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DETERMINANTS OF SELF SERVICE BANKING TECHNOLOGY IN KENYA

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ABSTRACT: *Advances in technologies have allowed service providers to incorporate many different technologies into the delivery of their services to improve their competitiveness and performance. The study focused on establishing determinants that influence consumer towards the usage of self-service banking technologies. It is believed that the successful usage of self-service banking technologies will be cost and convenience beneficial for all stakeholders in the financial sector enhance improving their performance. The research model purposes an extension to the technology acceptance models and the Unified theory of acceptance and use of technology that will represents a shift from fragmented view of information technology acceptance to a unified integrated single theory that will account for use of self service banking technology. The target population for the study was users of selected commercial banks in Kenya, utilizing a sample size of 325 respondents. Reliability and validity of the data collection instrument was tested using Crobach Alpha and Average Variance Extracted respectively. Descriptive and inferential statistical data analysis was carried out while regression analysis was used to predict the effect of selected determinants of self-service banking technology on its usage. The domains in which subjects were tested for were ease of use, facilitating condition, need for interaction, and perceived risk. The domains were significantly associated with use of self service banking technology exception of ease of use. Taking into account the importance of innovation and technological advancement studies should be carried to establish the effect of technological usage and organization commitment on firm performance.*

Key Words: Self-service banking technology, Self-service, Use of Self-service banking technology, Kenya

JEL: O3, O33:

INTRODUCTION

Technology changes our life day after day since the development of technology covers most of aspects in the life, and may be all of them. Today, our life has become digital and dependent on technology since we are interacting with different kind of technologies to fulfill different kind of tasks in our daily life. Some of these technologies have become important in our life more than others like computer, Internet and mobile phones. Technology embodied in small as well as in big devices where today our interaction with them increased radically since it is easy to carry and give us a high functionality. This technology effect on the environment and the meaning of the life is influenced by information technology and the shape of technology. Self-service technologies are viable for banks and other financial intermediaries because information processing is essential to their services. Automation of standard services is expected to reduce the need for financial intermediaries while there will be continued demand for nonstandard, differentiated transactions and services (Emmons & Greenbaum, 1998), however this is not the case in Kenya since commercial banks are still opening up branches at a high rate for instance it grew by 102% from 2004 to 2008 (CGAP Bank Branching Regulation Survey, 2008).

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This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic market place (Abor, 2005). Even though with the entire technological advancement, some consumers have negative experiences and feelings towards such technologies. Some customers prefer personal interaction with service personnel and other customers and are less than eager or could even resist using self-service banking technology, even though consumers are increasingly being required by financial institutions to take a more active role in the production and delivery of services through the use of self-service technologies. Its argued that the effective infusion of these technologies into the 'markets place will provide the users with many benefits such as convenience, flexibility, customization, control, enjoyment, improved service over face-to-face encounters and greater satisfaction, even though some consumers have negative experiences and feelings towards self-service banking technology. Some customers still prefer personal interaction with service personnel and other customers and are less than eager or could even resist using self-service technologies.

In Kenya the banking sector has undergone tremendous change in technology especially in Self Service Banking. Banks and other financial institutions have moved to e-banking in their efforts to cut costs while maintaining reliable customer service (Kolodinsky and Hogarth, 2001). However the adoption process has been the problem since customers are still visiting the traditional brick banking halls for most of the services which they could receive by use self-service banking Technologies (SSBTs).The successful implementation and usage of SSTBs is dependent on wide consumer adoption/usage in order for a bank to justify the investment cost. The need to understand consumer decisions regarding SSTs have attracted research attention into the factors which would facilitate consumer usage of self-service banking.

Consumers are increasingly being required by firms to take a more active role in the production and delivery of services through the use of self-service technologies (SSTs). It is argued that the effective infusion of these technologies into the 'markets place 'have provided the users with many benefits such as convenience, flexibility, customization, control, enjoyment, improved service over face-to-face encounters and greater satisfaction, even though some consumers have negative experiences and feelings towards self-service technology (SSTs). Some customers prefer personal interaction with service personnel and other customers and are less than eager or could even resist using Self Service Technologies. Self-service technologies are viable for banks and other financial intermediaries because information processing is essential to their services.

In Kenya the banking sector has undergone tremendous change in technology especially in Self Service Banking (SSB). Banks and other financial institutions have moved to e-banking in their efforts to cut costs while maintaining reliable customer service (Kolodinsky and Hogarth 2001). However the adoption process has been the problem since customers are still visiting the traditional brick banking halls for most of the services which they could receive by use self-service banking Technologies (SSBTs).The successful implementation and usage of SSTBs is dependent on wide consumer adoption/usage in order for a bank to justify the investment cost. The need to understand consumer decisions regarding SSTs have attracted research attention into the factors which would facilitate consumer adoption of self-service banking. Therefore the purpose of this study will be to look at the extent in which Self Service Banking Technologies has been accepted as a result of selected determinants of usage of self service banking.

