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EXAMINING THE INFLUENCE OF E-BANKING SECURITY ON CUSTOMER SATISFACTION IN UGANDA - A CASE OF UGANDAN COMMERCIAL BANKS

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Abstract

E-banking has continuously brought changes on our daily lives by enabling provision of fully automated banking services that do not require visiting a bank's premise. Customers do not have to queue for banking services but can do this at their own preferred time and place. The study aims at examining the effect of e-banking security on customer satisfaction in Uganda. To study the relationship between e-banking security and customer satisfaction, four security dimensions namely confidentiality, integrity, availability and authenticity are established based on literature review. The study uses a cross sectional survey methodology to gather data from 280 respondents. Results of correlation and regression analysis demonstrate that security has a positive relationship with customer satisfaction and therefore e-banking security has a big impact on predicting customer satisfaction. Various recommendations are put across on how retail banks can improve the security of their customer's data hence satisfying them through the use of e-banking channels.

Keywords:

E-banking, Security, Customer satisfaction, Four Security Dimension

1. INTRODUCTION

Advancement in Information and communication technologies have leveraged the development of new distribution channels that have enhanced available business opportunities for building relationships with clients for example customer satisfaction control, post-sale services and communication activities [1]. Furthermore, technology advancements have greatly made the distribution of services more convenient than before such as ATMs in banks, automated food ordering systems in restaurants, internet and phone-based services, automated check-in for flights, bill payment kiosks, and e-banking systems among others in numerous industries [1]. Electronic banking is the use of electronic means to transfer funds directly from one account to another, rather than by check or cash [2]. E-banking is an opportunity for countries with underdeveloped financial systems to advance developmental stages. These advancements can be seen in the form of increased varieties of bank services and products for customers, increased competition among banks, banks penetration of new markets and expanding their geographical reach through wireless communication systems rather than traditional "wired" communication networks [1].

In Uganda, banks have realized the importance of e-banking towards improving profitability and overall efficiency of the business for instance, standard chartered bank introduced the first automated teller machine (ATM) in 1997 [3]. In 2004 Stanbic bank Uganda launched its e-banking facility [4] thereby influencing other banks to adopt the same services. By June 2018, various banks in Uganda had increasingly adopted e-banking products and the number of ATMs had also increased to 818 [4]. This massive adoption and use of innovative financial services in developing countries like Uganda can be attributed to a number of factors like, a combination of a literate and relatively young population, a rapidly growing market penetration for mobile phones, an enabling regulatory environment and a competitive market place where supply is racing to meet demand [5]. With its merits of being safe, economical, convenient, and efficient, Ugandan domestic banks are confident that e-banking benefits will outweigh traditional banking services in the near future [6].

Despite the massive adoption of e-banking in different forms such as ATMs, mobile banking, and e-banking platforms, high levels of customer satisfaction have not been fully achieved by the Ugandan banks [6]. It is observed that the rate of satisfaction of e-banking among bank customers in Uganda still remains low at about 23% to 31%, compared to 62%, 51% in Kenya and south Africa respectively [29]. E-banking services are vulnerable to many risks particularly governance, legal, operational, and reputational but most importantly security risks. Customers still report cases of inconveniences such as internet theft and fraud for example the recent fiasco with centenary bank where some clients' accounts had transactions carried out using their respective PINs without their notice. In 2012, Bulgarians organized a fraud scam in Kampala thereby defrauding many ATM users [7]. Continuous system hacking frustrated customers and forced them to make long queues in banking halls. Charged off-counter withdrawals and questions about security are other reasons for skepticism on e-banking [7].

Numerous bank customers have fallen victim to electronic crime in Uganda and while some cases have been reported, most are dealt with under the hood for fear of alarming the public as well as for avoiding further damage to the already diminishing trust in banks with strong brand presence [7] [8]. Argued that in order for customers to get satisfied with e-banking services, banks should offer quality services with attributes such as security with continuous improvement. Therefore, the aim of this study is to examine the impact of security issues on customer satisfaction of e-banking usage in Uganda.

In this study, e-banking security is viewed from four factors namely confidentiality, integrity, availability and authentication while customer satisfaction is viewed through commitment, loyalty and retention. Findings of this study are useful for the banking sector in formulating appropriate strategies to build e-banking security and retain customer satisfaction.

