Customers Perception on Prior Knowledge of Technology and Its Effect on Usage of Internet Banking In Commercial Banks In Kenya

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Abstract: Internet banking allows banks to provide information and offer services to their customers conveniently using the internet technology. However, studies have shown that customers have perceptions that impact on the uptake and continuous usage of the platform. The purpose of this study is to understand the effect of customer perceptions on usage of internet banking in commercial banks in Kenya. This study used descriptive research design while a stratified random sampling technique was used to select subjects to represent the target population which was made up of 1,837,312 customers of commercial banks within Nairobi County. An estimated 384 respondents were targeted to participate in the study. 272 questionnaires representing a 71% response rate were received and analysed. Based on the findings of the research it was concluded that customers perceptions have an effect on usage of internet banking. Prior knowledge of technology was forund to have an impediment in using internet banking by customers. Not all customers are well versed in using systems used in accessing internet banking- both software and hard ware.

Keywords: Internet banking, commercial bank, Technology Acceptance Model, customer perceptions.

1. INTRODUCTION

The introduction of information technology (IT) has led to the fast growth and development in the service sector making it one of the leading worldwide (Gonza´lez, Dentiste, & Rhonda, 2008). The most noticeable example is in the banking industry, where through the introduction of IT related products in internet banking, electronic payments, security investments and in addition information exchange (Berger, 2008), banks provide more diverse services to customers with less manpower. The fruition of banking technology has largely been driven by changes in distribution channels as evidenced by the introduction of e-channels such as automated teller machine (ATM), tele-banking, PC-banking and most recently internet banking by commercial banks (Gallup Consulting, 2008). E-banking channels have experienced phenomenal growth and have become the main avenues for banks to deliver their products and services (Amato- McCoy, 2009). Nyangosi & Arora (2009) noted that banking through electronic channels has gained much popularity in recent years with majority of the banks having rolled out one or more of these to deliver their products and services to a wide clientele. Significantly, the application of information and communication technology concepts, techniques, policies and implementation strategies to banking services has become a subject of fundamental importance and concerns to all banks and indeed a prerequisite for local and global competitiveness (Obasan, 2011). According to Munyoki & Ngigi (2011) continuous technology development, particularly information technology revolution has forced the banks to embrace internet banking channel as one of the strategies for their sustainable growth in an expanded competitive environment.

1.1 Internet banking:

Internet banking is defined as the systems that enable bank customers to get access to their accounts and general information on bank products and services through the use of bank's website, without the intervention or inconvenience of sending letters, faxes, original signatures and telephone confirmations (Thulani, Tofara & Langton, 2009)

Banks decide to invest in Internet banking for many reasons; among these are: pressures to cut costs, increase information richness for customers, pressures to produce more without increasing costs, improve the quality of services in order to stay in business or to reach a wider audience. Banking is no longer limited to geographical regions, there is improved efficiency and effectiveness of operations meaning that more transactions can be processed faster and most conveniently, which will undoubtedly impact significantly on the overall performance of the banks (Padmalatha & Justin, 2011). Olawepo (2012) further advanced that banks can benefit from much lower operating costs by offering internet banking services, which require less staff and fewer physical branches.

To the customers, internet banking allows them to perform a wide range of banking transactions electronically via the bank's website anytime and anywhere (Grabner-Kraeuter & Faullant, 2008). Nasri (2011) noted that with the help of the internet, banking is no longer bound to time or geography therefore consumers all over the world have relatively easy access to their accounts 24 hours per day, seven days a week. In addition Liao, Shao, Wang & Chen (2011) showed that internet banking has the advantage in that customers avoid traveling to and from a bank branch hence, customers can manage their banking affairs when they want, and they can enjoy more.

Customers gain convenience and flexibility of services (Liao et al., 2011). This is because these new services can easily be accessed at any time from any locations with up-to-date information, efficient and effective response time, and use of friendly interface technology (Ayo & Oni, 2010). Opening hours of banks are no longer a barrier to access banking services in addition travel and waiting times are no longer necessary, and access to information regarding banking services is now easily available (Ayo & Oni, 2010).

