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Factors Influencing Customers' Acceptance of Internet Banking Services in Sudan

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Abstract: ***The explosion of internet usage and the great funding initiative in electronic banking have taken the attention of researchers towards internet banking. At the beginning, the conventional focus of internet banking research has been on technological infrastructure, but now shifting to user-focused research. Although millions of dollars have been paid to invest in the internet banking services, reports have shown that potential users may not use these services. A great deal of research has been conducted in various countries to determine the factors that influence acceptance of internet banking. However, these studies have not taken into account ability dimensions (Internet banking awareness, Accessibility, Internet connection quality, & Cost) that related to individuals' technology readiness. In addition, there is still very few research has been conducted on the internet banking in African and Arab countries in general, and Sudan in particular. Therefore, this study attempts to fill this gap. Based on sample of 207 bank customers, structural equation modeling was applied using AMOS 20. The results reveal that internet connection quality has direct effect on the behavioral intention to use internet banking in Sudan.***

Keywords: Internet banking, Behavioral intention, Ability, Structural Equation modeling (SEM), Sudan

1. Introduction

The twenty-first century is characterized by the use of information technology which has revolutionized our working and living patterns. A new area of banking, termed "internet banking" has emerged, where customers can perform their financial transactions electronically over the internet through their personal computer or laptop at a time convenient to them, without having to be restricted to regular branch operating hours. Furthermore, customer is expected to perform at least one of the following transactions online, namely balance enquiry, download banking statement, fund transfer between accounts, bills payment, ATMs card request, cheque book request, cheque clearing status enquiry, ATMs card notification, book cheque notification (Alsajjan and Dinnis, 2006) [5].

Internet banking (IB) is defined as "the use of the internet as a remote delivery channel for banking services, and an internet banking is defined as a bank that offers (web-based) transactional services" (Gopalakrishnan, Wischnevsky and Damanpour 2003) [1]. Internet banking is beneficial to both the banks and their customers. From the banks viewpoint, internet banking allows banks to reduce their operation cost through the reduction of physical facility and staffs resources that bank require, reduce waiting time in branches leading to potential boost in sale performances and bigger global reach (Hernando and Nieto, 2007). From the consumers' standpoint, internet banking enables consumers to do a wide range of bank transaction electronically through the bank web-site anytime and anywhere (Granbner-Krauter and Faullant, 2008) [11]. Although internet banking services has been widely adopted in various developed countries, customers' adoption of internet banking services in developing countries has been slower than anticipated. There is a limited empirical research on internet banking services in developing countries (Abu Shanab, Pearson, &Setterstrom, 2010; Al-Gahtani, 2011; Nasri&Charfeddine, 2012) [1]. Sudan as one of the developing countries has faced the same problems (limited studies on IB services). Therefore, there is a clear need to investigate the factors that influence customers' adoption to the internet banking services, so that banks can better formulate their marketing strategies to increase this service usage in the future. This study aims to identify the impact of ability on the customers' acceptance of internet banking services in Sudan. This study begun with a literature review, followed by research model then describe data analysis and results and discussion followed by conclusion and references.

2. Literature Review

2.1. Internet banking in Sudan

Sudan's environment faces many challenges in theapplication of internet banking. Sudan is a country that is just emerging from decades of civil war that has left the country under developed and war torn. Its infrastructure requires a lot of investments into its rehabilitation before it is able to provide online banking in its banking environment. It lacks the necessary technologies to setup internet banking web sites, and to protect it from hackers from all around the world who are a lot more technologically advanced than the banks in our country. Its population has a large number of uneducated people who are not familiar with using the internet, or people who have no access to it. Banks' employees are not trained in the administration of internet banking, and not familiar with its benefits and drawbacks. The telecommunications infrastructure is very poor, and internet servers provide a slow internet connection, and a network that is frequently breaking down [3]. In addition to that the internet banking awareness is very weak. Although,

the internet banking cost is suitable from customers' perception.

2.2. Factors influencing Customers' Acceptance of Internet Banking

Many factors are seen to be influencing the acceptance of internet banking and it is important to take these factors into account when studying customers' acceptance of internet banking.

2.2.1. Internet Banking Awareness (IBA)

In this study, the construct awareness refers to the information that the user possesses regarding availability of online banking, range of services, process of signing up and benefits and risks involved. Awareness has been cited as an important factor in determining a user's adoption of internet banking (Sathye, 1999; Pikkarainen et al., 2004) [15]. In Sudan, recent trends show that banks are increasingly following the practice of highlighting the internet banking services that can be availed by the user.

