

# Corporate Customers Usage of Internet Banking in East Africa

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## Abstract

The purpose of this paper was to identify the factors that influence corporate customers' adoption of Internet banking services in Kenya, Uganda, Tanzania and Rwanda. The hypotheses are empirically evaluated by using Trade Finance customers of an East African bank as the target sample. The study involved 137 respondents from Kenya, Uganda, Tanzania and Rwanda.

Due to the quantitative nature of the study, the results are analysed with statistical measures. The analysis reveals that corporate users are not motivated by the same factors as private users. In order to become Internet banking customers, it is extremely important for corporate users to have a system that is easy to use and operate with full support from the bank.

**Keywords:** Internet Banking, East Africa, Cooperate customers, Quantitative methodology

## 1. Introduction

Originally information technology was utilized in back offices for batch data processing, which was something not that obvious to the customers. Consumer oriented innovations became more important during 1980-1995. This time period is called the "diffusion period of the information revolution in commercial banking" (Bátiz-Lazo and Wood, 2002). Mainly this was possible due to Personal Computers (PC's), which enabled new contacts between banks and customers. But as expected, it didn't end there. After PC's invaded homes and workplaces, customers themselves could start communicating with the bank electronically from their own PC's. The information between customers' PC's and bank's systems did not transfer on-line at that time. Only after emergence of the Internet, banks have been able to provide real-time banking services electronically to a larger audience without a need to install anything on the customer's PC. (Bátiz-Lazo and Wood, 2002)

Historically branches and physical distribution channels have been the very cornerstones to most banks' market success. However, the emerging electronic channels have forced banks to change their entire management approach. Much of this is thanks to the fact that geographical and time restrictions do not limit the use of banking services anymore (Karjaluo et al. 2002). As long as customers are connected to the Internet, they should be able to use the services when and where ever. The whole banking strategy has changed as a result of this; people are not dependent on the bank having branch closest to them physically, as it used to be. They can choose whichever bank offering its services online - or even several banks to serve different banking needs. This kind of development has shifted banks' attention more from marketing and selling of services and products towards building and managing customer relations.

### Hypotheses

- i. Perceived Usefulness positively influences use of Trade Finance Internet Services in East Africa.
- ii. Perceived Ease of Use positively influences use of Trade Finance Internet Services in East Africa.
- iii. Organizational Support positively influences use of Trade Finance Internet Services in East Africa.
- iv. Bank Support positively influences use of Trade Finance Internet Services in East Africa.

## 2. Literature Review

### Technology Acceptance Model

Technology Acceptance Model (TAM) was initially suggested by Fred Davis in 1989. It is one of the most studied and used models in the investigations of user acceptance of information technology. The model is adapted from Theory of Reasoned Action (TRA), which was originally proposed by Fishbein and Ajzen in 1975. Technology Acceptance Model is an information system theory, which purpose is simply to predict and explain the user acceptance of information technology. The model addresses the reasons why users either accept or reject particular piece of information technology. The revised model by Davis et al. (1989) is constructed from external variables (external stimulus), perceived usefulness and perceived ease of use (cognitive response), behavioral intention, and actual usage (behaviour). (Davis et al. 1996a)

Quite a few researchers have applied TAM when studying acceptance of Internet banking. Liao et al. (2002) even made an invariance analysis concluding that TAM is a well suitable instrument for evaluating Internet banking acceptance, but also that the suitability is independent of the respondent characteristics such as gender, age and information technology competence. The current research done about Internet banking and Technology

Acceptance Model are reviewed next, presenting the major findings of them and the empirical environment.

Sudarraj et al. (2005) used deconstructed TAM to measure the importance of usefulness and ease of use in online and telephone banking. They successfully validated the model with Canadian university students. Karjaluoto et al. (2002) built a model based on TRA and TAM, which was empirically tested with private Finnish retail bank customers. Their conclusion is, that “prior computer experience, prior technology experience, personal banking experience, reference group, and computer attitudes strongly affect attitude and behaviour towards online banking.” (Karjaluoto et al. 2002).

Supporting findings were those of Lassar et al. (2005) who studied online banking adoption in the United States in the light of TAM. They concluded that the intensity of Internet usage is significantly influencing individuals’ adoption of Internet banking. These findings suggest that the more experienced the consumers are in using the computers and the Internet, the more likely it is that they will start using Internet banking.