1.2 Commercial banking industry in Kenya:

In Kenya, commercial banks and mortgage finance institutions are licensed and regulated pursuant to the provisions of the Banking Act and the Prudential Guidelines (CBK, 2013). Through various distribution channels which include branch network, internet, mobile applications, point of sales and automated teller machines, banks ensure that money circulates within the economy in a profitable and efficient manner (Muithya, 2013). There are 43 licensed Commercial banks and 1 Mortgage finance company (CBK, 2013), with an ownership structure of 30 locally owned and 14 foreign owned banks. In addition, the locally owned financial institutions encompass 3 banks with significant shareholding by the Government and State corporations, while 28 are privately owned (27 commercial banks and 1 mortgage finance institution)(CBK, 2013).

2.   STATEMENT OF THE PROBLEM

Several studies have brought out a number of observations by researchers on what could have occasioned the low uptake and continued use of internet banking; while Nyagosi et al. (2009) thought it's because of other alternative banking channels, others like Ozuru et al. (2010); Gikandi & Bloor (2010) and Isaiah (2011) observed that customers have attitudes and perception that dissuade them from using internet banking.

In focusing on the commercial banks in Kenya, the current research will extrapolate further by using a more representative sample that captures the banking industry in Kenya. It will aim at investigating the perceptions customers have on internet banking by assimilating perception on prior knowledge of technology.

3.   OBJECTIVES OF THE STUDY

The main objective of the study was to investigate the effect of customers' perceptions on the usage of internet banking in commercial banks in Kenya. The specific objectives were:-

• To find out the effect of prior knowledge of technology on use of internet banking in commercial banks in Kenya.

4.   LITERATURE REVIEW

Relevant literature to this research was reviewed from books, journals and websites

4.1 Theoretical review:

Technology Acceptance Model (TAM) has expansively been used by various studies to test how technology is being accepted by consumers over the years. TAM which was developed originally by Davis in 1989 is used to explain how a

customer accepts or decline the use of a technology based upon perceived ease of use and perceived usefulness of a technology (Aldás-Manzano, Lassala-Navarré, Ruiz-Mafé & Sanz-Blas, 2009).

The use of technology acceptance model elements in the current study will help in hypothesizing customers' perceptions on internet banking usage. If customers perceive internet banking as easy to use because it is secure, privacy is guaranteed, cost effective, less complex and that they have prior knowledge of technology, they will most likely perceive it as useful. Consumer demographics (such as age, gender, marital status, occupation and level of education) will help in grouping customers for purpose of understanding perceptions for each group based on certain shared attributes. External variables represent the intervening variables specifically other alternative banking channels which act as deterrents to use of internet banking. These myriad of elements will in turn affect customers' attitude, intention and actual use of internet banking.

4.2 Empirical review and research gap:

Previous technological skill or prior computer experience can impact on consumers' beliefs and attitude on information technology adoption (Vijayakumar & Chandra, 2013).

Nasri (2011) examined the factors that influenced customers to adopt internet banking services in Tunisia. From the study internet banking usage was influenced by risk, convenience, security and also prior internet knowledge. On influence of prior knowledge of technology Nasir (2011) looked at consumers' prior experience with computers. He noted that consumer's familiarity with technologies in general facilitated her appreciation of the potential added value which was inherent in a technology.

Prior computer knowledge was associated with use of personal computers, the internet and e-mail. Thus he concluded that prior knowledge of technology and attitudes towards computers influenced both attitudes towards internet banking and actual behaviours. In addition demographic factors showed a significant impact on users of internet banking (especially occupation and level of education).

