E-banking refers to the use of the internet as a delivery channel for banking services, which includes all traditional services such as balance enquiry, printing statement, fund transfer to other accounts, bills payment and other forms of electronic payments (Frust, Lang, & Nolle, 2000) without visiting a bank (Mukherjee & Nath, 2003). Nami (2009) adopts a broad definition of e-banking as the provision of retail and small value banking products and services through electronic channels. These channels include automated teller machines (ATMs), telephone banking, mobile phone banking, internet banking (online), PC banking (offline) and TV-based banking. In this study, e-banking is limited to internet banking (online). Some online banks are traditional banks which also offer online banking, while others are online only and have no physical presence (Okiro & Ndungu, 2013). In recent years, the adoption of e-banking as a channel of distribution for financial services has been fuelled by rapid advances in IT and increasing competition in the banking market (Mahdi & Mehrdad, 2010; Bichanga &Wario, 2014).

The strategic importance of the financial sector in modern economies has continued to fuel rapid innovation and evolution of new financial instruments to enhance competitiveness and customer service delivery globally (Malhotra & Singh, 2009; Muiruri & Ngari, 2014; Kombe & Wafula, 2015). In Africa, a 2014 KPMG study reported that even though financial sectors on the continent remain underdeveloped, the banking industry continues to dominate the landscape in terms of total assets and services. The World Bank estimated that only 14.2% of adults in Sub-Saharan Africa had deposit accounts with commercial banks in 2012, and projected that retail banking in the region will grow at a compound annual rate of 15% between 2013 and 2020, fuelled by the uptake of innovative strategies and banking products that fit consumers' rising financial sophistication needs as well as tap into the continent's massive unbanked population (KPMG, 2014). Many commercial banks in Africa have adopted e-banking as a mechanism for differentiation from competitors, reach a wider market share, increase customer satisfaction and lower operational costs, while most customers are using this functionality to choose banking providers and services.

E-banking debuted in Kenya in the early 2000s. There has been a steady increase in use of e-banking technologies such as automated teller machine (ATM), mobile and Internet (online) banking, electronic funds transfer, direct bill payments and credit card (CBK 2008). ATM banking is one of the earliest and widely adopted retail-banking services in Kenya (Nyangosi et al. 2009). However, according to an annual report by

Central Bank of Kenya (CBK), its adoption and usage has been surpassed by mobile banking (M-banking) in the last few years (CBK 2008). Currently, there are about 8 million users of M-banking services compared to 4 million people who hold accounts in conventional financial institutions in Kenya (CBK 2008). The tremendous increase in number of people adopting M-banking has been attributed to ease of use and high number of mobile phone users (Njuguna et al., 2012). This is consistent with the theory of consumer choice and demand as conceptualized in Au & Kauffman (2008) in relation to mobile payments. Based on their observation, customers can choose to adopt a particular banking technology such as M-banking, perceived to offer such advantages as ease of use (Kolodinsky & Hogarth, 2001).

While the rapid development of ICT has made some banking tasks more efficient and cheaper, technological advancements have their fair share of problems. Aduda and Kingoo (2012) contend that despite the potential benefits of ICT and e-commerce, there is debate about whether and how their adoption improves bank performance. Use of and investment in ICT requires complementary investments in skills, organization and innovation and investment and change entails risks and costs as well as bringing potential benefits. There are positive impacts of e-banking on bank turnover and profitability and to a lesser extent on employment, most notably when e-commerce is part of larger business strategies of bank. The use of e-banking can contribute to improved bank performance, in terms of increased market share, expanded product range, customized products and better response to client demand. E-banking continues to influence banks activities and their income structure. Among the activities that may be subject to stronger pressures for change are those that, up to today, have remained relatively insulated from ICT developments. This applies mainly to some retail banking activities that are suitable for standardization, and also to developments in remote banking (Aduda & Kingoo, 2012).

Despite the undeniable importance of financial innovation, there is inadequate understanding about the drivers of adoption of e-banking systems in the banking industry. In Kenya, traditional branch-based retail banking remains the most widespread, with the recent agency and mobile banking (M-Banking) models receiving wide adoption and usage. However, even though commercial banks have introduced internet banking systems to improve operational efficiency and reduce costs, these systems remain largely unnoticed by customers and remain seriously under-utilized in spite of their availability (Gikonyo, 2014). Studies show that e-banking is very low in Nairobi County, relative to the high rate of internet access (Njuguna et al., 2012). To address the disparity, more studies are needed on e-banking adoption in developing countries, with particular emphasis on the drivers and barriers impacting e-banking adoption, to identify factors which inhibit the adoption and diffusion of e-banking platforms.

The objective of the study is to investigate the factors affecting the adoption and use of e-banking in Kenya. The study will focus on the influence of organizational capability, technological risk, perceived usefulness (PU), and perceived ease of use (PEOU).