Another Finnish study investigated consumers’ acceptance of online banking: Pikkarainen et al. (2004) added perceived enjoyment, information on online banking, security and privacy and quality of Internet connection to the model. Surprisingly, they found only PU and information of online banking significantly affecting use of Internet banking services in Finland. Hong Kong students were used to empirically test another modification of TAM; in this study Chau and Lai (2004) also discovered that PU could be the only major factor directly influencing the attitude towards online banking. PEOU influenced also directly, but mainly via PU. Other measured factors like alliance services, personalization and task familiarity

influenced through PU, and accessibility through PEOU.

Suh and Han (2002) added trust to the original TAM model. They studied their model by empirically evaluating responses from personal customers of five major banks in South Korea and discovered trust to be a very significant determinant of user acceptance of Internet banking. Trust had a significant positive effect on both PEOU and PU, out of which PU appeared to be stronger in predicting the intention to use Internet banking.

Trust was handled also by Wang et al. (2003). Their research aimed on recognizing the determinants of user acceptance of Internet banking. In this research they introduced perceived credibility as a new factor to TAM, in addition to self-efficacy, perceived usefulness and perceived ease of use. The model was empirically tested by phone interviews with Taiwanese consumers. Surprising results were found: perceived ease of use and perceived credibility were more significant than perceived usefulness in predicting the behavioural intention to use Internet banking. The surprising factor in this was, that majority of TAM related research has concluded that PU is the ruling factor over PEOU. Self-efficacy

### **3. Methodology**

#### **Research population**

The researcher targeted population was business process in the organization,

corporate Customers, Current system if any, Capability of the organization's technology infrastructure and the management of the organization

#### **Research Instruments**

Quantitative analysis was chosen to test the research model, as it is good for measuring how many and in what proportion. In addition, with statistically reliable quantitative research it is possible to generalize the results: if the same questions are asked from different people with the same characteristics, the answers should support the outcome of the study.

The method for collecting empirical data for the statistical analysis was customer survey. Questionnaires were sent out to randomly selected Trade Finance customers of the case bank; (Kenya Commercial Bank) in Kenya, Uganda, Rwanda and Tanzania. The questionnaires were developed together with this banks best Trade Finance specialists. With the help of the expertise of these specialists, the questionnaire content and validity of the questions were confirmed to facilitate achieving the goal of the study in the best possible way. In addition the questionnaires contained questions outside of this research, mainly related to customer service and open-ended comments. The responses to those questions are used for further analysis only for the case bank's purposes.

The survey questions and their relation to the hypotheses are presented in the table below.

**Table 1. Questionnaire questions for hypothesis testing**

FACTOR	VARIABLE	HYPOTHESIS	SURVEY QUESTION
<i>Perceived usefulness</i>	PU	H1	I find / I think I would find TFIS useful in conducting Trade Finance banking transactions
<i>Perceived ease of use</i>	PEOU_1	H2	a) I find / I think I would find it easy to do what I want to in TFIS
	PEOU_2	H2	b) I find / I think I would find TFIS easy to use
<i>Organizational support</i>	OSU_1	H3	a) It is / would be important for me to have someone else in my organization to help out in case of non-technical* problems with TFIS
	OSU_2	H3	b) It is / would be important for me to have someone else in my organization to help out in case of technical** problems with TFIS
<i>Bank support</i>	BSU_1	H4	a) It is / would be important for me to have someone to help out in the bank in case of nontechnical* problems with TFIS
	BSU_2	H4	b) It is / would be important for me to have someone to help out in the bank in case of technical** problems with TFIS

\* Non-Technical problem could be for example creating a template, finding a deal via Inquiry, etc)

\*\*Technical problem c

**Data Analysis Method**

The analysis was done with a system designed for statistical analyses (SPSS). Descriptive statistics and regression analysis, completed with Pearson product-moment correlation analysis, were selected as the methods for interpreting and analysing the empirical data. With the help of these statistical measures, the validity of the theoretical model and hypothesis are tested.

Regression analysis was chosen, for it fits well for hypotheses testing and analysing how independent variables can be used to

predict a dependent variable. Linear regression is based on correlation between the variables, in this case Pearson product-moment correlation, but it enables more detailed and sophisticated examination of the interrelationship of the variables.

Analysis called ANOVA is conducted in order to determine the statistical significance of the correlations between the selected variables. The p-value of the F-test indicates the level of association between the dependent and independent variables in the model. When the significance p-value is less than 0.05, it

means there is a statistically significant association between the dependent and independent variables. P-value 0.10 refers to weakly significant association. If the p-value is more than 0.10, then the model chosen is not statistically significant.