2. LITERATURE REVIEW

2.1 ELECTRONIC BANKING

Electronic banking commonly referred to as e-banking or virtual banking is the provision of fully automated banking

services without visiting a bank's premise and thus it is non-branch based [2]. The study [4] argues that electronic banking covers a broad area of technological advancements and these are front end (such as ATMs, online banking) and back end technologies (such as those used by big institutions like online cheque transactions).

E-banking involves the use of a web browser to carry out banking activities [4]. Types of electronic banking include; automated teller machines (ATMs), PC banking, Mobile banking [1], Telephone banking and Television banking [9]

2.2 ELECTRONIC BANKING SECURITY

E-banking security is the protection of a system's information assets [10] argues that security deals with how e-banking sites guarantee that a hacker and others cannot gain access to customer's information or their credit card numbers [10]. In e-banking, security is one of the most significant challenges, because customers fear advanced risks in using the web for financial transactions [11]. It is observed that perceived security is a paramount factor in the usage and satisfaction of e-banking. Therefore, when customers perceive security in e-banking transactions, they may develop trust, commitment and loyalty towards the bank and this helps the bank to maintain a close bank-customer relationship [12]

2.3 SECURITY DIMENSIONS IN ELECTRONIC BANKING

As the social environment gets less tangible through reduced face-to-face communication, customers become more predisposed to mistrust systems [13]. It is highly recognized that e-banking customers and the banking industry are primarily concerned with both the privacy and security of transactions and personal information confidentiality and therefore, banks should implement proper security features such as encryption, firewalls and virus protection to persuade customers that e-banking is realistically safe. The study [16] suggests that e-banking security measures should be designed to protect one or more facets of CIA triad i.e. confidentiality, integrity and availability

Confidentiality refers to limitations of information access and disclosure to authorized users and preventing access by or disclosure to unauthorized users.

Integrity relates to the trustworthiness of information resources and it ensures that information is sufficiently accurate for its purposes [17].

Availability of information refers to ensuring that e-banking systems or platforms remain available at all times, preventing service disruptions due to power outages, hardware failures and system upgrades [16].

Protecting such information is a major part of information security and if not protected it will discourage bank customers from using certain services [25]. A very key component of protecting information confidentiality, integrity and availability include encryption and usage of existing schemes such as GPG to digitally sign the data [16]

Research reveals that in the present world, where security is a major determination for the use of e-banking, biometrics is another key boosting technology with the potential to make the banking society safer, reduce fraud and lead to user convenience. [16] argues that biometric technology is among the leading technologies for security factors of e-banking. Biometrics means the personal identification of people grounded on their unique anatomical identity. A simple biometric authentication system consists of five key components, namely: sensor, feature extractor, fingerprint database, matcher and decision module [18].

2.4 CUSTOMER SATISFACTION

The study in [22] defines customer satisfaction as the post purchase evaluation of products or services taking into consideration the expectations. Customer expectations are defined as partial beliefs or assumptions about products or services that serve as a standard or reference point against which products' or services' performance is judged [19].

The study in [2] asserts that customer satisfaction is a result of cognitive and affective evaluation, where some comparison standard is compared to the actually perceived performance. If the perceived performance is less than expected the customer will be dissatisfied and if perceived performance exceeds expectations the customer will be satisfied. Customer satisfaction in this case is looked at as an ambiguous and abstract concept because the actual manifestation of satisfaction varies from person to person, product to product and service to service, the state of satisfaction depends on a number of factors that include economical, psychological and physical factors. [20]

As customers face a growing variety of services and products, their selections are mainly determined based on their perception of quality of services and value. Thus firms need to recognize the determinants of customer satisfaction i.e. increased customer satisfaction leads to behavioral consequences such as commitment, loyalty, intention to stay and post purchase behavior [20].

The study in [23] argue that services such as intangible goods appeal differently to each customer and certain degree of service should be realized in order to please the customers and that the resulting commitment, loyalty and retention are critical signs of customer satisfaction. The level of customer satisfaction depends on the degree to which customer's expectations about the product or service are achieved. It is therefore crucial for banks that offer e-banking services to consistently measure the level of satisfaction of their customers based on customer commitment and customer loyalty.