2.0. Literature Review

2.1. Theoretical Framework

2.1.1. Innovation Diffusion Theory

According to Dillon and Morris (1996) the factors which influence the diffusion of an innovation include; relative advantage (the extent to which a technology offers improvements over currently available tools), compatibility (its consistency with social practices and norms among its users), complexity (its ease of use or learning), trialability (the opportunity to try an innovation before committing to use it), and observability (the extent to which the technology's outputs and its gains are clear to see). These elements are not mutually exclusive thus unable to predict either the extent or the rate of innovation diffusion (Rogers, 1983). Rogers' theory does not tell us whether the system states of organizations need to be in normal operating mode in order for the theory to apply, or whether the theory holds in all types of organizations or only in certain types (Lundblad & Jennifer, 2003). Specifically, the theory begins to describe the innovation-decision process within organizations, but not to the level of addressing whether and how the characteristics of an innovation interact to affect its adoption within organizations, or whether organizational type, size, or industry affect adoption. In addition, while there is an innovation-decision process described for individuals and within organizations, there is no description of how the variables interact when innovations are diffused across organizations (Lundblad & Jennifer, 2003).

2.1.2. Technology–Organization–Environment (TOE) Model

The technology–organization–environment (TOE) model was developed by Tornatzky and Fleischer which is designed for studying the likelihood of adoption success of technology innovations. This framework is a comprehensive and well received framework in the context of innovation adoption by organizations and has been used in many studies. According to Tornatzky and Fleischer (1990), technology adoption within an organization is influenced by factors pertaining to the technological context, the organizational context, and the external environment. Based on this model it is possible to framework to summarize possible key factors affecting the adoption of technological innovations. For instance, in the case of e-banking, the environmental context refers to the external environment in which an organization operates and its condition for supporting the development of e-banking services, while the organizational context refers to the organization's characteristics that influence its ability to adopt and use e-banking. The technological context refers to adopter's perception of e-banking attributes. Typical characteristics of technology considered in technology adoption studies are based on Roger's diffusion of innovation theory which includes relative advantages perceived benefits, compatibility, trialability, complexity and perceived risks.

2.1.3. Technology Acceptance Model

To understand, predict and explain why people accept or reject information systems; researchers have developed and used various models to understand the acceptance of users of the information systems. The technology acceptance model (TAM) that was introduced by Davis, Bagozzi, and Warshaw (1989) is one of the most cited models that researchers used to study underlying factors that motivate users to accept and adopt a new information system (Al Shibly, 2011). The primary goal of TAM is to provide an explanation of factors affecting computer applications' acceptance in general. In addition, this model helps researchers and practitioners to identify why a particular system is unacceptable (Davis, 1989).

Davis et al. (1989) suggested that using an information system is directly determined by the behavioral intention to use it, which is in turn influenced by the users' attitudes toward using the system and the perceived usefulness of the system. Attitude and perceived usefulness are also affected by the perceived ease of use. According to TAM, greater perceived usefulness and the perceived ease of use of an information system will positively influence the attitude toward this system. The attitude, in turn leads to a greater intention to use the system, which positively affects one's actual use of the system. TAM supposes that, other thing being equal, perceived usefulness is influenced by the perceived ease of use because the easier a technology to use, the more useful it can be. Adopting the TAM model requires the understanding of end-users requirements regarding usefulness and user friendliness (Pedersen et al., 2002). From this model, usefulness and user friendliness affect users' attitudes towards any service. Davis (1989) suggested that it is important to value user requirements based on perceived usefulness and the user friendliness of the technology rather than other objective measure.

Perceived usefulness (PU) is defined as the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease of use (PEU) refers to the degree to which a person believes that using the system will be free of effort. Attitude (ATT) explains a person's favourable or unfavourable assessment regarding the behavior in question. Intention (INT) is a measure of the strength of a person's willingness to use effort while performing a certain behaviour. The external variables in the model refer to a set of variables that can influence information system adoption indirectly through perceived ease of use and perceived usefulness (Davis et al., 1989).

2.2. Empirical Review

2.2.1. Organizational Capability and Adoption of E-banking

Organizations are different in their inclination to adopt innovation technology and they are in influenced by a number of factors (Chitura, 2008). Some of the main factors are firm size, financial and human resources, and top management support. Firm size has been widely recognized as an important factor determining an organization's ability to adopt a new innovation as well as capitalizing on its benefit (Zhu et al., 2003; Anderson et al., 2003; Bertschek & Fryges, 2002). Large organizations have the resources and skills to adopt new technologies and have enough business volume to justify the investment. Therefore, it is also expected to affect the adoption of e-banking by banking institutions. Financial resources are an important factor in facilitating innovation adoption for any organization and they are often correlated with the firm size (Kurnia, Peng, & Liu, 2011). Support from senior management is also commonly identified as an important factor for any technology adoption within an organization (Scupola, 2003).

Kurnia, Peng, and Liu (2011) explored factors which affect the adoption of electronic banking in China. The study noted that electronic banking was facilitated by various electronic commerce (EC) technologies which

helped commercial banks to stay competitive through productivity gains, transaction cost reduction, and customer service management. The results demonstrated that the benefits of the technology were recognized such as improved customer services, business efficiencies and cost reductions.