#### 4. Analysis of Findings

##### Use of the system

Most of the responses came from users of the system (90%). Customers, who do not

currently use the system, but reported that they will in the future cover 7%. Only 3% of all responses came from customers who do not use the system, and do not intend to. All Kenyan customers were users of the system, and also in Uganda only one of the responses came from a non-user. The most non-users were registered from Rwanda (36%). This can probably be explained by the distinct difference in TFIS between Rwanda and the other countries.

**Table 2 User statistics**

Usage	Frequency (%)
Don't Use and Won't	3
Don't Use but will	7
Users	90

##### T-tests

An independent T-test was conducted to compare the scores for each of the variables between users and non-users, females and males, older and younger, and between those with higher and lower education.

##### Differences between users and non-users

A t-test was conducted to compare the outcomes for each of the variables between users and non-users. Table 3 contains the outcome for this test.

**Table 3. T-tests between users and non-users**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	Non-user	User	F	Sig.	Sig. (2-tailed)
PU	4.10	4.27	1.445	0.232	0.555
PEOU_1	3.56	3.97	0.197	0.658	0.185
PEOU_2	3.22	4.01	0.074	0.786	0.011
OSU_1	2.80	2.63	0.080	0.777	0.688
OSU_2	3.20	2.96	0.171	0.680	0.582
BSU_1	3.83	4.56	0.987	0.323	0.001
BSU_2	3.55	4.54	1.143	0.287	0.000

\* F-value for Equal variances assumed was lower than 0.05. Therefore values for equal variances not assumed are used.

As can be seen from the table above, both users and non-users find the system useful. Non-users seem to be more aware of using the system, and have more confidence on them when it comes to using it. Non-users also have more experience on using other bank services provided in the Internet. For non-users organisational support is more important. The only variables that are statistically significant between users and non users are PEOU\_2 and BSU\_1 and

BSU\_2 ( $p < 0.05$ ). These three are all scored higher among the users. The finding about bank support is also in line with the regression analysis results for the adjusted model.

**Differences between females and males**

A t-test was conducted to compare the outcomes for each of the variables between females and males. The results of this comparison can be seen in table 4.

**Table 4. T-tests between males and females**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	Female	Male	F	Sig.	Sig. (2- tailed)
PU	4.29	4.18	1.036	0.311	0.561
PEOU_1	4.10	3.53	0.896	0.346	0.002
PEOU_2	4.06	3.65	0.866	0.354	0.027
OSU_1	2.70	2.52	2.396	0.124	0.503
OSU_2	2.99	2.97	0.491	0.485	0.942
BSU_1	4.56	4.29	2.643	0.107	0.077
BSU_2	4.54	4.21	3.263	0.074	0.049

Based on the T-test results, there is statistically significant difference between the scores of males and females in Perceived Ease of Use and Bank Support. Both PEOU\_1 and PEOU\_2 have received higher scores by the females. Both BSU\_1 and BSU\_2 are statistically significant: BSU\_2 somewhat more strongly ( $p$ -values $<0.01$  and  $P<0.05$  respectively). Hence, females think the system is easier to use than males, but to them the importance of support received by the bank is bigger than for males – especially technical support. That is not very

surprising if traditional roles and areas of interest are considered; men in general tend to be more self-assured about technical matters.

**Differences between age groups**

A t-test was conducted to compare the outcomes for each of the variables between respondents of different ages. They were divided into two categories: respondents between 24-45 years and 46-65 years. The results of this comparison can be seen in table 5.

**Table 5. T-tests between Age Scales**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	24-45 years	46-65 years	F	Sig.	Sig. (2- tailed)
PU	4.28	4.20	0.188	0.665	0.622
PEOU_1	3.97	3.91	1.417	0.236	0.721
PEOU_2	3.94	3.98	1.270	0.262	0.843
OSU_1	2.67	2.56	0.145	0.705	0.656
OSU_2	2.94	3.00	0.436	0.510	0.819
BSU_1	4.51	4.43	0.066	0.798	0.599
BSU_2	4.60	4.18	5.181	0.025	0.009

According to the T-test between respondents of age 24-45 and 46-65, there is statistical significant difference in variables EXP\_1 and BSU\_2. The results indicate that the older the users are, the more experience they have in other Internet bank services and the less technical support they need from the bank. This is surprising when considering the common impression that younger are more familiar with electronic banking services, which also has been supported by

empirical results in few of the studies ( Karjaluoto et al. 2002).