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Research Questions

1. Why are consumers in the banking hall still queuing while they can receive the same service using self-service banking technology?

LITERATURE REVIEW

The term 'self-service technologies' was first used by Meuter, *et al* (2000); they defined self-service technology as 'technological interfaces that enable customers to produce a service independent of direct service of employee involvement'. The definition has gained wide acceptance in subsequent research by other authors such as (Makarem *et al.*, 2009; Dean, 2008; Forbes, 2008 and Meuter, 2005). The introduction of Self-Service Technology to the delivery of a service has led to the removal of the provider's personnel from the transaction and gave the consumers more responsibilities to the customer to transact the service on their own. Although changes in service delivery are supposedly made to benefit the customer, they often require increased the involvement on the part of the customer. These and other factors may preclude the customer from trying or using the technology. Service providers must be aware that when changes in a service are instituted, a potentially significant portion of the customer base that the change is alleged to benefit, will opt not to participate in the new service format (Langeard *et al.*, 1981). Even with all this benefits the use has remained to be so minimal amongst the account holders and bank user especially in developing countries.

For instant most of the financial institutions and banks have adopted the use of self service banking technologies such as the automated teller machines (ATM's) and internet banking (e-banking), mobile banking (m-banking) have been utilized in serving consumers and reducing costs of carrying business while maximizing profits. With the development of m-shwari a product of Safaricom and Central Bank of Africa (CBA), one can say it's an evolution of paperless banking offered through M-PESA. With M-shwari we can call it a revolution in the banking sector. It is a paperless banking service which Enable you open and operate an M-Shwari bank account through your mobile phone, via M-PESA, without having to visit banks or fill out any forms. This is a product for everyone who feels that banking should be hassle-free. No forms to fill in, no branches to visit. Just one click on your phone and you have a saving account www.safaricom.co.ke .

The growing research into self-service banking technologies (SSBTs) has brought the need for the development of a classification system that will look at the different forms of SSTs usage by the consumers since most of the institution are putting huge investments in such technologies so as to maximize profits and minimize cost by transferring the cost to the consumers of their products. The successful implementation of SSTs is dependent on wide consumer adoption/usage in order to justify the investment cost (Lee and Allaway, 2002). The need to understand consumer decisions regarding SSTs has attracted researcher's attention into the factors which would facilitate consumer adoption/usage (Curran and Meuter, 2005). A study carried in Portugal about the use of self-service technologies in financial services revealed that customers who use the service are more satisfied compared to those who don't use the service. They also turned out to be less sensitive to prices than their counterparts who were not using the service since most of the decisions they made without persuasion. However, the customers who used the self-service technologies were more prone to complaining especially at the early stages of learning majorly due to the time invested in the learning

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process. Users of the technology also showed a higher tendency to purchase and were not likely change their banks compared to the non-users (Rodriguez, 2010).

A study conducted among Portuguese consumers about the use of self-service technologies in financial services revealed that customers who used the self-service banking technologies where more satisfied compared to those who don't use the self-service technologies. Consumers who used self-service technologies also turned out to be less sensitive to prices than their counterparts who were not using the service since most of the decisions they made without persuasion of personnel's. However customers who used the self-service technologies were more prone to complaining especially at the early stages of learning majorly due to the time invested in the learning process. Users of self-service technology showed a higher tendency to purchase and were not likely change their banks compared to the non-users (Maria, 2010). These reviews have produced different SSBT adoption factors and this paper suggests that there is no evidence of a widely agreed SSBT model of adoption. For the purposes of this study, five key factors, namely perceived risk, ease of use, need for interaction, facilitating condition and consumer readiness. The five factors were chosen because of their frequent inclusion in SST adoption research projects.

FORMS OF SELF SERVICE BANKING TECHNOLOGIES

Automated Teller Machines (ATMS)

According to John McGill (2004), an automated teller machine (ATM) is a computerized telecommunications device that provides the customers of a financial institution with access to financial transactions in a public space without the need for a human clerk or bank teller.

Telephone Banking

Telephone banking is a service mostly uses an automated phone answering system with phone keypad response or voice recognition capability (Jane Blake, 2000). To guarantee security, the customer must first authenticate through a numeric or verbal password or through security questions asked by a live representative located in a call center or a branch, although this feature is not guaranteed to be offered 24/7.

Mobile Financial Services (M-banking)

The current business environment is getting more competitive especially with the advancement of new technologies. The recent emergence of the wireless and mobile networks has resulted in a new platform known as mobile financial services which is beginning to gather attentions from businesses. Khraim *et al.*, (2011) stated that technology is a vital element in the competitive landscape of the financial services industry. As a result of these new advancements many companies have always strived to improve themselves by creating better products and services for their customers in order for them to stay competitive (Wei *et al.*, 2008).