Daghfous and Toufaily (2007) investigated the success and critical factors in adoption of e-banking by 51 Lebanese banks, 31 of them operated internationally while 26 are strictly local. The study focused on the factors associated with successful adoption of e-banking as well as those acting as a barrier to its adoption. These factors were organizational, structural and strategic factors which can accelerate or, on the contrary, slow the adoption of this electronic mode of distribution and communication by the bank. The findings showed that the organizational variables (bank size, functional divisions, technical staff, technical infrastructure, perceived risks, decision makers` international experience and mastery of innovation) exerted significant impact on the adoption of E-banking. The structural characteristics, findings showed that the internal technological environment of the bank is a very important factor in determining the adoption of e-banking also the result shows that banks which are developing in the international scale are more likely to adopt e-banking innovations. Finally, the extent of penetration of e-banking in the growth phase of an emerging market has an important correlation with the improvement of commercial performance.

Shah et al. (2005) investigated the critical success factors (CSF) in e-banking conducted in United Kingdom, to determine the critical issues related to financial sector organizations when they establish businesses online, the finding of the study showed that understanding the critical success factors was important in helping banks improve their strategic planning process. The top six organizational factors responsible for adoption and use were: a user-friendly website, systems security, support from top management, fast responsive customer service, promotion of electronic commerce within organization, and all time availability of services and rapid delivery of services.

Bultum (2014) investigated the factors affecting the adoption of electronic banking system in the Ethiopian banking industry. The sample consisted of four banks, one state-owned bank and three private banks. A mixed-method design was used in the study, with questionnaires used for data collection. The study was also grounded on the technology-organization-environment model (TOE) developed by Tornatzky and Fleischer. The findings of the study showed that the main factors affecting adoption are security risk, lack of trust, lack of legal and regulatory frame work, Lack of ICT infrastructure and absence of competition between local and foreign banks. As such, the study recommended that the governance challenges facing the organizations should be tackled, particularly the need to establish a legal framework governing e-banking and investing on ICT infrastructure.

2.2.2. Perceived Technological Risk and Adoption of E-banking

One of the important risks faced by banking institutions in offering e-banking services is the customers' resistance to use the services which significantly hinder the growth of e-banking. The main issues related to this refusal are issues about security, which has been recognized as a recurrent concern during the introduction of new technology and can negatively affect e-banking transactions. As such, the perception of the risks regarding e-banking is expected to influence the adoption and further growth (Kurnia, Peng, & Liu, 2011). According to the TAM model, consumer behaviour studies define perceived risk (PR) in terms of the customer's perception of the uncertainty and potential adverse consequences of buying a product or services. The degrees of risk that customers perceive and their own tolerance of risk tacking are factors that influence their purchase decision (Nasri, 2011). On another hand, introducing a new technology may involve both benefits and risks to the user, and before deciding to adopt the technology, the individual may want to weigh risks and benefits. Electronic banking services will not be an exception to this general rule. A larger perception of risk will reduce the perceived benefit of the technology (Horst, Kuttschreuter, & Gutteling, 2007).

According to Featherman and Pavlou (2003) perceived risk is the potentiality of loss in the pursuit of a desired outcome of using electronic services. It increases with the higher level of uncertainty or with an increased chance of negative consequences (Lu, Hsu, and Hsu, 2005). Customers' perceived risk is a multi-dimensional construct, and such dimensions may vary according to the product or service type. There are five dimensions of perceived risk have been identified in the previous studies. They are: performance risk, social risk, financial risk, privacy risk and time risk (Featherman & Pavlou, 2003; Kuisma et al., 2007; Lu et al., 2005; Natarajan et al., 2010). Performance risk refers to losses incurred deficiencies of electronic services. Customers are often worried that a break down in the system servers will occur while conducting electronic services, because these situations may result in unexpected losses (Kuisma et al., 2007).

Littler and Melanthiou (2006) noted that a break down in the system could reduce customers' willingness to use online banking. Social risk refers to the potential loss of status in one's social group as a result of adopting a

product or service (Featherman & Pavlou, 2003). It is possible that one's social standing may be enhanced or diminished depending on how electronic banking services are viewed. Yang et al. (2007) found that social risk has a negative impact on attitude for consumers. Financial risk is defined as the potential for monetary loss due to transaction error or bank account misuse. Many customers resist using online banking because they fear from such losses (Kuisma et al., 2007). Privacy risk refers to the potential loss of control over personal information which is used without knowledge or permeation (Featherman & Pavlou, 2003). Horst et al. (2007) stated that the greatest challenge of the electronic banking sector will be winning the trust of customers over the issue of privacy and security. Finally, time risk refers to the loss of time in implementing, learning how to use and troubleshooting a new electronic service (Natarajan et al., 2010). Consumers are less likely to adopt an electronic service that they consider having high setup and maintenance costs (Featherman & Pavlou, 2003).

Khalfan et al. (2006) carried out a descriptive case study on the factors influencing the adoption of internet banking in Oman. The purpose of the study was to identify the main potential factors or impediments that are currently inhibiting the incorporation or adoption of E-commerce applications in the Omani Banking sector. The results of the study demonstrated that security and data confidentiality issues have been a major barrier. The banking sector was reluctant to use e-commerce applications as they felt that transactions conducted electronically were open to hackers and viruses, which are beyond their control. Lack of top management support is the other inhibiting factor in the adoption of electronic commerce applications.