Customer Commitment: [20] argued that on average, extremely committed customers use more products or services, give more recommendations and are much less likely to change to another bank compared with customers who have lower commitment levels. The study in [1] further argued that advanced levels of website usability might lead to advanced levels of customer's affective commitment to the website as well a positive and substantial relationship between satisfaction in earlier interactions and the consumer commitment to a financial services website.

Customer Loyalty and Retention: This is also crucial to customer satisfaction given that a satisfied customer remains loyal to the bank, transacts more as the bank introduces new products and improves existing ones, talks positively about the firm and its products, pays less devotion to competing brands and is less sensitive to price [1] Some firms think they are getting a sense of customer satisfaction by tallying customer complaints, but 96%

of dissatisfied customers do not complain, instead many just stop buying [1] . Therefore, a customer who is satisfied with the banks' products and services will always remain loyal to the bank hence customer retention.

2.5 RELATIONSHIP BETWEEN E-BANKING SECURITY AND CUSTOMER SATISFACTION

Security has a significant effect on online banking context [8]. Security is an important factor that customers consider before using e-banking services. Some customers avoid e-banking as they perceive it as being easily susceptible to fraud. This perception can damage consumers' confidence in the online system as a whole. The study in [14] asserts that a security uncertainty is the most important issue facing bank customers. This has affected their satisfaction of e-banking services. The study in [13] indicated that for the bank customers to develop trust in e-banking services, banks must use security services such as digital signatures, encryption mechanisms and authorization mechanisms. The study in [21] argued that customer satisfaction of e-banking is significantly influenced by variables of system security. This shows that security has a significant effect on e-banking customer satisfaction because satisfaction is derived from a set of technology that is visible to them

Furthermore, [21] argued that most customers in developed countries conduct their transactions through web browsers that connect to merchant sites. Therefore, consumer perceptions of security are developed through visible sufficient mechanisms that are carried out through the processes of encryption, protection, verification and authentication of online transactions. The mechanisms of encryption, digital authentication, protection and verification of on-line identity influence the internet customer perception of information security and increase consumer confidence and trust [13]. The study in [14] urges banks to safeguard their customer's data from all kinds of security threats since any kind of negligence has serious results and can lead to financial losses. Banks must guarantee to maintain confidentiality of customer's account. Otherwise their failure can cause damage to the bank and its image. Therefore, banks need to take some measures to ensure security of customers' banking transactions so as to reduce on the fears of customers in using the web for financial transaction [13] [14] [21].

3. METHODOLOGY

The study adopted a cross sectional quantitative research design methodology were quantitative research methods were used to examine the influence of e-banking security on customer satisfaction in Uganda. Morgan's table for determining sample size for known population [24] was used. [24], state that for a population of over 1,000,000, a sample size of 384 is adequate with the confidence level of 95% and margin of error = 5.0%. Statistics from bank of Uganda show that there are over 7million bank accounts [4] and from this, a sample of 384 regular e-banking customers with active bank accounts were selected using purposive sampling method from the existing 25 registered commercial banks in Uganda [4]. These were selected from the registered banks within the central region of Uganda namely Wakiso and Kampala. The choice of region was mainly because of time and financial constraints. The respondents were approached from the bank's premise by our research assistants with permission from the bank's administration. Questionnaires were distributed to respondents after inquiring whether they had used e-banking services before and follow ups for the questionnaires were made at the work places of the respondents after getting their contacts and addresses. The researchers used purposive sampling to select only those respondents who had/are using e-banking services. Therefore, only retail bank customers who have ever used e-banking services were included in the study as respondents.

A structured questionnaire was designed and randomly administered to the above selected respondents both electronically and printed copies. The items used in the questionnaire were constructed by the extant literature reviewed. The questionnaire comprised of three sections; Section 1 comprised questions on demographic characteristics, Section 2 consisted of questions assessing e-banking security and section 3 comprised of questions assessing e-banking customer satisfaction. Respondents were asked to indicate their levels of agreement based on the five-point Likert scale from "1" (strongly disagree) to "5" (strongly agree).