Theoretical Framework

The main interest of the study is on usage of self-service banking technology in Kenya and its acceptance, a fundamental managerial challenge in the implementation of self service banking technology. Thus, a review of prior studies suggested the theoretical foundations of the formulations used in our hypotheses. To this end, this study will examines two prevalent

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theories (i.e., TAM and UTAUT) for investigating individual information technology /information science (IT/IS) acceptance in a self-service banking context. Studies concerning consumers' intentions to use mobile services have been conducted on the basis of Davis's (1989) technology acceptance model (TAM) but Nysveen *et al*. (2005) pointed out 4 extension of TAM that may be relevant to explain intention to use self-service banking technologies in relation to mobile banking, but can this extension be used in place of self service banking technology. According to Ventkatesh and Davis 2000 they stated that TAM may be too parsimonious and it should be supplemented and extended by means of concepts such as subjective norm and image therefore UTAUT construct was included in the study conceptual framework.

Nysveen *et al.* (2005) concluded that technological acceptance model (TAM) has been used often in work-related contexts that has no implication to the end user thus the consumers' of such self-service banking technology such those using mobile services depends on their available resources (perceived control), as predicted in the theory of planned behavior (TPB) of (Ajzen 1991). TAM has only been used in an organizational context rather than in everyday life context that users face while using such technologies (Ventkatesh and Davis 2000). That calls for the need of additional construct from the unified theory acceptance and use of technology (UTAUT) model since TAM's ability to explain various forms of technology usage is limited, and it has only been able to explains a variance of approximately 40 percent (Ventkatesh and Davis 2000). The research has combined both TAM and UTAUT dimension so as to encompass the reliability and accuracy of the technology based self-service technology usage with an aim of establishing determinants of self service banking technology usage and establishment of an effective model that will explain the usage of such self-service banking technologies.

DETERMINANTS OF SELF SERVICE BANKING TECHNOLOGY USAGE

The successful implementation of Self-Service banking Technology (SSBT) is dependent on consumer usage/adoption in order to justify the investment cost (Lee and Allaway, 2002). The need to understand consumer decisions regarding Self-service Technologies have attracted research attention into the factors which would facilitate consumer adoption (Curran and Meuter, 2005). The implementation and adoption of new technology brings several questions into the minds of the consumers. In this regard it can be said that self-service banking technologies are an effective source to reduce costs and to increase the number of customers for the firm. It can also go the other way, if customers either won't try the new Self-service banking technology, or try it once and go running to the competitor. The question is 'what is customer value, and how will new Self-service banking technology (SSBT) provide the value. The research examine four key factors, namely perceived risk, perceived ease of use, need for interaction and facilitating condition. The factors were chosen because of their frequent inclusion in SSBT adoption research projects.

Hypothesis Development

Perceived Risk

Perceived risk has been examined mainly in the e-commerce in connection with the buying process of consumers (Young *et al.*, 2005; Harper *et al.*, 2004). Risks in Internet shopping were

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researched in varying shopping contexts: shopping for clothes (Cases, 2002), airplane tickets (Kim *at al.*, 2009; Cunningham *et al*., 2004) and Internet shopping in general (Forsythe and Shi 2003; Liebermann and Stashevsky, 2002). Kim *et al*. (2009) who studied perceived risk and risk reduction in purchasing air-tickets online. They included risk dimension variables derived from the literature to date including performance risk, security risk, financial risk, physical risk, psychological risk, time risk and found that security risk was of primary importance. This finding is similar to previous research which found that payment and privacy security appeared as a major risk factors in Internet shopping settings (Forsythe and Shi, 2003). Therefore we hypothesis the first hypothesis:

H1 Perceived risk is has no significant effect on use of self service banking technology.

Ease of Use

Perceived usefulness and ease of use was introduced by Davis, Bagozzi and Warshaw (1989) and conceptual the model called Technology Acceptance Model (TAM), introduced the two variables of perceived usefulness and perceived ease of use in a. Davis (1989) justified the choice of perceived ease of use and perceived usefulness as key determinants of behavior, based on a literature review of multiple disciplines dealing with behavior and innovation adoption. Perceived ease of use is introduced in the information systems literature by Davis (1989) and defined as 'the degree to which a person believes that using a particular system would be free of effort.

Extensive researches have provided evidence of the significant effect perceived ease of use has on usage intention, whether affecting perceived usefulness directly or not (Venkatesh & Morris, 2000). In order to prevent the ''under-used'' system problem, mobile banking systems must be both easy to learn and easy to use. Perceived ease of use was also found to be a significant antecedent to the perceived credibility of Internet banking in a study by Wang *et al.*, 2003, the study seek to establish the effect of perceived ease of use on self-service banking technology usage in Kenya . Therefore we hypothesis:

H2 Ease of use has no significant effect on use of self service banking technology.