Gerrard et al. (2006) in their study in Singapore identify risk to be an important factor for internet banking adoption. All respondents who did not use internet banking services had a negative perception of the security of e-banking. The respondents perceived that there were many security risks when using the internet. They felt the privacy was a concern, feeling all their financial information could be in jeopardy. Risk was one of the two most frequently mentioned factors in their study. Concern about risk was mentioned by all respondents. An empirical investigation conducted by Sathye (1999) on the adoption of internet banking by Australian consumers also identified, security concerns as key factor in internet banking adoption. A report on internet banking in Australia established that security concerns among banks and customers are keeping both away from internet banking.

2.2.3. Perceived Usefulness and Adoption of E-banking
Perceived benefits of e-banking cover both direct and indirect benefits for the banking institutions. Direct benefits include the savings on operational cost, improved organisational functionality, productivity gain, improved efficiency and increased profitability. Indirect benefits include the opportunity or intangible benefits such as improved customer's satisfaction through improved services, improved banking experience and fulfilment of their changing needs and lifestyle (Kurnia, Peng, & Liu, 2011).

Kerem (2003) explored the underlying consumer behaviour and critical success factors on the adoption of electronic banking in Estonia. The survey conducted for this research addressed six different issues influencing the adoption of Internet banking (better prices, recommendations, better service, marketing efforts, better access and higher privacy). The most important factors in starting to use internet banking are first and foremost better access to the services (convenience), better prices and higher privacy. Better service (preferring self-service over office service) was also of above the average importance. Two factors that the respondents did not consider relevant to their adoption decision were banks' marketing activities and personal recommendations from friends and colleagues.

Bichanga and Wario (2014) investigated the effects of e-banking services on growth of customer base in Kenyan banks for over the last 5 years and what factors hindered the effective utilization of E-banking service in Kenyan banks and its impact on growth of customer base. The study addressed issues that affected effective utilization of E-banking facilities by customers, particularly how lack of technological know-how, illiteracy, unreliability, and transaction limits has hindered growth of on-line customer base in Kenyan banks. Using a descriptive study approach, the researchers found out that e-banking provided enormous benefits to consumers in terms of time saving and cost of transactions, either through internet, telephone or other electronic delivery channels. For many consumers, electronic banking means 24-hours access to bank services. E-banking was found to enhance the growth of the customer base for the banking institutions in Kenya, by increasing service accessibility.

In another study in Kenya, Aduda and Kingoo (2012) investigated the relationship between e-banking and performance of Kenya banking system. Specifically, the researchers were interested in the relationship between investments in e-banking, number of ATMS and number of debits cards and performance measured by return on assets. The findings of the study showed that e-banking has strong and significance marginal effects on returns

on asset in the Kenyan banking industry. Therefore, there is a positive relationship between e-banking and bank performance, and banks should invest in e-banking as a way of bringing services closer to its customers.

Okiro and Ndungu (2013) investigated the adoption of internet and information technology and mobile technology in 30 banks in Kenya. The researchers were interested in determining the effect of mobile and internet banking innovations on the performance of financial institutions. The results indicated that these technological innovations made banking tasks more efficient and cheaper. The most common use of e-banking was balance inquiry while the least common was online bill payment. Cash withdrawal was the most commonly used mobile banking service whereas purchasing commodities was the least commonly used.

Ernst and Young (2014) carried out a survey to determine customer's satisfaction with e-banking. To stay competitive, financial institutions need to continue building out channel capabilities to provide 24/7 real-time access. The survey found out that in an online context, where human interactions are replaced by graphic user interfaces, the important role in customer satisfaction is fairness. Trust is identified as the key mediator of fairness to customer satisfaction. E-banking can be used to increase customer loyalty and consequently enhance customer satisfaction and build stronger relationships with customers. The integration of electronic banking into the multichannel strategy of financial institutions was found to correlate with higher quality service and greater satisfaction among clients.

Kombo et al (2015) investigated the perceived usefulness of e-banking, in terms of how it influenced customer satisfaction in Kenya and Czech banking sectors. The study used customer satisfaction surveys because this is the main source of information to set strategies aimed at meeting needs or understanding of customer perceptions, most importantly showing relationships and possible areas of improvement for customers. The banks drawn from the Czech Republic were Česká spořitelna, Komerční banka, GE Money Bank and UniCredit Bank, while the banks sampled in Kenya were Co-operative Bank, K-Rep Bank, Kenya Commercial Bank and Equity Bank. The results showed that the customers in Kenyan banks were less satisfied with e-banking when compared to customers in the Czech Republic. The level of dissatisfaction, however, differed depending on the democratic characteristics.

Al-Smadi (2011) investigated the impact of e-banking on the performance of Jordanian banks. The study examined the impact of electronic banking on performance in 15 Jordanian banks for the period 2000-2010. The findings of the study showed that electronic banking has a significant negative impact on banks' performance. Electronic banking has not improved the performance of these banks. Banks' customers in Jordan depend on traditional channels to carry out their banking operations. As a result, costs associated with adopting electronic banking are still higher than revenues from provision electronic services. Hence, banks should focus its work to promote the confidence of electronic banking services and encourage the customers to use this kind of services.