**Differences between education levels**

A t-test was conducted also for comparison of scores for each of the variables between respondents with different education levels. They were divided into two categories: respondents with elementary school, high school education, and those with university bachelor's or master's degree.

**Table 6. T-tests between Low and High educated**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	Lower education	Higher education	F	Sig.	Sig. (2- tailed)
PU	4.37	4.19	1.347	0.248	0.315
PEOU_1	4.00	3.96	0.938	0.335	0.806
PEOU_2	3.95	4.00	0.586	0.446	0.782
OSU_1	2.65	2.62	0.393	0.532	0.897
OSU_2	3.10	2.91	0.667	0.416	0.469
BSU_1	4.61	4.41	1.068	0.304	0.186
BSU_2	4.54	4.390	0.083	0.774	0.390

The T-test results indicate that there is a big difference in previous experience. Similarly surprising results can be seen with the education level of the respondents, as with the age and use of Internet banking of females: Clearly the higher the level of education, the less experience the respondent has with both

Internet banking and other Internet services.

Again the common understanding and empirical evidence from studies done before do not support this notion.

**Differences between nationalities**

In order to distinguish the differences between Kenyan, Ugandan, Tanzanian and Rwandan respondents, a t-test was also made to compare the scores of each of the

variables. The analysis of the countries and the differences of scores were done by pairing the countries for the analysis. This approach was chosen to see the differences in more detailed.

**Table 7. Mean values for Kenya, Uganda, Rwanda and Tanzania**

	Mean			
	RWANDA	UGANDA	TANZANIA	KENYA
PU	4.54	4.20	4.05	4.42
PEOU_1	4.00	3.84	3.78	4.29
PEOU_2	3.77	4.02	3.70	4.13
OSU_1	2.75	2.62	2.96	2.33
OSU_2	3.17	2.81	3.17	3.08
BSU_1	4.14	4.62	4.00	4.88
BSU_2	4.36	4.57	3.92	4.75

**Table 8. T-tests between Kenya, Uganda, Rwanda and Tanzania**

	Levene's Test for Equality of Variances and t-test for Equality of Means											
	RWANDA-UGANDA		RWANDA - KENYA		RWANDA-TANZANIA		UGANDA - KENYA		UGANDA-TANZANIA		TANZANIA - KENYA	
	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)
PU	1.056	0.262	0.255	0.616	0.347	0.074	3.443	0.337	3.567	0.531	0.115	0.083
PEOU_1	0.102	0.558	0.863	0.341	0.269	0.494	0.521	0.039	0.097	0.810	0.143	0.054
PEOU_2	0.874	0.354	0.011	0.247	0.091	0.831	1.289	0.609	2.329	0.154	0.259	0.123
OSU_1	2.462	0.749	2.998	0.387	0.014	0.587	0.663	0.381	4.394	0.267	4.696	0.100
OSU_2	1.345	0.376	8.810	0.875	0.004	1.000	7.151	0.431	2.051	0.240	12.841	0.837
BSU_1	5.312	0.018	14.732	0.001	0.823	0.624	12.620	0.068	0.197	0.000	4.657	0.000
BSU_2	0.204	0.342	1.438	0.123	0.611	0.167	1.735	0.306	2.674	0.002	3.924	0.002

When looking at the table 8, several small statistically significant differences can be distinguished from the T-test results: Variable Awareness is statistically significantly lower in Uganda than in Rwanda and Kenya. Experience in other Internet services is significantly different

among Rwandans and Tanzanians and Rwandans and Kenyans.

Although all the countries value support from the bank in both non-technical (BSU\_1) and technical (BSU\_2) issues, there is clear statistical difference between Kenyans, Ugandans and the other



countries. Especially Tanzanians give the lowest scores to both: M=4.00 and M=3.92 respectively. Especially score for the technical support is significantly lower than it is for Kenyans and Ugandans. Rwandans do not see non-technical support as important as Kenyans and Ugandans either.

Tanzanians and Rwandan corporate customers obviously do not value support from the bank as much as Kenyans and Ugandan customers do. Therefore it is good to keep in mind that most of the respondents of this research were from Uganda and Kenya. However, none of the nations seem to demand much of support from their own organisations. In general, Rwandans are the least experienced, and Ugandans have the least confident and lowest level of awareness of the system usage.

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