Consumers have different levels of computers and internet competency which in turn could influence attitude, actual behaviour and the frequency of using internet banking. This study does not clearly demonstrate how different competency levels affect the frequency of using internet banking. Moreover, the study only looked at users' knowledge on only computers yet there are other equipment which can be used to access internet banking services

Akhlaq & Shah (2011) did an investigation to find out the factors that defy customer's adoption of internet banking in Pakistan. From the results the factors which had the highest impact hindering user acceptance and adoption of internet banking was users' familiarity with internet technology specifically software applications such internet browsers and also concerns about download speeds. The use of hardware cannot be separated from software (applications) which helps in manipulating and using software. Through hardware a user can perform various functions using application software's to perform specific tasks for example use mouse and keyboard to launch and operate internet banking website. It thus follows that users of internet banking should have competence and prior knowledge in working with computers, an element which this study did not look at.

5.   METHODOLOGY

The study used descriptive research design to collect data from the respondents. Mugenda and Mugenda (2003) noted that the purpose of descriptive research is to determine and report the way things are and it helps in establishing the current status of the population under study. The target population for the study being customers in all the 43 commercial banks operating in Kenya within Nairobi County. Essentially these are customers who have transactional and current accounts that allow one to use internet banking services. Customers both users and non-user were included in the investigation. A survey by Finaccess (2013) observed that there were a total of 1,837,312 customers who operated transactional and current accounts cumulatively in all the 43 commercial banks-branches in Nairobi County: this formed the accessible population for this study. Purposive sampling technique to pick a cluster of 12 out of the 43 commercial banks for this study. A stratified random sampling technique was used to pick respondents. This was then followed by random selection of subjects from each stratum (Orodho & Kombo, 2002). Mugenda and Mugenda (2003) recommend the use of 10% - 30% sample size of the population and thus the use of the selected number of banks met this threshold.

According to Mugenda & Mugenda (2003) a large population is one which comprises of 10,000 elements and more. In this study the study population was made up of 1,837,312 customers and hence can be defined as a large population. Using the Fishers formula below recommended by Mugenda & Mugenda (2003) the sample size for this study was determined as follows:

$$n = \frac{Z^2 \, p \, q}{d^2}$$

Where:

n - The desired sample size

z - The standard normal deviation set at 1.96 which corresponds to 95% confidence interval

p- Proportion of target population estimated to have characteristics being measured. For this study this is set at 50% (0.5)

q- 1-p (those without characteristic of interest)

d- Precision level desired or the significance level which is 0.05 for this study

$$n = \frac{(1.96)^2 \text{ x } (0.5) \, (0.5)}{(0.05)^2} = \textbf{384}$$

Table 1: Distribution of target population

No.	Banks	Market size index (%)	Transaction & Current account holders in each bank	% No. of Transaction & Current account holders in each Bank	Sample size per bank
1	Kenya Commercial Bank Ltd	12.83%	2357	21.9	84
2	Equity Bank Ltd	9.79%	1799	16.7	64
3	Co-operative bank of Kenya Ltd	8.61%	1582	14.7	57
4	Standard Chartered Bank (K) Ltd	8.09%	1486	13.8	53
5	Commercial Bank of Africa Ltd	4.40%	808	7.5	29
6	Diamond Trust Bank (K) Ltd	4.26%	783	7.3	28
7	I&M Bank Ltd	4.19%	770	7.1	27
8	NIC Bank Ltd	4.17%	766	7.1	27
9	African Banking Corporation Ltd	0.70%	129	1.2	5
10	Gulf African Bank Ltd	0.62%	114	1.1	4
11	Equatorial Commercial Bank Ltd	0.53%	97	0.9	3
12	Giro Commercial Bank Ltd	0.52%	96	0.9	3
			10,787	**100**	**384**

Source: FinAccess (2013)

Data Analysis:

The results were presented using frequency tables while inferential statistics were used to derive meaningful findings and conclusions.