Need for Interaction

Lee *et al*, (2010) proposed that need of interaction should be included as construct in research models for Self Service Technology adoption/usage since consumers have a preference for personal contact. This construct has been researched in detailed by Simon and Usunier (2007) they found that personal contact had the strongest influence on the preference for the personal contact construct. This fact was also confirmed by Dabholkar and Bagozzi (2002) that personal traits are the basis of forming consumer attitudes and behavioral intentions on usage of such self-service technologies. Walker and Johnson (2006) reported that 35% of the respondents to their survey preferred personal contact and 65% preferred it in some occasions, including when they had a specific issue which needed prompt resolution, or when they wanted to make a complaint. Consumers develop negative attitudes towards a service provider if they are left with only Self Service Technology option and they expect to have personal backup if something goes wrong.

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H3 Need for interaction has no significant effect on use of self service banking technology.

Facilitating Condition

By capturing the concepts of perceived behavioral control facilitating conditions, and compatibility such as work style, Venkatesh *et al*., (2003) defined facilitating conditions as the degree to which an individual believes that an organizational and technical infrastructure exists to support technology use. In UTAUT, Venkatesh *et al.* (2003) integrated 32 factors used in eight competing models into five constructs and empirically identified that behavioral intention and facilitating conditions were two direct determinants of adoption behavior. In the mobile banking adoption literature, Joshua and Koshy (2011) illustrated that the more convenient the access of respondents to computer and Internet, the more proficient their use of the computer and Internet, which results in a higher adoption rate of respondents using electronic banking. Consequently, grounded in UTAUT, the following hypothesis is put forth:

H4: Facilitating conditions has no significant effect on use of self service banking technology.

CONCEPTUAL FRAMEWORK

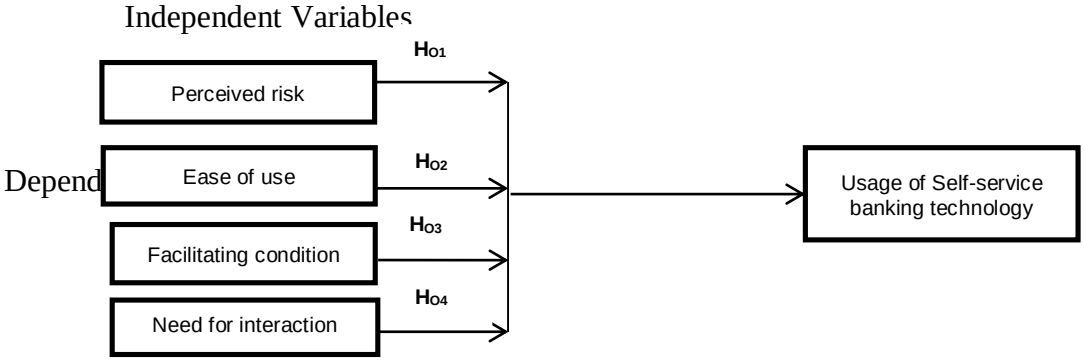

Figure 2.1

Source: Researcher (2014)

Note: Independent variables which are the selected determinant of self-service banking usage will include: ease of use, perceived risk, and need for interaction. Self- service banking technology usage will be the depended variable.

DATA AND METHODOLOGY

Research design

The study used a descriptive design since we focused on getting inferences from the findings on the impact of determinants of usage of self-service baking technology (Ease of use, Need for interaction, Facilitating condition and Perceived risk) on Usage of self service banking technology. The design for the study was a survey design which measured five variables: independent variable and dependent variable. The independent variables were (Ease of use,

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Need for interaction, facilitating condition and Perceived risk) and the dependent variable was Use of self service banking technology.

Target sample size

The target population will be 650 depositors out the 1000 adults in the country according to the (World Bank Report, 2013).There are 25,701,394 registered adults in Kenya, which 12,709,568 people are males and 12,991,826 people are female registered inhabitants in Kenya (UNICEF Report, 2013).

Using Taro Yamane's formula (1967) the sample size for the study will be calculated as shown below. Taro Yamane generated the following formula.

$n = (N) / (1+Ne^2)$

= 16,705,906/ (1+16,705,906*0.052) 41765.765

= 399.99

N = Number of Total Population (16,705,906)

N= If out 1000

n = Number of Sample Size

e = Sampling Error (designating to be at the 0.05 significant level)

**Confidence level is 95% or 0.05 of level of significant are choose for this study*

Hence, the sample size of the survey in this current study would approximately be 400 respondents and it believes to be controlled and collected within the limited time.