2.2.2. Accessibility (AC)

According to Kling and Elliott (1994), accessibility is defined as the ease with which individual can locate specific computer system (such as an internet banking services). User perceptions of accessibility have been found to be related to technology and information use in both organizational communications and information systems research [7]. Accessibility has a number of dimensions such as the access to and interface with the source, and the capability of physically retrieving important information. However, previous research has suggested that physical access to data (information) is not dependent on the access to an information system (Culnan, 1984). In discussing the results of his study, Culnan (1984) noted that, while providing unobstructed physical access to information is essential for use of information systems; however, physical access only does not guarantee the use of information systems [7].

2.2.3. Internet connection quality (ICQ)

Internet connection quality defined in terms of speed and continuity can influence user's perception of the internet banking acceptance. A low-quality connection can make completion of banking tasks difficult and lead to uncertainty regarding the status of transaction. This can adversely impact the degree of internet banking acceptance. On the other hand, a better internet service can enhance the user's perception of internet banking acceptance and make the user more inclined to use internet banking (Sathye, 1999) [15].

2.2.4. Internet Banking Cost (IBC)

This is one of the major factors that influence customers' adoption of innovation. Aliyu et al., (2012) stated that for customers to use new technologies, the technologies must be reasonably priced relative to alternative. Otherwise, the acceptance of the new technology may not be viable from the standpoint of the customer [4].

2.2.5 Behavioral Intention (BI)

Behavioral Intentionis an indicator of a person's readiness to perform certain behavior [10].The TRA has been applied in the internet banking domain to predict the performance of behavior and individuals intention toward internet banking acceptance (Nor et al., 2008; Ok and Shon, 2010; Sadeghi and Farokhian, 2011; Yousafzai et al., 2010) [2].

3. Research Model

For the purpose of understanding the factors influencing customers' acceptance of internet banking in Sudan, this paper proposes a research model (see figure 1. below). This research model is developed based on several previous studies related to electronic banking, internet banking, and customers' adoption of internet banking services.

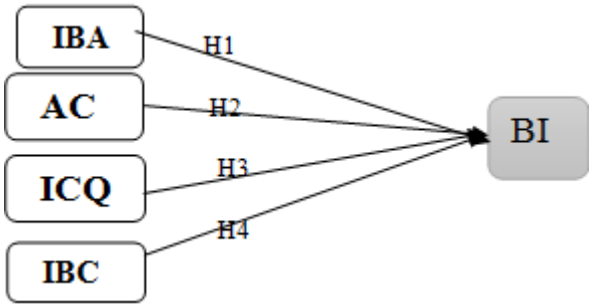

Figure 3.1: Research Model

The following hypotheses are developed based on the research model and literature review discussed:

H1: internet banking awareness has a significant and positive influence on Behavioral Intention to Use of Internet Banking.

H2: accessibility has a significant and positive influence on Behavioral Intention to Use of Internet Banking.

H3: internet connection quality has a significant and positive influence on Behavioral Intention to Use of Internet Banking.

H4: Internet banking cost has a significant and positive influence on Behavioral Intention to Use of Internet Banking.

4. Research Methodology

The research method is descriptive survey. Descriptive survey research includes methods that their aim is describing investigated situations or phenomena. Implementation of descriptive research, can only contribute to the better understanding of the current situation or the decision-making process. Survey is a method to obtain information on attitudes, beliefs, ideas, behaviors, or characteristics about a group of members in statistical population through investigation. In survey research, data collection will be conducted by asking individuals who have been selected systematic and have been categorize in sample groups (Samad, 2002) [10].

4.1. Population and Sample

Population of present research consisted of all customers in the Sudanese banks located in Khartoum state, who have an account there and who have used this bank's internet banking service. The sampling method used in this research is simple random sample.Since the size of population in this

research about 12,000 customers, thus according to Sekaran, Uma (2003) the sample size is 375 [13].

4.2. Measurement Instruments

All measurement items were adopted with sight modifications, from the literature. Internet banking awareness, accessibility, internet connection quality, and cost were adopted from [5]; [7]; [16]; [14].

A questionnaire was initially developed in English, based on the literature, and the final version was independently translated into Arabic by a professional translator.

All items were measured using five-point likert scales, ranging from strongly agree (1) to strongly disagree (5). Were also included demographic questions relating to gender, age, education, marital status, occupation, experience, and income per month.

4.3. Data Collection

A sample of 375 bank customers was randomly chosen from five different bank branches in Khartoum city. Out of the questionnaires distributed, 207 usable questionnaires were returned yielding a response rate of 55.2%.

5. Data Analysis and Results

SEM describes relationships among variables. Although similar to multiple regression in many ways, SEM offers a number of additional benefits including effective handling of multicollinearity. SEM models show relationships among variables using one or more regression equations. The regression equations are called structural equations, and a collection of such equations is referred to as a structural equation modeling. The coefficients describing how dependent variables depend on independent variables are called path coefficient [15].