A multi linear regression model was used to test the effect of independent variables on dependent variables. The model is show below

$$Y = \beta_o + \beta_1 X_1 + \euro$$

β_o $_=$ constant

βi; {i=1} = The coefficients representing the independent variable

Xi; {i=1} = Values of the independent (covariate) variable

$\euro$ = error term which is assumed to be normally distributed with mean zero and constant variance.

Y   =   usage of internet banking in commercial banks

X_1 =   prior knowledge of technology

6.   PRESENTATION AND ANALYSIS OF FINDINGS

6.1 Response rate:

Out of the 384 self-administered questionnaires 310 were returned. However, only 272 were duly completed. This converts to a response rate of 71% as shown in the summary Table below

Table 2: Response rate

Response	Frequency	Percentage
Returned	272	71%
Unreturned	112	29%
Total	**384**	**100%**

Source: Research data (2014)

6.2   Demographic variables:

The majority of the respondents were male (56.2%). This indicated a male's dominance in using banking services. This agrees with results reported by Flavian et al (2006) that women were less likely to conduct their banking activities online. Most of the respondents are young between 18- 30yrs and as such more in tune with banking technology. This view is consistent with Alagheband (2006) who asserted that young individuals are more likely to adopt internet banking.

The result on marital status showed that the customer's attitude towards internet banking adoption is higher for singles (49.6%). A result that shows single people are more likely to adopt and use internet banking services than couples. It may simply indicate a high likelihood for singles to use internet banking compared to married people.

The findings imply that education increases the likelihood of adopting internet banking services. Majority of the respondents hold either a bachelors degree (30.1%) or other professional courses (26.1%). Thus highly educated consumers may be more likely to adopt internet banking services than low educated consumers. This is consistent with Karjaluoto et al (2002) who concluded that people with high educational attainment may have an aptitude for computers and possesses good information processing skills. In addition Young (2006) showed that highly educated groups generally accept changes more readily.

People who have a reliable source of income tend to have a high propensity to banking services. This is indicated in the study finding showing that majority of the respondents have some form of employment (salaried – 59.6% and self-employed – 30%). Analysis of the data showed that majority of the respondents at 58.1% operated a transactional account. 64.3% of respondents had registered for internet banking with majority having an account in only one bank. Frequency of using internet banking is mostly on monthly basis and majority of the respondents have had access to internet banking for more than three years.

Table 3: Summary of demographic variables

Variable		Frequency	%
Gender	Male	153	56.2
	Female	119	43.8
	Total	**272**	**100**
Age	18-24	37	13.6
	25-30	101	37.1
	31-35	61	22.4
	41-45	45	16.5
	46-50	16	6.0
	Missing	12	4.4
	Total	**272**	**100**
Marital	Single	135	49.6
	Married	112	41.2
	Divorced/Separated	4	1.5
	Missing	21	7.7
	Total	**272**	**100**
Education	No Formal	13	4.8
	Primary	28	10.3
	Secondary	43	15.8
	Bachelor	82	30.1
	Post Graduate	35	12.9
	Other Professional course	71	26.1
	Total	**272**	**100**
Occupation	Unemployed	26	9.6
	Salaried	162	59.6
	Self Employed	84	30.0
	Total	**272**	**100**
Type of account held	Transactional Account	158	58.1
	Current Account	66	24.3
	Both	48	17.6
	Total	**272**	**100**
Signed for internet banking	Yes	175	64.3
	No	97	35.7
	Total	**272**	**100**
Number of banks where users have internet banking account	One	137	50.4
	Two	38	14.0
	None	97	35.7
	Total	**272**	**100**
Frequency of using internet banking	Daily	25	9.2
	Weekly	45	16.5
	Monthly	67	24.6
	Other	38	14.0
	Missing	97	35.7
	Total	**272**	**100**
Duration of access to internet banking	Less than 1 Year	17	6.3
	1-2 Years	21	7.7
	2-3 Years	38	14.0
	3-5 Years	46	16.9
	More than 5 years	53	19.5
	Total	**272**	**100**