Measurement Scales from previous studies was used to measure the study variables of e-banking security and customer satisfaction. E-banking security was measured by a 4 items scale i.e. Confidentiality, Integrity, Availability and Authentication developed by [25], whereas e-banking customer satisfaction included Commitment, Loyalty and retention and these were measured by a scale developed by [19].

To ensure content validity, a content validity index test (CVI) was performed on the constructs to ensure that the scale items are meaningful to the sample and capture the issues that were measured. A content validity index (CVI) of above 0.92 for the questionnaire items declared that the construct is reasonably valid [27].

Reliability of the instrument was tested using Cronbach Alpha Coefficient (CAC). This test deemed the questionnaire items reasonably reliable or consistent given that CAC was above 0.80 [27] and the results are shown in Table.1.

Out of the 384 questionnaires distributed to the selected respondents, 296 questionnaires were returned. However, after screening the returned questionnaires for quality, accuracy and completeness, 280 questionnaires were found to be valid, which constituted a valid response rate of 74%. This is in line with [26] who state that a response rate of above 50% is acceptable to represent the actual situation. We can therefore conclude that the response rate from the sampled respondents was good enough and appropriate to represent the entire target population. SPSS software version 20 was used for data analysis. Descriptive and analytical analyses were used to examine whether changes in the independent variables affected the dependent variables. Whereas Correlation analysis was used to establish the relationship between e-banking, security and customer satisfaction, Multiple Regression analysis was used to determine the extent to which e-banking security predicted Customer satisfaction.

Table.1. Cronbach Alpha and Content Validity Index Values

Variable items	CAC	CVI	No. of items
e-banking security		0.964	
Confidentiality	0.862		5
Integrity	0.842		5
Availability	0.850		4
Authentication	0.851		6
Customer satisfaction		0.967	
Commitment	0.878		4
Loyalty	0.892		6

Source: Primary data

4. PRESENTATION OF STUDY FINDINGS

4.1 SAMPLE CHARACTERISTICS

Descriptive analysis of the respondent's age and education shows that majority of the respondents were male (58.6%) and female (41.4%), an indication that the study was gender sensitive as it included the male and female respondents. Most of the respondents to this study were mainly Bachelor's degree holders (49.3%), followed by Master's degree holders (24.3%), High school graduates with 15.3%, Diploma holders (8.6%) and respondents with certificate qualifications were least with 2.5%. This implied that the respondents who participated in this study were educated enough and could therefore understand and comprehend the e-banking security issues.

4.1.1 Descriptive Analysis of E-Banking Security:

Descriptive analysis of e-banking security was conducted in terms of Confidentiality, Integrity, Availability and Authentication. The results were presented in terms of means and standard deviations (SD) as shown in Table.2. Means and standard deviation were calculated for each item in the variables so as to determine which individual items explained the constructs. Those items with mean less than 3.5 are perceived not to affect the respondents.

Table.2. Descriptive analysis of E-banking security in terms of Confidentiality, Integrity, Availability, and Authentication

Item (N=280)	Mean	Std. Deviation
Confidentiality		
e-banking institutions keep customers information confidential	4.1136	1.08377
e-banking institutions misuse my personal information	2.6484	1.47559
e-banking institutions obtains my consent for sharing my personal information with other agencies	3.2967	1.11962
In case I accept giving my consent, e-banking institutions explains clearly to me the full meaning of the disclosure clause	3.5128	1.09512
I am confident over the security aspects of e-banking in Uganda	3.6264	1.22157
Integrity		
e-banking transactions cannot be intercepted on transit by unauthorized third parties	3.2125	1.14352
e-banking carries out transactions as intended by the user	3.6667	1.01218
Transactions conducted through e-banking are secure	3.6300	1.08403
The information offered by e-banking is honest	3.6593	.97641
Funds may be fraudulently transferred by using e-banking	3.3187	1.18395
Availability		
The e-banking sites are always available for business	3.6117	1.10620
Up-to-date Information is available on banks website to guide me in making decisions about e-banking services	3.4835	1.16659
e-banking sites provides security guidelines on home pages	3.5531	.93832
I always get electronic message for my e-banking account transaction	3.4652	1.46267
Authentication		
e-banking reminds me to change my PIN from time to time	2.8974	1.42086
There is maximum number of incorrect PIN submissions	3.1392	1.40209
Only User name and PIN is secure enough to protect my information online	2.7216	1.22000
Am willing to use additional authentication besides username and password	4.3114	.92858
Idle time log out from session exists at my e-banking site	3.4725	.97401
OTP (One Time Password) is required, if logging from different browsers/computers	3.3993	1.09053