5.1 Respondent's Profile

Table 5.1: shows the frequencies and percentages of respondents

Variable	*Category*	*F*	**%**
Gender	Male	158	76.3
	Female	47	22.7
Age	Less than 25 years	25	12.1
	25 – 34 years	110	53.1
	35 – 44 years	53	25.6
	45 – 54 years	12	5.8
	55 year and more	5	2.4
Education	Basic	3	1.4
	Secondary School	12	5.8
	Diploma	15	7.2
	Bachelor	111	53.6
	High Diploma	8	3.9
	Master	50	24.2
	Doctorate	7	3.4
Marital Status	Married	107	51.7
	Single	96	46.4
Occupation	Student	12	5.8
	Public Sector	50	24.2
	Private Sector	112	54.1
	Business	24	11.6
	Other: (specify)	5	2.4
Experience	Less than 5 years	64	30.9
	5 years and less than 10 years	65	31.4
	10 years and less than 15 years	46	22.2
	15 years and less than 20 years	11	5.3
	20 years and more	13	6.3
Income per month	Less than 1,000 SDG	22	10.6
	1,000 SDG and less than 3,000 SDG	101	48.8
	3,000 SDG and less than 5,000 SDG	36	17.4
	5,000 SDG and less than 10,000 SDG	27	13
	10,000 SDG and more	11	5.3

5.2 Cronbach's Alpha

Data collected were analyzed using Cronbach's Alpha coefficient to check its internal consistency. The Cronbach's Alpha coefficient is commonly used to measure reliability of the questionnaires in surveys. Hair et al. (2006) noted that alpha and construct-reliability values greater than or equal to 0.70 and a variance-extracted measure of 0.50 or greater indicates sufficient scale or factor reliability [4]. Therefore, the Cronbach's Alpha coefficients of the variables were shown in the table 5.2 below. All instruments showed high reliability values (exceeding point of 0.70), which has a good internal consistency, with a Cronbach's Alpha coefficient reported in table 5.2 below:

Table 5.2: Shows Cronbach's Alpha Coefficient

Variables	*Cronbach's Alpha*	*No of items*
Internet Banking Awareness (IBA)	0.883	4
Accessibility (AC)	0.70	3
Internet Connection Quality (ICQ)	0.832	4
Internet banking Cost (IBC)	0.880	4

5.3 Confirmatory Factor Analysis (CFA)

The CFA measurement model estimation is the first step of SEM. The CFA determines whether the number of factors and the loadings of items on them confirm to what is expected based on the pre-established theory of scale assessment. The SEM techniques were used to perform the CFA. The AMOS software 20 was used to calculate whether or not the proposed factor solutions and the model fit. SEM is considered a family of statistics models that looks for details concerning the relationships among multiple variables (Hair, Black, Basin, & Anderson, 2010) [1]. A confirmatory factor analysis is first used to confirm the factor loadings of four constructs (internet banking awareness, accessibility, internet connection quality, & cost). The figure 5.1 and the table 5.3 below are shows the CFA and Model fit summary respectively that used in this study.

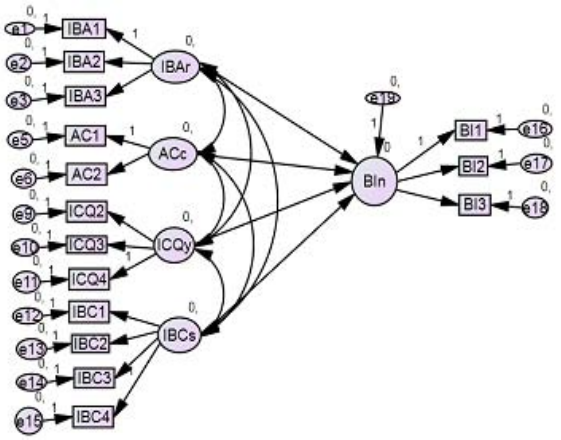

Figure 5.1: shows the structural model of behavioral intention.

Table 5.3: measure of the model fit

Goodness-of-fit Measures	*Acceptable Level*	*Structural Model*
Chi-squire/df	>1 and <5	2.103
Goodness of fit index (GFI)	0 (no fit) to 1 (perfect fit)	0.91
Adjusted goodness of fit index (AGFI)	0 (no fit) to 1 (perfect fit)	0.90
Root-mean-squire error of approximation (RMSEA)	< ,05	0.073
Normal fit index (NFI)	0 (no fit) to 1 (perfect fit)	0.914
Comparative fit index (CFI)	0 (no fit) to 1 (perfect fit)	0.952

From the figure 5.1 shows that the full structural model results show that there are 4 correlations and 6 covariance achieving stable model fit estimates.