2.2.4. Perceived Ease of Use and Adoption of E-banking

Sahoo and Swain (2012) sought to establish whether e-banking is performing as per the perception amongst the customers and the employees or is there gap between the perceived value and the performance. The researcher disagreed with the position that customers using e-banking can access services more easily from banks abroad and through wireless communication systems, which are developing more rapidly than traditional "wired" communication network. To disconfirm this notion, the researchers sampled customers and employees of Punjab National Bank of India. The findings showed that there is a gap is exiting between perceived value and performance of e-banking services. As such the researchers recommended that e-banking services should be made available to customers, and banks implement product awareness to increase knowledge and adoption of e-banking services.

Gikonyo (2014) investigated the factors influencing the adoption of internet banking in Kenya. Specifically, the study sought to determine how awareness of IB by the consumers affect adoption of internet banking, and how website security affects adoption of internet banking and to determine to what extent website features affect adoption of internet banking. A multi-linear regression analysis was used to analyze the data and the findings demonstrate that men have adopted banking than women; education level is not a barrier to the banking services, the middle-aged people have embraced the banking services than any other age category; awareness, website features and security all affect the adoption of internet banking.

Njunguna et al (2012) investigated internet adoption in Kenya, with particular interest in Nairobi County between 2010 and 2011. The researchers sought to identify factors such as perceived usefulness, perceived ease of use, self-efficacy, relative advantage, compatibility, and result demonstrability. The research was grounded in two models: technology acceptance model (TAM) and perceived characteristics of innovation (PCI) model. The

findings showed that internet banking use in Kenya is very low, with only a quarter of the customers using internet services. The results also revealed that perceived usefulness, perceived ease of use, self-efficacy, relative advantage, compatibility, and result demonstrability have a significant association with intention to use internet banking, while risk, visibility and trialability are not significant.

2.3. Conceptual Framework

The following conceptual framework shows the relationship between the independent variables (organizational capability, perceived technological risk, perceived usefulness, and perceived ease of use) and adoption of e-banking.

Figure 2.1: Conceptual Framework

Independent Variable   **Dependent Variable**
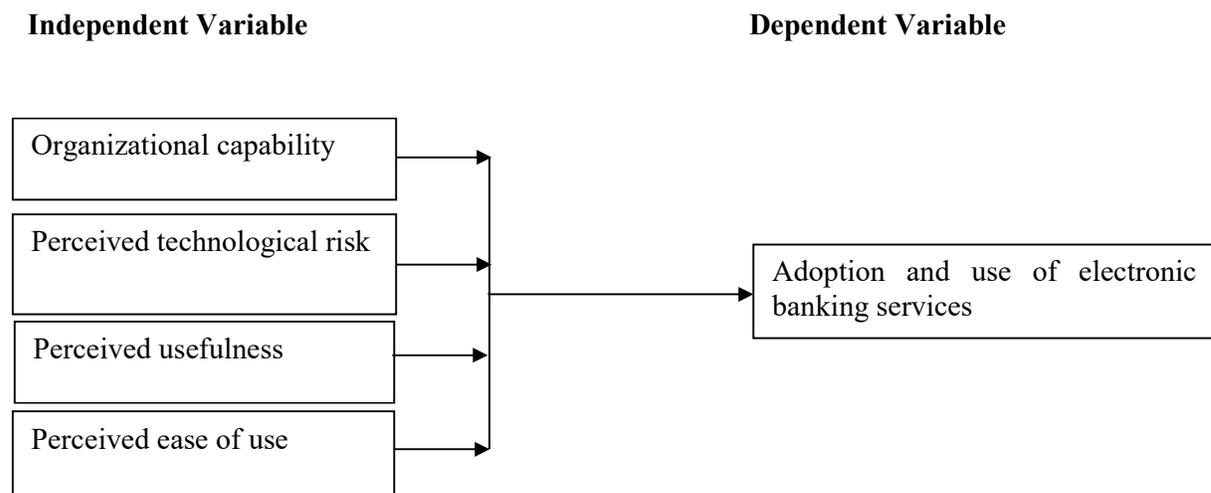
Source: Researchers (2018)

3.0. Research Methodology

3.1. Research Design

A descriptive design was used to investigate the phenomenon under study. Descriptive research design is employed to investigate situations where the researcher's primary interest is describing and making interpretations about the research phenomenon (Mertler, 2006). It involves collecting quantitative information that can be tabulated and presented in numerical form to establish causal relationships between given variables. In most cases, data is collected using survey instruments such as questionnaires and interviews. The justification for using descriptive research design stems from the fact that it enables the researcher to establish relationships between variables and examine people's beliefs, opinions, and perceptions on a set of questions under study (Golafshani, 2003).