Source: primary data

The descriptive analysis of e-banking security in Table.2 reveals that the respondents perceived e-banking system to exhibit confidentiality, integrity, availability and authentication. Confidentiality was perceived by the way of e-banking institutions keeping customers' information confidential (Mean=4.00, SD=1.00) and confidence over the security aspects of e-banking in Uganda (Mean=3.3462, SD=1.2). Integrity was perceived by the way e-banking carries out transactions as intended by the user (Mean=3.6667, SD=1.00), transactions conducted through e-banking are secure (Mean=3.6300, SD=1.08) and the information offered by e-banking is honest (Mean=3.6593, SD=1.0). Availability was perceived by the way the e-banking sites are always available for business (Mean=3.6117, SD=1.1) and e-banking sites providing security guidelines on home pages (Mean=3.5531, SD=.93). Authentication was perceived by the way the client is willing to use additional authentication besides username and password

(Mean=4.3114, SD=.93) and Idle time log out from session existing at the e-banking site (Mean=3.4725, SD=.90). This therefore implies that for customers to perceive e-banking security, the bank should consider confidentiality, integrity, availability and authentication as very important security aspects if they want to change the perception of the users towards the e-banking system security.

4.1.2 Factor Analysis of E-Banking Security and Customer Satisfaction:

Factor analysis was conducted on e-banking security based on the factors; confidentiality, integrity, availability, authentication and customer satisfaction based on the factors; commitment and loyalty. This was done so as to determine their Eigen value, variance and cumulative variance as shown in Table.3 and Table.4 respectively.

Results in Table.3 revealed the e-banking security is determined by some factors such Confidentiality, integrity, availability and authentication in their order of importance. They include; availability (Eigen value = 3.262, Variance = 51.940%), authentication (Eigen value = 3.058, Variance = 28.392%), confidentiality (Eigen value = 2.933, Variance = 44.855%), and integrity (Eigen value = 2.688, Variance = 47.073%) each explaining 51.940%, 47.073%, 44.855 and 28.392% variance respectively. The implication of the results in Table.3 show that if customers find the e-banking systems to provide confidentiality, integrity, availability and authentication, then they will perceive the e-banking systems to be secure.

Table.3. E-banking security in terms of Confidentiality, Integrity, Availability and Authentication

Item/Factor	Confidentiality	Integrity	Availability	Authentication
e-banking institutions keep customers information confidential	0.671			
e-banking institutions misuse my personal information	0.259			
e-banking institutions obtains my consent for sharing my personal information with other agencies	0.752			
In case I accept giving my consent, e-banking institutions explains clearly to me the full meaning of the disclosure clause	0.786			
I am confident over the security aspects of e-banking in Uganda	0.736			
e-banking transactions cannot be intercepted on transit by unauthorized third parties		0.707		
e-banking carries out transactions as intended by the user		0.737		
Transactions conducted through e-banking are secure		0.789		
The information offered by e-banking is honest		0.697		
Funds may be fraudulently transferred by using e-banking		0.449		
The e-banking sites are always available for business			0.462	
Up-to-date Information is available on banks website to guide me in making decisions about e-banking services			0.828	
e-banking sites provides security guidelines on home pages			0.600	
I always get electronic message for my e-banking account transaction			0.940	
e-banking reminds me to change my PIN from time to time				0.830
There is maximum number of incorrect PIN submissions				0.811
Only User name and PIN is secure enough to protect my information online				0.188
Am willing to use additional authentication besides username and password				-0.058
Idle time log out from session exists at my e-banking site				0.497
OTP (One Time Password) is required, if logging from different browsers/ computers				0.268
Eigen Value	2.933	2.688	3.262	3.058
Variance (%)	44.855	47.073	51.940	28.392
Cumulative variance (%)	44.855	47.073	51.940	28.392