The overall fit measures of the structural model indicate an adequate fit of the model. The standard values were obtained as following: x^2/df = 2.103, goodness of fit index (GFI) = 0.91, adjusted goodness of fit index (AGFI) = 0.92, root-mean-squire error of approximation (RMSEA) = 0.073, normal fit index (NFI) = 0.914, comparative fit index (CFI) = 0.952. The initial confirmatory factor analysis showed agood model fit. As shown in table 5.3 above all fit indices for the measurement model have achieved agood fit. These findings suggest that the measurement model fit the sample data good [5].

5.4 Results of Hypothesis Testing

The table 5.4: shows that the hypotheses (IBA → BI), and (ICQ→ BI) are supportedwhich indicated that the performance expectancy and internet connection quality has direct effect on the behavioral intention to use internet banking in Sudan, whereas, (AC→ BI), and (IBC→ BI) are not supported. See the table 5.4 below.

Table 5.4: shows the results of hypothesis testing

	Estimate	S.E	C.R	P	supported
BI ← IBA	.131	.052	2.495	.013	yes
BI ← AC	.120	.225	.534	.594	No
BI ← ICQ	.254	.083	3.067	.002	Yes
BI ← IBC	-.072	.051	1.417	.157	No

6. Conclusion

In this study, we developed and validated a new research to predict factors which affect behavioral intention to use internet banking in Sudan. Moreover, the interdependent relationships among various research factors were investigated. The results reveal that the customers prefer to use internet banking services because they have internet banking awareness and internet connection quality is suitable.

References

[1] Al-Ajam, A. S., & Nor, K. M. (2013). Customers' Adoption of Internet Banking Services: An Empirical Examination of the Theory of Planned Behavior in Yemen. *International Journal of Business and commerce, Vol. 2, No. 5,* 44-58.

[2] Al-Ajam, A. S., & Nor, K. M. (2013). Predicting Internet Banking Adoption Determinants in Yemen Using Extended Theory of Reasoned Action. *Research Journal of Applied Sciences 8 (5),* 280.

[3] Alam, N., Magboul, I. H., & Raman, M. (2010). Challenges Faced by Sudanese Banks in Implementing Online Banking: Bankers' Preception. *Journal of Internet Banking and Commerce, Vol. 15*, No. 2, 1-9.

[4] Aliyu, A. A., Rosmain, T., & Takala, J. (2014). Online Banking and Customer Service Delivery in Malaysia: Data Screening and Preliminary Findings. *Procedia - Social and Behavioral Sciences 129*, 562-570.

[5] Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). Internet Banking Acceptance in the Context of Developing Countries: An Extension of the Technology Acceptance Model. 1.

[6] Bian, H. (2011, fall). Structural Equation Modeling II, Office for Faculty Exellence.

[7] Chandio, F. H. (2011, June). Studying Acceptance of Online Banking Information System: Structural Equation Model, Business School, Prunel University. West London, UK.

[8] Chiemeke, S. C., & Evwiekpaefe, A. E. (2011, December). A Conceptual Framework of a Modified Unified Theory of Acceptance and Use of Technology (UTAUT) Model with Nigerian Factors in E-commerce Adoption. *Educational Research (ISSN: 2141 - 5161), Vol. 2(12), pp. 1719 - 1726*, 1721. Retrieved from http://www.interesjournals.org/ER

[9] Chuttur, M. (2009). Overview of the Technology Acceptance Model: Origins, Developments and Future Directions. Indiana University, *USA. Sprouts: Working Papers on Information Systems, 9(37).*, 3.

[10] Delafrooz, N., Taleghani, M., Karami, R., & Moradi, A. (2013). Factors Affecting the Adoption of Internet Banking. *International Journal of Business and Behavioral Sciences, Vol. 3, No. 2*, 82-100.

[11] Folake, N. P. (2014). The Impact of Trust Antecedents in Acceptance of Internet Banking in Nigeria. *International Journal of Economic and Business Management, Vol. 2(2),* pp. 19-24, 19.

[12] Karjaluoto, H., Mattila, M., & Pento, T. (2002). Electronic banking in Finland consumer beliefs and reactions to a new delivery channel . *Journal of Financial Services Marketing 6 (4), forthcoming*.

[13] Musiime, A., & Ramadhan, M. (2011). Internet banking, consumer adoption and customer satisfaction. *African Journal of Marketing Managment, Vol. 3(10),* 261 - 269.
[14] Sekaran, U. (2003). *Research Methods for Business: A Skill Building Approach*. USA: John Wiley and Sons.
[15] Sharma, S. K., & Govindaluri, S. M. (2014). Internet banking adoption in India "Structural equation modeling approach". *Journal of Indian Business Research, Vol. 6 No. 2*, 155-169. doi:10.1108/JIBR-02-2013-0013
[16] Yu, C.-S. (2012). Factors Affecting Individuals to Adopt Mobile Banking: Empirical Evidence from the UTAUT Model. *Journal of Electronic Commerce Research, Vol. 13, No. 2*, 104-121.

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