3.2. Population and Sample Size

The population of the study encompasses the 44 licensed commercial banks operating in Kenya. According to the CBK Bank Supervision Annual Report (2015), the banks are categorised into three peer groups: large, medium, and small, based on a weighted composite index. As at 31st December 2015, there were 7 large banks representing a weighted market share of 58.21%, 12 medium banks representing a weighted market share of 32.42%, and 21 small banks representing a weighted market share of 9.24%. The target population for this study are the 7 large commercial banks in Nairobi: Kenya Commercial Bank, Co-operative Bank of Kenya, Equity Bank, Barclays Bank, Standard Chartered Bank, Commercial Bank of Africa, and Diamond Trust Bank.
Gerstman (2003) states that a sample is needed because a study that is insufficiently precise lacks the power to reject a false null hypothesis and is a waste of time and money. The study used stratified random sampling

technique to generate the sample size for the study. Yamane's ransom sampling formula was used (Yamane, 1967).

$$n = \frac{N}{[1+N\,(e)^2]}$$

Where,

n = the sample size

N= the size of the population

e = the error of 5 percentage points

95% confidence level (p = 0.05) are assumed.

Calculating for n:

$$= \frac{161}{[1+\,161(0.05)^2]}$$

=114.795

Therefore, the sample size for the study was 115 respondents.

Table 3.1: Sample Size

Category	Population Sample	Sample Size	Frequency
Senior Managers (Senior & Branch Managers)	14	10	9%
Department Managers (Corporate Affairs Manager, Customer relationship Manager, Credit Manager, Operations Manager, Brand Manager, ICT Manager)	42	30	26%
Customers	105	75	65%
TOTAL	**161**	**115**	**100%**

Source: Researchers' Computations (2018)

3.3. Data Collection

Questionnaires were used to collect data. The questionnaire contained questions on the four objectives: organizational capability, perceived technological risk, perceived usefulness, and perceived ease of use and how they relate to the adoption of e-banking in Kenya. The scoring for the question was based on a 5-point likert-type scale, using Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (5) to determine the level of agreement with specific questions. The questionnaires were administered by the researcher with the help of two assistants to the bank customers of the main branches of the sampled banks: Kenya Commercial Bank, Co-operative Bank, Equity Bank, Barclay Bank, Standard Chartered Bank, Commercial Bank of Africa, and Diamond Trust Bank. The research assistants had undergraduate-level education and were trained by the researcher before the commencement of the data collection process. Completed questionnaires were collected and stored for data analysis.

3.4. Data Analysis and Model Specification

The data collected from the questionnaires was analyzed using both descriptive and inferential statistical measures. All the data collected was coded and entered into an Excel sheet, organized and cleaned for any inconsistencies. The Statistical Packages for Social Sciences software (SPSS 21) was used for descriptive and inferential analysis. Descriptive statistics are ways of summarizing large sets of quantitative (numerical) information such as means, modes, medians, and standard deviations and presenting analysis in tables, charts, and graphs that describe, organize, and summarize the data. Since descriptive statistics do not allow for generalizations, inferential statistics were used to determine whether there was any form of linearity, homogeneity, normality, and independence in the data. Therefore, inferential statistics are statistics which are used to make inferential statements about a population.

Multiple regression was used to establish the relationship organizational capacity, perceived technological risk, perceived usefulness, perceived ease of use and the adoption and use of e-banking services in commercial banks operating in Nairobi County. The following regression model took the form of:

$$P = \alpha + \beta_1 OC + \beta_2 PR + \beta_3 PU + \beta_4 PEOU + \mathcal{E}$$

Where;
P denotes e-banking adoption
OC denotes organizational capacity
PR denotes perceived technological risk
PU denotes perceived usefulness, and
PEOU denotes perceived ease of use.
$\beta_1, \beta_2, \beta_3, \beta_4$ are regression coefficients
$\mathcal{E}$ is the error term

4.0. Data Analysis

4.1. Response Rate

A total of 115 questionnaires were administered to customers sampled from the 7 biggest banks. From questionnaires collected, 113 were complete and had all the questions answered. This represents a response rate of 98.3%. All completed questionnaires proceeded to data analysis.

4.2. Demographic Characteristics

The gender distribution was relatively even with male making 56.6% of the total population sample and female 43.4%. Table 2 below show the descriptive frequency and percentage of gender in the survey. Most participants in the study were between the ages of 21- 30 years (50.4%) and the least participants were from the ages of Over 51 years (13.3%). Respondents under the age bracket of 31-40 years and under 20 years constituted 18.6%, 17.7 % respectively. The highest number of respondents had a degree as the highest level of education. Respondents with degrees constituted 59.3%, followed by 16.8% with secondary certificate, 15.9% with certificate/ diploma, master's degree 6.2% and lastly people with PhD constituted 1.8% of the total respondents. The pie chart below show the distribution in percentage.

4.3. Organizational Capability and Adoption of e-Banking

A majority of the respondents felt that banks had put in effective financial capacity to ensure the availability of E-banking services compared to other variables like necessary E-banking systems and effective management. The computed mean from the 5-Likert scale, 1 being the lowest and 5 the maximum value. The mean score of respondent on the on the effective financial capacity put in place to facilitate E-banking services scores 3.53, necessary E banking systems comes second with 3.51 and effective management come last with a mean score of 3.42. From the table, most banks in Kenya have established a strong financial base for the effectiveness of E-banking but have lagged behind on management of the service and putting in place necessary E-banking systems, database and applications.