Data Collection Instruments

The questionnaires were the main instrument of data collection. Questionnaires were issued randomly to customer at the banking hall. Each respondent was given enough time to respond to questions and any clarification was done at the same time by research assistants. The questions were divided into variables of interest. Likert scale with point 7 was used to bring variation of results, with 1- very Strongly Disagree, 2- Strongly Disagree 3-Disagree, 4-Neutral, 5-Agree 6- strongly agree and 7-very strongly agree.

Data Processing and Analysis

The data collected from the respondent was coded and entered in SPSS V20 for data analysis. Before analysis was, test for normality was done so as to ascertain whether to use parametric or non-parametric test in subsequent analysis. Descriptive statistics was done to identify characteristics of demographic data of respondents while inference statistics was done for the purpose of Correlation i.e. identify the relationship between the determinants (Ease of use, Need for interaction, facilitating condition and Perceived risk) and Use of self service banking technology and Multiple Regression was done to find out the variance in the dependent variable (Use of self service banking technology) that was explained or accounted by the independent variables (Ease of use, Need for interaction, facilitating condition and Perceived risk). The model below was used to predict the Use of self service banking technology

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$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textbf{(i)}$$

$\boldsymbol{y}$ =Self-service banking technology adoption without a moderator

Y'= Self-service banking technology adoption with the moderator

$\boldsymbol{\beta_0}$=Is the constant of the equation?

$\boldsymbol{x_1}$=Ease of use

$\boldsymbol{x_2}$=Perceived risk

$\boldsymbol{x_3}$=Facilitating conditions

$\boldsymbol{x_4}$=Need for interaction

$\boldsymbol{\beta_1}$ - $\boldsymbol{\beta_4}$ = are the coefficient regression or change induced in $\boldsymbol{y}$ by each $\boldsymbol{x}$

RESULTS AND CONCLUSION

Respond Profile

As shown in table 1, the study revealed that majority of the respondents 174 (53.5%), were males. It was also revealed that, 105 (57.5%) of the respondents were also aged below 24 years. 82 (25.2%) were below 30 years and 21 (6.5%) were above 46 years, while 123 (37.8%) of them were undergraduate degree holders from this we can assume that bank users are males and females who are aged below 24 years. The study also revealed that those with computer skills were 91.1% which indicated that majority of bank users in Kenya are computer literate. From these findings we can conclude that bank users in Kenya are the young people of age 35 years and below and majority have some computer skills.

Table 1: Respondents

Category		Number of respondent	Percentage
Gender	Female	151	46.5
	Male	174	53.5
	Total	325	100
Age	18-24	105	32.3
	25-30	082	25.2
	31-35	042	12.9
	36-40	051	15.7
	41-45	024	07.4
	46 –Above	021	06.5
	Total	325	100
Education	High school graduate	055	16.9
	Technical training	061	18.8
	Undergraduate degree	123	37.8
	Graduate degree	051	15.7
	Others	035	10.8
	Total	325	100

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Average monthly income	0-10,000	124	38.2
	10,001-20,000	101	31.1
	20,001-30,000	040	12.3
	30,001-40,000	028	8.6
	40,001-50,000	021	6.5
	Above 50,001	011	3.4
	Total	325	100
Computer skills	No	029	8.9
	Yes	296	91.1
	Total	325	100

Source: Survey Data (2014)

Reliability

Reliability of the study instrument was to determine the extent to which a variable is consistent in what was supposed to measure (Hair *et al*. 2006). The reliability of the items was assessed by determining the items' coefficient alpha. The generally acceptable level of Cronbach's alpha is above 0.70 and it may decrease to 0.60 in exploratory research (Hair *et al*. 2006). The scores of reliability coefficient for the study were calculated using SPSS software and the result are shown in table 2. During the measurement purification, one item measuring Facilitating Condition Construct (FCa) and Use of self service banking Technology (USa) records Corrected Item-Total Correlation which was less than 0.3 and the Cronbach's alpha of the construct increased when the item were removed from further analysis. The above table reveals that the all the factors in the construct have recorded a reliability value of 0.8 and above respectively for Cronbach's alpha. In short, all the dimensions in the constructs have exceeded the recommended threshold value of 0.70 for composite reliability and Cronbach's alpha coefficients. Therefore, it can be concluded that all dimensions in their individual constructs have passed the second criterion in determining the construct validity by having sound internal consistency reliability.