Source: Research data (2014)

6.3 Transaction services carried on internet banking:

Respondents were asked about the services they carry out on internet banking. From the responses obtained all those who had used internet banking indicated that they use the service to check their account balance (100%) and account statement enquiry (100%). 25.7% of the respondents indicated that they use internet banking to transfer funds compared to 74.3% who said they don't .Other internet banking services are rarely used for instance ordering cheque books (21.1%), stopping cheque payments (23.4%), Email Enquiry (41.1%), knowing bank products (8.6%), bills payment (38.9%), prepaid mobile top-up (30.3%) and management of direct debits and standing orders at 32.6% and changing internet banking password (29.7%). This is shown in table 4. The results indicate an underutilization of the internet banking channel.

The use of internet banking as a channel for accessing banking services is only average (Muranguri, 2013). Podder (2005) was of a similar opinion when he found out that the number of transactions carried out through the internet banking channel remained low in developing and undeveloped countries. According to Podder there is still room for banks to encourage uptake of the service by customers.

Table 4: Transaction services carried out on internet banking

Internet Banking Service	N	Service usage	%	Service not used	%
Check account balance	175	175	100.0	0	0.0
Account statement enquiry	175	175	100.0	0	0.0
Transfer of funds	175	45	25.7	130	74.3
Order cheque book	175	37	21.1	138	78.9
Stop cheque payment	175	41	23.4	134	76.6
E-mail enquiry	175	72	41.1	103	58.9
Change password	175	52	29.7	123	70.3
Know bank products	175	15	8.6	160	91.4
Bills Payment	175	68	38.9	107	61.1
Prepaid mobile top-up	175	53	30.3	122	69.7
Manage direct debits and Standing orders	175	57	32.6	118	67.4

Source: Research data (2014)

6.4 Frequencies and descriptive analysis on customer perception variables:

This section is analyzed based of the objectives of the study

6.4.1 Prior knowledge of technology:

From the study, the results reveal that 16.2% and 31.6% have no or low capability respectively in using equipment used to access internet banking, 23.5% fair, 12.1% good and only 16.5% are excellent. On using the internet; not capable 18.8%, Low capability 30.9%, fair 24.3%, Good 13.6% and excellent 12.5%. The mean score for responses in this section was 2.755 which indicated that prior knowledge of technology had an effect on usage of internet banking in commercial banks in Kenya.

The results show that the reason for low adoption and continuous usage of internet banking services among bank customers is due to lower internet skills, lack of access, and lack of experience with related technologies such as computers and smart phones. Consumers' knowledge and skills about the internet and computers or smart phones are important to the adoption of internet banking. If the knowledge and skills about the internet and computers or smart phones is low, the adoption rate will be low.

The findings agrees with those of Karjaluoto et al. (2002) who asserted that prior experience and attitudes towards computers and related technologies, influence both attitudes towards internet banking and actual behaviors. This is because consumer's familiarity with technologies in general facilitates her appreciation of the potential added value which is inherent in a technology.

In addition Corritore, Kracher and Wiedenbeck (2008) in their study noted that consumers may not rapidly adopt internet banking due to a lack of understanding and knowledge about the internet. Internet experience is an important factor that affects consumers' intentions to use internet banking, and consumers' attitudes towards using the internet banking system (Lichtenstein and Williamson, 2009).

7.   INFERENTIAL STATISTICS

7.1.1   Bivariate correlation:

Table 11: Bivariate correlation

Variable		Usage of internet banking	Security and Privacy	Cost	Complexity	Prior Knowledge of technology
Usage of internet banking	Pearson Correlation	1.000				
	Sig. (2 tailed)					
Prior Knowledge of technology	Pearson Correlation	0.296	-0.080	-0.021	-0.317	1.000
	Sig. (2-tailed)	0.000	0.005	0.001	0.045	

Source: Research data (2014)

Table 11 displays the results of correlation test analysis between the dependent variable and the independent. The results show that usage of internet banking is positively correlated with the independent variable used in the study. This reveals that any positive change in security and privacy of internet banking will have an effect on internet banking usage.