Table 4.2: Organizational Capability

	N	Mean	Std. Deviation
The bank has put in place necessary e-banking systems, databases, and applications	113	3.51	.992
The bank has established effective management and oversight over the risks associated with electronic banking services	113	3.42	.904
The bank has effective financial capacity to ensure the availability of e-banking services	113	3.53	.946

Source: Researchers' Computations (2018)

4.4. Perceived Risk and Adoption of e-Banking

A majority of the people feel that other people accessing their accounts is the most risky factor in the E-banking services (mean score 2.81). The E-banking performing wrongly and making the incorrect payment comes as second (mean 2.73) and lastly the lots of time taken to learn to use E-banking services is the least risk (2.49).

The average mean score of the 3 options (2.68 > 2.5) shows that people find it risky to use the E-banking services (5 and 1 is maximum and minimum risk values). The high risk level show that people are less confident in using the E- banking services making the adoption of the services slow.

Table 4.3: Perceived Risk

	N	Mean	Std. Deviation
Electronic banking services may not perform well and process payment incorrectly	113	2.73	1.094
It would take me lots of time to learn how to use electronic banking services.	113	2.49	1.111
I am worried to use electronic banking services because other people may be able to access my account.	113	2.81	1.327

Source: Researchers' Computations (2018)

4.5. Perceived Usefulness and Adoption of e-Banking

Most participants in the survey accepted that E- banking services enable them accomplish their task more easily (99 respondents) followed by E-banking is advantageous to the traditional banking (97) and finally it makes them carry their tasks easily (96). However, 16 respondents felt that E-banking services is not useful. The respondents either choose Strongly Disagree (5) or Disagree (11). The means show that there was similar agreement on the usefulness of e-banking in accomplishing tasks more quickly (4.16) and that it was advantageous to traditional banking. In the same vein, respondents also agreed that e-banking services made it easier to accomplish tasks (4.11).

Table 4.4: Perceived Usefulness

	N	Mean	Std. Deviation
I think that using the electronic banking services would enable me to accomplish my tasks more quickly.	113	4.16	.774
I think that using the electronic banking services would make it easier for me to carry out my tasks.	113	4.11	.783
I think the electronic banking services are advantageous compared to traditional banking.	113	4.16	.912

Source: Researchers' Computations (2018)

4.6. Perceived Ease of Use and Adoption of e-Banking

The data analysis above shows that most respondents feel E-banking services are ease to use. A majority of participants feel that E- banking is easy to learn (3.77 mean) compared to other options like it does not require a lot of mental effort (3.38 mean) and does not require training (2.74). The above results show that as much as the E- banking is easy to learn, it requires some mental capability and training. The table below shows the mean results of each individual option.

Table 4.5: Perceived Ease of Use

	N	Mean	Std. Deviation
I think that learning to use electronic banking services would be easy.	113	3.77	.991
I think that interaction with electronic banking services does not require a lot of mental effort.	113	3.38	1.270
I think use of electronic banking services does not require any training.	113	2.74	1.280

Source: Researchers' Computations (2018)

4.7. The Effect of the Factors on the Adoption and Use of e-Banking Services
4.7.1.   Level of Adoption of E-Banking Services by Customers

The most used service is the balance enquiry and cash withdrawal service which recorded a total of 72 and 70 users respectively. Balance enquiry had 37 *frequently* and 35 *very frequently* use it, 49 users choose *frequent* and 21 choose *very frequent* in the cash withdrawal. The least used service in e-banking is the loan payment (43 users) and cash deposit (58 users) that frequently or very frequently used the service. Mobile top up came up as the 3rd frequently used service (66 users) followed by money transfer (60 users) then bill payment with (59 users). A large number (27 customers) recorded not to use the e-banking service in loan payment. the mean of the responses (1 don't use as the minimum value and 5- very frequent as the maximum value) shows that balance

enquiry is the most used service (3.63), followed by cash withdrawal (3.46), followed by mobile airtime recharging, then cash deposit (3.28), then bill payment (3.27), then money transfer (3.18) and lastly loan payment (2.95).

Table 4.6: Adoption and Use of E-Banking Services

	N	Mean	Std. Deviation
Cash deposit	113	3.28	1.285
Cash withdrawal	113	3.46	1.261
Money transfers	113	3.18	1.377
Loan payment	113	2.95	1.381
Bill payment	113	3.27	1.309
Mobile airtime recharging	113	3.45	1.389
Balance inquiry	113	3.63	1.317

Source: Researchers' Computations (2018)

4.7.2.   Regression Results

Multiple regression was used to establish the relationship organizational capacity (OC), perceived technological risk (PR), perceived usefulness (PU), perceived ease of use (PEOU) and the adoption of e-banking services such as cash deposit, cash withdrawal, money transfers, loan repayment, bill payment, mobile airtime charging, and bank balance inquiry among the 7 largest commercial banks in Nairobi County. The regression model summary shows that 27.6% of the variation in the level of adoption of e-banking services is influenced by organizational capability, perceived risk, perceived ease of use, and perceived usefulness.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525[a]	.276	.249	.85309
a. Predictors: (Constant), PEOU, OC, PU, PR				

Source: Researchers' Computations (2018)

From the findings, the independent variables statistically significantly predict the dependent variable, F (4,108) =10.291, p value = 0.000, implying that the regression model is good for the data at $p < 0.05$ (95% confidence level).