Table 2: Reliability Analysis

	Item	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	Standardized Cronbach's Alpha
Ease of use No of items 3	EUa	.443	0.196249	.902	
	EUb	.635	0.403225	.899	
	EUc	.597	0.356409	.900	.890
Need for interaction	NIa	.329	0.108241	.903	
	NIb	.610	0.372100	.900	
	NIc	.576	0.331776	.900	.880
Perceived risk No of items 4	PRa	.576	0.331776	.900	
	PRb	.477	0.227529	.901	
	PRc	.556	0.309136	.900	
	PRd	.457	0.208849	.902	
Facilitating condition No of items 4	FCa	.183*	0.033489	.907	
	FCb	.690	0.476100	.898	
	FCc	.324	0.104976	.904	
	FCd	.597	0.356409	.900	.897

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Use of self service banking technology	USTa	.214*	0.045796	.905	
	USTb	.419	0.175561	.904	
	USTc	.443	0.196249	.903	
	USTd	.416	0.173056	.904	
	USTe	.464	0.215296	.902	.879

*Note: EU= Ease of use, NI=Need for interaction, PR=Perceived Risk, FC=Facilitating Condition, UST=Use of self service banking technology *Deleted from further study since the Corrected Item-Total Correlation of the items were less than 0.30 Item deleted * <0.30.*

Factor Analysis Results

Factor analysis was carried out and the results of principle component analysis highlight that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value is found to be above 0.80 which will indicates around 80 per cent of variance of the data is common variance. The KMO value measures the sampling adequacy and the values were more than 0.6 which is the rule of thumb in conducting analysis (Coakes *et al.,* 2010). A summary of these tests is shown in table 3.

Table 3: Factor Analysis

	Items	Standardized loading	KMO	Cumulative of variance
Ease of use	Learning to use SSBT was easy for me.	0.741		
	I find SSBT difficult to use.	0.847		
	It was easier for me to be skillful using SSBT	0.824	0.843	60.624
Need for interact	I enjoy seeing the people who work at my bank	0.631		
	Personal attention at my bank is not important	0.856		
	people at my bank do things that no machine could	0.721	0.632	55.009
Perceived risk Facilitating condition	I feel secure conducting my banking using SSBT	0.795		
	I feel safe conducting my business using SSBT	0.828		
	I know SSBT will handle my banking correctly	0.767		
	There is little danger anything wrong will happen when using SSBT	0.618	0.724	57.170
	I have the knowledge necessary to use SSBT	0.758		
	All the contents of self- service banking technologies are easy to read and understand	0.771		
	The Language in document is easily understood	0.801	.659	60.363
Use of SSBT	How likely are you to use mobile banking	0.766		
	How likely are you to use internet banking	0.727		
	How likely are you to purchase using SSBT	0.604	.628	54.077
	How likely are you to pay bills using SSBT	0.827		

Average Variance Extracted

Validity of the measurement of the instrument was done by applying Fornell and Larcker (1981), measure of Average Variance Extracted (AVE) to access the discriminate validity of the measurement. To satisfy the requirement of the discriminate validity, the square root of a

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construct's AVE must be greater than the correlations between the construct and other constructs in the model. For example, the square roots of the AVEs for the two constructs, ease of use and facilitating condition, are 0.74707 and 0.56751 in table 6, which are more than the correlation, 0.480; between them in table 4 this demonstrates there is adequate discriminate validity between the two constructs. The square roots of all constructs' AVEs in table 4 of this study were also greater than the correlations among all constructs in table 5. Therefore, the discriminate validity of the measurement in this study was acceptable. In sum, it demonstrated that there were adequate reliability and validity in this study.

Table 4: The loadings of the Items and AVEs of the Constructs

Construct	Items	Loading	The square root of AVE
Ease of use (EU)	EUa	.897	
	EUb	.777	
	EUc	.919	.74707*
Need for interaction (NI)	NIa	.869	
	NIb	.871	
	NIc	.897	.77264*
Perceived risk (PR)	PRa	.777	
	PRb	.919	
	PRc	.869	
	PRd	.871	.73788*
Facilitating Condition (FC)	FCb	.547	
	FCc	.822	
	FCd	.891	.56751*
Use of self service banking Technology (US)	USTb	.740	
	USTc	.871	
	USTd	.869	
	USTe	.800	.67240*

Source :(Survey Data 2014),

*Note: *: AVE is average Variance Extracted, EU= Ease of use, NI=Need for interaction, PR=Perceived Risk, FC=Facilitating Condition, US=Use of self service banking technology*

Table 5: Correlation Matrix and variance Inflation Factors (VIF)

	Y	A	B	C	D
Use of SSBT (Y)	1.000				
Ease of use (A)	.363	1.000			
Perceived usefulness (B)	.518**	.479**	1.000		
Need interaction (C)	.354**	.553**	.480**	1.000	
Perceived risk (D)	.472**	.479**	.559**	.425**	1.000
VIF		1.15177	1.36673	1.1432	1.2867

***Correlation is significant at the 0.01 level (2-tailed), *Correlation is significant at the 0.05 level (2-tailed).*
Note: VIF= Variance inflation factor