Source: primary data

Table.4. E-banking Customer Satisfaction in terms of Commitment and Loyalty

Item/Factor	Commitment	Loyalty
I feel committed to e-banking services	0.831	
I am quite comfortable with my bank's e-banking services	0.841	
I consider e-banking as my first choice to transact business	0.813	
I am committed to my bank as a result of the e-banking services being provided	0.832	
I recommend e-banking services to those who seek my advice about such matters		0.795
I am a brand ambassador of my bank because of the e-banking services		0.708
I intend to continue using e-banking services in the future.		0.645
I would encourage my friends to use e-banking services		0.654
I am committed to my bank as a result of the e-banking services being provided		0.867
I say positive things about my bank's e-banking services to other people		0.794
Eigen Value	3.092	4.108
Variance (%)	68.774	56.002
Cumulative variance (%)	68.774	56.002

Source: primary data

Results in Table.4 show that e-banking customer satisfaction is measured by commitment and Loyalty. In their order of importance, they include; Loyalty (Eigen value = 4.108, Variance = 56.002%) and commitment (Eigen value = 3.092, Variance = 68.774%), each explaining 68.774% and 56.002% variance respectively. The salient issues regarding commitment include; the client being quite comfortable with the bank's e-banking services (0.841), the client being committed to their bank as a result of the e-banking services being provided (0.832), the client feeling committed to e-banking services (0.831), and the client considering e-banking as their first choice to transact business (0.813). The salient issues regarding loyalty include; the client being committed to their bank as a result of the e-banking services being provided (0.867), the client recommending e-banking services to those who seek their advice about such matters technology (0.795), the client saying positive things and the e-banking system (0.794), and a client being a brand ambassador of their bank because of the e-banking services (0.708). The implication of these results shows that if customers are satisfied with e-banking services, they exhibit a lot of commitment and loyalty to e-banking services.

4.1.3 Correlation Analysis Results of E-Banking Security and E-Banking Customer Satisfaction:

Correlation analysis is conducted to determine whether a relationship exists between variables and the resultant values of the correlation coefficient are always between -1 and +1, where: a correlation coefficient of +1 indicates that two variables are perfectly related in a positive linear sense, -1 indicates that two variables are perfectly related in a negative linear sense, and 0 indicates that there is no linear relationship between two variables [15]. Herein correlation analysis was carried out between the independent variable (e-banking security) and a dependent variable (customer satisfaction) and the results are presented in Table.5.

Table.5. Correlation analysis of e-banking security and E-banking customer satisfaction

Variable (N=280)	1	2	3	4	5	6	7	8
e-banking security (1)	1							
Confidentiality (2)	.758**	1						
Integrity (3)	.808**	.565**	1					
Availability (4)	.789**	.419**	.513**	1				
Authentication (5)	.749**	.347**	.428**	.546**	1			
Customer satisfaction (6)	.628**	.471**	.500**	.587**	.398**	1		
Commitment (7)	.536**	.528**	.442**	.405**	.284**	.876**	1	
Loyalty (8)	.599**	.359**	.465**	.628**	.420**	.937**	.653**	1
**Correlation is significant at the 0.01 level (2-tailed), p<.01 for all								

Source: primary data

Findings in Table.5 revealed that there was a significant positive relationship between e-banking security and customer satisfaction in Uganda (r=0.628). This is an indication that the e-banking security directly relates with the level of customer satisfaction. This therefore means that increasing on the security measures through enforcing confidentiality, integrity, availability and authentication of e-banking services, banks will be able to achieve customer satisfaction (through commitment and loyalty) towards usage of these e-banking solutions. This is evidenced from the detailed correlation analysis shown in Table.5.

Following the findings from the correlation analysis, regression analysis was done to determine whether e-banking customer satisfaction was influenced by e-banking security. The results of the Regression Analysis are presented in Table.6.