Table 4.8: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29.959	4	7.490	10.291	.000[b]
	Residual	78.599	108	.728		
	Total	108.558	112			
a. Dependent Variable: Adoption						
b. Predictors: (Constant), PEOU, OC, PU, PR						

Source: Researchers' Computations (2018)

The purpose of multiple regression is to determine the relationship between several independent or predictor variables and a dependent or criterion variable. It also allows the researcher to understand the direction of the relationship between variables, by examining the signs (+ or -) of the *B* coefficients. If a *B* coefficient is positive, then the relationship of this variable with the dependent variable is positive; if the *B* coefficient is negative then the relationship is negative. If the *B* coefficient is equal to 0 then there is no relationship between the variables. Therefore, the findings in table 4.14, show that, with regard to the regression model;

$P = \alpha + \beta_1 OC + \beta_2 PR + \beta_3 PU + \beta_4 PEOU + \mathcal{E}$

The predictions of *B* from the unstandardized coefficients column are;

Adoption and Use = 0.721 + (0.276 x OC) + (0.144 x PR) + (0.376 x PU) – (0.75 x PEOU)

This shows that there is a positive relationship between adoption and use of electronic banking services and organizational capability, perceived risk, and perceived usefulness, but a negative relationship with perceived ease of use.

To test for statistical significance in the relationship, t-tests and corresponding p-values are used. T-tests test whether the unstandardized or standardized coefficients are equal to zero in the population, and if the corresponding $p < 0/05$ then it can be concluded that the coefficients are statistically and significantly different to zero. From the findings in table 4.14, there is a statistically significant relationship between organizational capability (OC) and the adoption and use of e-banking services among the largest commercial banks in Kenya, t=2.471, p-value = 0.015 at 0.05 significance level. There was also a statistically significant relationship between perceived usefulness (PU) and the adoption and use of e-banking services, $t = 0.4.097$, p-value 0.000 at 0.05 significance level. However, there was no statistically significant relationship between perceived risk (PR) ($t = 0.270$, p-value = 0.270) and perceived ease of use (PEOU) ($t = -0.767$, p-value 0.445) and the adoption and use of e-banking services in Kenya.

Table 4.9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.721	.669		1.077	.284
	OC	.276	.112	.211	2.471	.015
	PR	.144	.130	.102	1.109	.270
	PU	.376	.092	.366	4.097	.000
	PEOU	-.075	.097	-.064	-.767	.445
a. Dependent Variable: Adoption						

Source: Researchers' Computations (2018)

These finding show that there is a positive and statistically significant relationship between organizational capability and perceived usefulness and the level of adoption and use of electronic banking services. There was also a positive but not statistically significant relationship between perceived technological risk and the level of adoption and use. Finally, even though the relationship between perceived ease of use and adoption of electronic banking services was negative, it was not statistically significant.

5.0. Conclusion and Recommendations

The study sought to establish the influence of organizational capability, perceived technological risk, perceived usefulness, and perceived ease of use on the adoption of e-banking in Kenya. The findings show that a majority of the banks had necessary e-banking systems, databases and applications; had established effective management and oversight of e-banking risks; and had the financial capacity to ensure that customers can access e-banking services. The capability of a bank influences its ability to install e-banking systems. There is a statistically significant relationship between organizational capability and the adoption of e-banking systems.

With regard to perceived risk, there was demonstrably moderate level of agreement that electronic banking services may not perform well and process payments may be entered incorrectly. Others were worried that they may not be able to access their accounts. Almost half of those surveyed felt that it takes a lot of time to learn how to use e-banking. These results imply that the level of perceived risk made customers less confident to adopt and use e-banking services. The regression results indicate that there is, however, no statistically significant relationship between perceived technological risk and the level of adoption and use of e-banking services. E-banking is perceived as being useful, as shown by the high level of agreement on all the questions posed to customers. A majority stated that electronic banking enables them to accomplish tasks quickly, easily, and it was advantageous compared to traditional banking. The sense of perceived usefulness was supported by regression results. The findings indicate that there is a statistically significant relationship between perceived usefulness and the adoption and use of e-banking services.

The findings on the perceived ease of use further supported sentiments on perceived usefulness. Most customers stated that learning to use e-banking services is easy and that it does not require much mental effort. There was also a moderate level of agreement that using e-banking platforms does not require any training. However,

multiple regression findings showed that the perceived ease of use did not have a statistically significant effect on the adoption and use of e-banking services.

The study recommends putting in place e-banking systems, databases and applications demands that the organization must have adequate financial and non-financial resources. The fact that organizational capability influences the adoption and use of e-banking services means that banks should continue to allocate resources to continual development and upgrades as a way of achieving competitive advantage. Banks should invest in relevant product awareness campaigns to educate potential customers to alleviate the risk of incorrect entries and to deal with the perception that it takes a long time to learn how to use e-banking systems. This market confidence in the benefits of the technology means that banks should become increasingly innovative and create a diverse portfolio of e-banking products and services that are responsive to the growth of a dynamic, an informed, and demanding customer base. Finally, banks should maintain interactive and easy to use user graphic interfaces, and should not develop platforms that present great difficulty to their customers.

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