7.1.2 Regression analysis:

In order to establish the statistical significance of independent variables on the dependent variable, regression analysis was employed. The regression model took the following form:

$Y = \beta_o + \beta_1 X_1 + €$

β_o =   constant

βi; {i=1} = The coefficient representing the independent variable

$X i$; {i=1} = Values of the independent (covariates) variable

$€$ = error term which is assumed to be normally distributed with mean zero and constant variance.

Y   =   usage of internet banking in commercial banks

X_1 =   prior knowledge of technology

The findings in table 12 show that the coefficient of determination also called the R square is 79.3%. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the changes in the dependent variable. This means that the combined effect of the predictor variables (prior knowledge of technology) explains 79.3% of the variation in effect of customer perception on the usage of internet banking in commercial banks in Kenya. The correlation coefficient of 89.0% indicates that the combined effect of the predictor variables has a strong and positive correlation with the dependent variable

Table: 12: **Regression model fitness**

R	R Square	Adjusted R Square	Std. Error of the Estimate
.890	.793	.782	.224

Source: Research data (2014)

Analysis of variance (ANOVA) was further carried out to test the significance of the regression model in relation to the difference in means of the dependent and independent variables. The results on table 13 shows that prior knowledge of technology was statistically significant in explaining the effects of customer's perception on usage of internet banking in commercial banks in Kenya. The findings produced an f-value of 75.942 which was significant at $p<0.001$. This illustrates that the regression model is significant at 95% confidence level. Thus, confirming that there is a relationship between customer perception and usage of internet banking. The value of F is large enough to conclude that the independent variable as a whole was contributing to the variance in usage of internet banking.

Table 13: ANOVA

Indicator	Sum of Squares	Df	Mean Square	F	Sig.
Regression	49.478	13	3.806	0.7594	.000
Residual	12.930	258	.050		
Total	62.408	271			

Source: Research data (2014)

Table 14 evaluates and interprets the standardized coefficients of correlation (beta). In estimating the contribution of each independent variable in the study, it was established that all independent variables significantly contributed to the variance of usage of internet banking in commercial banks in Kenya at 0.05. However, the relative importance of each independent variable was different.

Table 14: Regression Coefficients

Variable	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	1.671	0.318	
Prior knowledge of technology	0.036	0.093	0.103

Source: Research data (2014)

Since the significant values are less that 0.05, the coefficients are significant and therefore the regression equation becomes:

Usage of internet banking in Commercial banks in Kenya $= 1.671 + 0.103X_4 + €$

8. CONCLUSION

Based on the findings of the study it was concluded that customer perceptions have an effect on usage of internet banking in commercial banks in Kenya. Prior knowledge of technology is an impediment in using internet banking by customers. Customers seemed to have fair knowledge of gadgets used in accessing the internet for instance computers or smart phones and only a few had adequate skills in using the internet application. The study results demonstrated a great effect of other alternative banking channels and over the courter branch services to internet banking usage

9. RECOMMENDATIONS OF THE STUDY

To address the issue of unclear instructions, commercial banks can provide options for use of other languages so that customers can easily understand if there is any problem in English language. This will make it easier for users to clearly understand instructions. Banks can use various modes such as brochures, print media and other technologies to enlighten

users and potential users on step by step access and use of internet banking. This will help bridge the knowledge gap. Electronic banking products such as internet banking should be made as user-friendly as possible as not many consumers are familiar with the electronic banking.

10. SUGGESTIONS FOR FURTHER RESEARCH

The researcher focused on individual customers of commercial banks. Further studies can be done focusing on effect of corporate customer's perception on usage of internet banking in commercial banks in Kenya and also on strategies employed by commercial banks to encourage adoption and continued use of internet banking by customers.

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