Table.6. Regression analysis of e-banking security and customer satisfaction with E-banking

	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
(Constant)	0.109	0.228		0.479	0.633
E-banking Security	0.374	0.089	0.277	4.219	0.000
R^2	0.490		**F Statistic**		129.820
Adjusted R^2	0.486		**Sig.**		.000

Note: Dependent variable: customer satisfaction (Source: primary data)

The findings in Table.6 revealed that customer satisfaction was significantly influenced by e-banking security (beta=.277, p<.01). This implies that e-banking security greatly influences customer satisfaction of e-banking and should therefore be highly considered by the e-banking service providers.

5. DISCUSSION

5.1 RELATIONSHIP BETWEEN E-BANKING SECURITY AND CUSTOMER SATISFACTION

The findings revealed that there was a significant positive relationship between security and customer satisfaction. This means that security of e-banking transaction is a very pertinent issue and an important factor that customers consider before using e-banking services. Some retail bank customers avoid e-banking as they perceive it as being easily prone to fraud. This perception can damage consumers' loyalty and commitment of the e-banking system as a whole therefore banking institutions must use modern security standards in different e-banking channels to have better results of security dimension hence customer satisfaction. These findings are in line with [14] who assert that security uncertainties are the most important issue facing bank customers which has affected their satisfaction of e-banking services. The studies in [14] [23] [25] further assert that the use of modern security mechanism greatly impacts on e-banking quality of services resulting in customer satisfaction and develop attitudinal loyalty and commitment.

The results from correlation analysis further reveal that confidentiality, integrity and availability are the most significant predictors of customer satisfaction towards e-banking services. Therefore, banks should put more emphasis on ensuring that the e-banking solutions developed meet the above measures of e-banking security most importantly confidentiality, integrity, availability (CIA) and authentication. This in turn will lead to improved customer satisfaction in e-banking usage. This is in handy with [23] who state that information security especially in e-banking solutions is made up of mainly confidentiality, integrity, availability and authentication and therefore banks should be able to meet these measures so as to attract more customers to use their e-banking services.

5.2 RECOMMENDATIONS

Both the bankers and government should pay attention on e-banking services in Uganda as follows: Banks should invest in securing client information given that security plays a great role in influencing customer satisfaction on the use of e-banking platforms.

Commercial banks should use modern authentication methods like the two-factor authentication in reducing cases of e-banking frauds in order to better satisfy their clients. The study in [25] argued that the two-factor authentication is much more secure than traditional password authentication because it relies on something you know (your password) and something you have (a physical device) or something you are (biometric info.) such as finger print or retina scan etc. This method is recommended as a more secure method in reducing cases of fraud in e-banking services, countries like china and USA have used it and proved a success.

Banks should increase promotional activities in order to attract customers to utilize e-banking services. This is because the respondents stated that they developed interest in e-banking and are not hesitant to recommend e-banking services to those who seek advice about transactions in banking business.

6. CONCLUSION

In this paper, we examined the impact of security issues on customer satisfaction of e-banking usage in Uganda. The following are our major findings:

- E-banking security has a direct relationship with Customer Satisfaction in Uganda and therefore, before bank customers embrace the usage of e-banking services, banks should take adequate measures to guarantee the security of the transactions as e-banking security is an essential element in e-banking services.
- Commitment and Loyalty are major determinants of e-banking customer satisfaction in Uganda. These factors are in line with the findings reported by the previous studies mentioned earlier in the paper.
- The aspects of Confidentiality, Integrity, Availability and Authentication as measures of e-banking security are key determinants of e-banking customer satisfaction and therefore they are essential for any e-banking system in Uganda.

The findings of this study have important implications for researchers in the field of e-banking. Given the fact that the determinants of customer satisfaction in e-banking are provided particularly in the context of a developing country like Uganda, it would be worthwhile to understand that the determinants of customer satisfaction differ for different settings.

7. LIMITATIONS TO THE STUDY

Respondents were hesitant to fill the questionnaire. However, this was overcome by giving the respondents an insight on the importance of their participation.

Secondly, the study only considered the customers' perception of e-banking security, while it did not consider the perception of bank employees on e-banking security.

Finally, the study has considered e-banking security as the only determinant of customer satisfaction. Hence, it is recommended that subsequent studies should also consider the

factor of quality of service as another determinant of customer satisfaction in e-banking services.

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