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The low inter-correlations among the explanatory variables used in the regressions indicate no reason to suspect serious multicollinearity. To check further for multicollinearity, a diagnostic test was done using variance inflation factors (VIFs) were computed for the independent variables. As a rule of thumb, if one of the individual VIFs is greater than 10, there is an indication of multicollinearity problem (Gujarati, 1995). The VIF values reported in the table 5 are small (much less than 10) with an average of 1.34 indicating an absence of multicollinearity between variables .The VIF can therefore be defined as; $VIF=1/(1-R^2)$ where R^2 is the squared multiple correlation coefficient between dependent variable and the explanatory variables (Maddala,2001). The minimum value of VIF is one, where R^2 is equal to zero. Hence, the closer the VIF value is to one the lower is the degree of multicollinearity. The highest correlation is between ease of use and use of self service banking technology (positive and significance), 0.363. The second highest correlation is between perceived usefulness and use of self service banking technology (Positive and significant), 518.

Results of Regression Analysis

The analysis of the results is presented here is in different subsections. It begins with an analysis of measures of Ease of use, Perceived risk, Need of interaction and facilitating condition, followed by the moderating variable consumer readiness and finally the conclusion.

Regression Analysis for Direct Relationship

Multiple regression analysis was employed to test hypothesis in this research, According to (Hair et al., 2005), Multiple Regression Analysis is applied to analyse relationships between a single Dependent Variable and Independent Variables, and hence it was considered an appropriate method for this research. The study aimed at investigating the direct effect of the perceived risk, Ease of use, Need for interaction Facilitating condition and consumer readiness on use of self-service banking technology. Multiple linear regression models were used to investigate the effect of independent variables against dependent variable. The study results in table 6 scored adjusted R squared of 0.704, indicating that joint contribution of ease of use, need for interaction consumer readiness and facilitating condition explains 70.4% variation of Use of self service banking technology in Kenya.

Table 7 shows the prediction of the five variables on use of self service banking technology was reported to be significant as reported by analysis of variance (ANOVA) of goodness fitness with F ratio of 23.334, with p value of 0.000 less than 0.01. The Durbin Watson test the serial correlation of the data, Durbin-Watson statistic is substantially less than 2, there is evidence of positive serial correlation, although positive serial correlation does not affect the consistency of the estimated regression coefficients, it does affect our ability to conduct valid statistical tests, as such the research concluded that the significant statistics are valid.

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Table 6: Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	Durbin-Watson
.853	.727	.704	.54992778	.727	1.748

** Predictors: (constant) consumer readiness, need interaction, facilitating condition, perceived risk, ease of use*

**. Dependent Variable: use of self-service technology*

	Direction	Path Coefficient	t values	Sig.
EU	+	.124	1.772	.077
FC	+	.514	9.007	.000**
NI	-	.351	-5.611	.000**
PR	+	.282	6.022	.000**
R Square .727				
Adjusted R Square .704				
ANOVA (F ratio) 23.3 34				
ANOVA (Prob) 0.000				

Table 7 ANOVA

** Predictors: (constant) consumer readiness, need interaction, facilitating condition, perceived risk, ease of use, Significant * p<.001*

Hypothesis Testing

To test the study hypothesis, $H0_1$, $H0_2$, $H0_3$ and $H0_4$ the study used direct effect regression model. Results on table 4.6 overleaf reported that beta value for ease of use was 0.124 with *p* value of 0.077 which was more than p< 0.05 (level of significance) hence the study accepted hypothesis $H0_1$ that there is no significant effect of ease of use on use of self service banking technology and concludes that ease of use affects performance of small and micro-enterprise performance with 12.4 units rate of change.

More study results on table 8 below shows that facilitating condition beta value of 0.514 with *p* value of 0.000 which was significant at p*< 0.01, thus the study rejects hypothesis $H0_2$ there is no significant effect of facilitating condition on use of self service banking technology in Kenya and concludes that there is significant effect of facilitating condition on use of self-service technology. This implies that increasing facilitating condition by one unit it affects use of self service by 51.4% units.

Study results on table 8 below shows that the beta value for need for interaction was 0.351 with *p* value of 0.000 which was p*< 0.01 (level of significance) which was significant, thus the study rejects hypothesis $H0_3$ there is no significant effect of need for interaction on use of self service banking technology in Kenya and concludes that there is significant effect of need for interaction on use of self-service technology. This implies that need for interaction had a 35.1% variation on use of self service banking technology in Kenya.

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Further the study found that perceived risk had a beta value of 0.282 with *p* value at a 0.000 which the p*< 0.01 (level of significance) which was significant, thus the study rejects hypothesis $H0_4$ there is no significant effect of perceived risk on use of self service banking technology in Kenya and concludes that there is significant effect of perceived risk on use of self-service technology. This implies that perceived had a 28.2% variation on use of self service banking technology in Kenya.

Table 8: Path Coefficient, t-value and Significance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	99.042	6	16.507	23.334	.000*
Residual	225.958	319	.707		
Total	325.000	325			

*Note: Source: (Survey Data 2014), **Significant at p<0.01, *significant at p<0.05, NI need for interaction, FC= facilitating condition, EU= ease of use, PR= perceived risk.*

CONCLUDING COMMENTS

Summary of the Findings

The study focused determinants of self service banking technology (Ease of use, Perceived risk, Need for interaction and Facilitating condition) on usage of self service banking usage moderated by Consumer Readiness in Kenya. In overall the selected determinants of self service banking technology explains 70.4% of the variation of the usage of self service banking technology in Kenya. This means that there are other factors which explain 29.6% of the variation on the use of self service banking technology. This was higher than technological acceptance model (TAM's) which it only explains a variance of approximately 40 percent (Venkatesh and Davis 2000). By combining TAM's and UTAUT Model it explained the variance by 70.4 percent which was higher than that found by (Venkatesh & Davis 2000). This implied that personal factors such as need for interaction plays an important role in use of self service banking technologies in Kenya. Need for interaction was found to be significant in a direct relationship with use of self service banking technology but when moderated need for interaction was not significant implying that end users don't need to be prepared to interact with bankers in the banking halls.

Further need of use was not significant on the use of self service banking technology in Kenya implying that most Kenyans have technical knowhow on the use of technological infrastructure hence banks should not concentrate on customizing such technologies but concentrate on other factors such as perceived risk which was very significant. This implies that consumers were worried lot when using self-service banking technologies. The implication for business especially the banking industry is that, instead of developing self-service banking technology from the organization perspective it should be from the holistic viewpoint of the consumers. Furthermore, referring to Venkataesh *et al.*, (2003), Venkataesh and Zhang (2010), and Foon

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and Fah (2011), this study reveals that the effect of need for interaction and facilitating condition was significantly amplified on use of self service banking technology and only perceived risk was significant from technological acceptance model.

Conclusion

The study contributed to the theoretically by providing an overview role of contingency factors such as facilitating condition and need for interaction are crucial to technology usage. Self-service banking technology in Kenya is likely to become increasingly more important banks strive to minimize costs and maximize service in order to remain competitive in expanding marketplace. Bank managers need to continually assess consumers' propensity to accept and use the new self-service technology that they offer. The levels of optimism, insecurity, need of interaction and discomfort on facilitating condition towards using new self-service technology appear to be either a contributor or an inhibitor to the diffusion of innovative self-service technology for most consumers. Banks need to take advantage of the contributor (Optimism) and address the inhibitors (Insecurity, need for interaction and facilitating) in order to enhance the likelihood of Kenyan consumers using self-service technology to complete banking transactions.

Recommendations

The managerial implications are that for Banks to effective utilize the self-service banking technologies they should put much investment in awareness and provision of facilitating conditions that will enable the usage of such technologies be successful rather than investing so much on the technology itself than the end user who will consume the product . Further self-service banking technology providers have to take into consideration consumer's perceptions which deemed important on use of self service banking technology which is in line with Anitsal and Schumann, (2007) findings that SSBT's providers should consider the high level of consumer participation which sometimes the consumers are not rewarded for their input such as the provision of facilitating conditions. Therefore, an understanding of the consumer perspective is of importance in terms of awareness on the usage SSBTs.

The UTAUT model was proven to be stronger to the other competing models (Venkataesh & Zhang 2010), but only a little UTAUT-based research exist, particularly compared huge TAM/TPB-based research. This is why Venkatesh and Zhang (2010) proclaimed that studies examining and enhancing the generalizability and validity of UTAUT in various technology contexts are demanded. Based on the feedback from 325 respondents in Kenya, the empirical evidence of this study indicates that the variances of consumer intention and behavior can be significantly explained by the extended UTAUT. Table 6 presented UTAUT and TAM model combined was able to explain as much as 70.4% of the variation of the usage of self service banking technology in Kenya. As a result, the first theoretic contribution of this work is to demonstrate the validity and generalizability of UTAUT in the context of self service banking technology usage since with the addition of two construct of UTAUT model it improved the TAM model variation from 40% stated by Venkatesh and Davis (2000) to 71.04%.

Suggestions for Further Studies

Further studies should examine, other predictors of propensity to use technology should be examined. Finally, future research could examine whether the relationship between the technology readiness dimensions and "likelihood to use self-service technology" will vary

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across demographic characteristics of consumers. Also studies should be carried to establish the effect of self service banking technology usage on financial performance of financial intermediaries since most consumers are using such technologies are less price sensitive (Rodriguez, 2010)

Finally the samples selected might have not be representative of the whole with regard to the problem at hand of convenient sampling since Such samples are biased because some kinds of respondents might be selected and avoid others (Lucas 2014), and respondents who volunteer for a study may differ in unknown but important ways from others (Wiederman 1999), their fore other sampling technique should be used and replicated in the same study.

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